Debate rages over health effects of marijuana
25 October 2010, By Sandy Kleffman

The marijuana cigarette, with its pungent smell, became a symbol of the 1960s. Bill Clinton tried it, but he didn't inhale. Comedians joked about burned-out dopers with brains altered by a variety of drugs, including pot. College students and young professionals passed around joints at parties and wondered: Why all the fuss?

Now, four decades later, Californians will decide Nov. 2 whether to legalize recreational use of the drug. Proposition 19 would allow those 21 or older to possess as much as an ounce of marijuana and to grow it in spaces of 25 square feet or less.

Although marijuana has been in use for years, voters will head to the polls with only a hazy understanding of its health effects.

Research has been difficult because the drug is illegal, and the limited studies that have been done often paint conflicting pictures. Among the murky areas:

• Marijuana smoke is laced with carcinogens and can lead to respiratory problems, but no link has been established with lung cancer. Some studies suggest the drug's active ingredient may even have anti-cancerous properties.

• It can be addictive -- one federal survey found that 4.3 million people had a problem with marijuana abuse or dependence in 2009 -- but research indicates it may not be as addictive as other drugs or alcohol.

• While people are under its influence, marijuana can impair memory and hinder the brain's cognitive abilities. Whether such effects are long-lasting is not clear.

• In rare instances, it can lead to psychotic episodes, but whether it can be linked to mental illness in vulnerable people remains an open question.

One of the biggest unknowns is marijuana's effect on a developing brain. Many experts consider this question particularly important because brains mature until people are in their 20s.

Also open to debate is whether legalizing marijuana would lead to more fatal traffic accidents, especially if people combine drinking with the drug.

All of these uncertainties provide plenty of fodder for those on both sides of the Prop. 19 debate in California.

Some medical professionals view marijuana as clearly less harmful than alcohol.

"It seems to be a rather safe substance with very low potential for addiction and withdrawal," said Dr. Donald Abrams, a professor of medicine at UC San Francisco and chief of hematology and oncology at San Francisco General Hospital. He recommends marijuana for many of his cancer patients.

"There are 8 million people in the United States that are relatively chronic marijuana users," he said, "and many of them are highly functioning people that hold full-time jobs and are creative members of society."

But others see reason for caution.

Alan Budney, a professor of psychiatry and behavioral sciences at the University of Arkansas for Medical Sciences, studies marijuana dependence and withdrawal.

"If you start using it way too much, it starts affecting your life just like alcohol or any other drug does," he said. "Your relationships suffer. Financially, you suffer. Employment and school-wise, you suffer. All the things that go along with dependence on any drug, I see that as the most chronic problem with marijuana. People abuse it."
So, how addictive is it?

One well-known study found that one out of every 10 or 11 people who use marijuana will develop an abuse or dependence problem.

That compares to one out of three people who use tobacco, one out of six who drink alcohol, one out of six who use cocaine, and one out of five who use heroin.

This suggests that marijuana is not as addictive as other drugs and alcohol. Budney cautions that if it is legalized and becomes less expensive and easier to obtain, its dependence numbers may rise.

Marijuana comes from the dried, shredded leaves, stems, seeds and flowers of the hemp plant. It is the most commonly used illegal drug in the United States. A 2008 federal survey found that 15.2 million people had used it within the past month.

Most people inhale it in hand-rolled cigarettes, but it also can be mixed into foods such as brownies or used to brew tea.

When smoked, the active ingredient in pot, delta-9-tetrahydrocannabinol, or THC, has an almost immediate effect. It passes from the lungs to the bloodstream and travels to organs throughout the body.

In the brain, THC attaches to sites called cannabinoid receptors on nerve cells, changing the way those cells work. These receptors are abundant in parts of the brain that regulate memory, thinking, concentration, movement, coordination, time perception, and pleasure.

Within a few minutes, the heart rate may speed up and even double in some cases. This could pose problems for those with heart conditions, but Budney and others said it usually is a mild reaction that does not lead to serious heart troubles.

One of the biggest concerns is the potential effect on the lungs, particularly since marijuana smoke contains 50 to 70 percent more carcinogenic hydrocarbons than tobacco smoke.

Marijuana joints have no filter and are more loosely packed than a tobacco cigarette. People tend to hold marijuana smoke in their lungs for about 16 seconds, much longer than the three or four seconds for cigarette smokers, said Donald Tashkin, a professor of medicine at UCLA and one of the world's leading researchers on marijuana and the lungs.

"You smoke marijuana differently from tobacco, so more of the particles have time to deposit," he said. Marijuana smokers are at increased risk of developing such respiratory problems as coughing, phlegm and bronchitis, studies have shown.

Tashkin and his colleagues have found evidence of swelling, inflammation and microscopic injury in the lining of the major airways of marijuana smokers. So they speculated that this could lead to lung cancer and chronic obstructive pulmonary disease, or COPD.

To their surprise, when they conducted a large study in the Los Angeles area, they found no increased risk for these conditions among marijuana users, no matter how heavily they smoked. Other researchers have replicated their findings.

"So the bottom line is that it doesn't appear marijuana increases the risk for causing COPD or lung cancer," Tashkin said. "We also failed to find any risk for head and neck cancer."

No one knows why marijuana has not been linked to lung cancer, but Tashkin has a theory. He notes that at least 12 studies have shown that THC has properties that may inhibit the development of tumors by limiting cell division and promoting the death of unhealthful cells.

"It's presumably on the basis of these properties that THC inhibits the production of cancer," he said. But more research is needed.

Another unclear area involves marijuana's effect on cognitive abilities. One study found that long-term, heavy pot users one week after they quit using were still impaired in their ability to recall
words from a list, but returned to normal by four weeks. Another study found the effect on the brain can build up and deteriorate life skills over time.

When performing a memory task, marijuana smokers "activate either different parts of the brain or more parts of the brain than somebody who is not a marijuana smoker," said Susan Weiss, chief of the science policy branch at the National Institute on Drug Abuse.

"So what does that mean?" she added. "You could interpret it to mean that the marijuana smokers' brains are less efficient than somebody