

Adolescent Marijuana Use

After alcohol, marijuana is the most commonly used substance among adolescents. Marijuana use is more common among older adolescents than younger youth. The Monitoring the Future national survey for 2016 provided the following percentages of young people reporting marijuana use at least once in the previous month:

- Five percent of students in 8th grade
- Fourteen percent of students in 10th grade
- Twenty-three percent of students in 12th grade
- Twenty-two percent of college students and young adults

A Bit of History

Recreational and medical use of marijuana has a long history (e.g., in China, as early as 2700 B.C.). In the 1800s, marijuana extracts were sold in pharmacies and doctors' offices around the U.S.A for stomach problems and to help sufferers with cholera. In the 1930s, marijuana became a political topic, and the "evil weed" was outlawed in 29 states. In 1970, the "War on Drugs" led to designating marijuana a Schedule 1 drug (e.g., a substance with a high potential for abuse) under the Controlled Substances Act.

Reconsideration of marijuana use in recent years has led to an increase both medically and recreationally. As of 2019, 29 states and the territories of Guam and Puerto Rico allow marijuana for limited medical purposes. Several others have legalized unrestricted use. And while marijuana still is illegal under federal law, a 2014 Congressional act prevents the Department of Justice from spending funds to interfere with implementation of state medical marijuana laws.

Understanding the Substance

The legalization of marijuana is outstripping research on positive and negative effects. What follows is some basic information. (Appended is a list of some common terms.)

In discussing cannabis, two key ingredients must be understood. The first is THC (delta-9-tetrahydrocannabinol). This is the main ingredient found in marijuana. Research indicates that this ingredient is associated with increased blood flow to the brain's prefrontal cortex and reward system (amygdala, nucleus accumbens, medial forebrain bundle, and ventral tegmental area) along with a surge of dopamine which causes a "high" and other intoxication effects. THC also may help remedy pain, nausea, muscle spasms, and appetite loss. Those who take marijuana recreationally often want a product that high levels of THC.

The second most prevalent ingredient is CBD (cannabidiol). It is the main component of medical marijuana and is used to decrease anxiety, reduce pain, and help with epilepsy. Unlike THC, CBD is deemed safe by the U.S. Food and Drug Administration and is sold as gels, gummies, oils, supplements, and extracts.

Trends in Adolescent Use

Over the last several decades, marijuana use among twelfth-graders has fluctuated considerably (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2017). In 1980, 34 percent had used marijuana in the month preceding the survey. By 1992, the proportion decreased to 12 percent. From 1992 to 1997, the rate doubled to 24 percent, then by 2006, fell to 18 percent, then increased by 2012 to 23 percent. And with slight yearly fluctuations, the figure was at 23 percent as of 2017. Trends for younger students are similar.

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Students who plan to complete four years of college report less use of marijuana when compared to those who do not have such plans. For example, reports indicate that, in 2017, eighth-graders without college plans were nearly three times more likely than their eighth-grade peers to have used marijuana (13 and 5 percent, respectively). Comparisons for tenth-graders indicate that those without college plans were nearly twice as likely to have used (25 versus 14 percent, respectively). At twelfth grade, the differences were 27 percent for students with college plans, versus 22 percent for students without plans.

Marijuana can be used in different ways, including smoking, vaping, eating as an “edible,” or dabbing, which means smoking or inhaling marijuana in the form of hash oil or wax. Over the past decades, the typical percentage of tetrahydrocannabinol (THC), the most active ingredient in marijuana, has increased in marijuana and marijuana products, making them more potent.

Vaping is a popular and relatively new way to use marijuana and other substances. To vape marijuana, a person breathes in vapor, aerosol, or mist that contains hash oil or other forms of cannabis through an electronic or battery-powered device. Vaping devices include e-cigarettes, including “mods,” and e-pens.

*(U.S. Department of Health and Human Services –
<https://www.hhs.gov/ash/oah/adolescent-development/substance-use/marijuana/index.html>)*

Effects on Adolescents

Conclusive data on impact are yet to be produced. In their 2019 review, Tomko, Williamson, McRae-Clark, and Gray conclude that: (1) neurobiological risk factors associated with increased risk of developing a CUD [Cannabis Use Disorder] include: “impulsivity/disinhibition, emotional dysregulation, and sensitivity to the rewarding properties of cannabis. (2) Environmental risk factors such as low parental monitoring, parental cannabis use, and association with peers who use cannabis may contribute to cannabis use initiation in adolescence, indirectly influencing the development of CUD.”

Research conducted in Montreal, Canada is typical of recent studies (Meda et al., 2017). The researchers conducted a longitudinal study that looked at 3,826 students from grade 7 to grade 11 and asked participants whether they used drugs, including cannabis and alcohol. They tested memory, visual reasoning skills, and inhibition levels. The participants responded on a 6-point scale of use ranging from “never” to “every day.” Students who used drugs, including cannabis, had lower scores on a memory test, reasoning test, and inhibition test. Similar problems were not reported by those using alcohol.

More ominously, a 2017 report from Grewal and George cautions that: “Numerous lines of evidence suggest a correlation between cannabis consumption and a variety of psychiatric conditions, including cannabis-induced psychosis (CIP). While it can be difficult to differentiate CIP from other psychoses, CIP holds distinguishing characteristics, which may aid in its diagnosis. Given the increasing push toward cannabis legalization, assessing CIP and employing timely treatments is critical.”

With respect to behavioral and pharmacological treatments for adolescent CUD, Tomko and colleagues report that “more research is available on behavioral treatments for adolescent CUD, and these are often the first-line treatment options. Emerging evidence suggests promising pharmacological adjuncts for the treatment of adolescent CUD, however. Preliminary data examining these pharmacological treatments suggests that effective treatments for adults may not be appropriate or effective for adolescents and vice versa, though further research is necessary.”

Adolescents typically do not think using marijuana is as risky as using other substances. This belief has been steadily growing. When asked, “How much do you think people risk harming themselves (physically or in other ways) if they smoke marijuana regularly,” less than one-third of high school seniors responded that there was a “great risk” in 2016. Ten years ago, more than half of high school seniors (58 percent) believed it was a great risk.

(U.S. Department of Health and Human Services –
<https://www.hhs.gov/ash/oah/adolescent-development/substance-use/marijuana/index.html>)

Concluding Comment

Clearly, not enough research has been conducted on marijuana to know the full effects. And it is also important to watch for possible bias in marijuana research, especially as concerns increase about negative outcomes and as those profiting from use underwrite research.

That said, the general view at this time is that the abuse of the substance can alter the ability to make sound judgments and increases the likelihood of risky behavior (e.g., impaired driving, unsafe sex). This is a particular concern as cannabis users seek products with higher and higher concentrations of THC.

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Appendix – Some Terms Related to Marijuana and Cannabis

- Cannabinoids* - naturally occurring chemical compound in cannabis that produces a "high".
- CBD* - Cannabidiols - this is medical cannabinoids use for therapeutic and medical purposes.
- Dabs* - A waxy cannabis concentrate that are heated and vaporized and then inhaled. These have high THC levels.
- Edibles* - Consumable food or drink that contains THC (e.g., pot brownies). Has delayed effects.
- Endocannabinoid System* - The body system that responds to cannabinoids.
- Hash* - A smokable concentrated potent substance made from isolating the trichomes of a cannabis plant.
- Hemp* - The fiber of the cannabis plant, extracted from the stem; does not produce high concentrations of cannabinoids. (Also used to make rope, strong fabrics, fiberboard, and paper).
- Potency* - The strength of a substance as measured by the amount needed to produce a certain response.
- Refinement* - The process of removing impurities and unwanted elements from cannabis extract.
- Resin* - Goopy black tar that builds up in bongs, pipes, and other smoking devices.
- THC (Tetrahydrocannabinol)* - Main ingredient in marijuana that produces a "high" and as helping remedy pain, nausea, muscle spasms, and appetite loss.
- Vaping* - Inhaling the gas from heated cannabis oil using a vape pen. Vaping tends to be more intense as there are higher THC or CBD levels in oil.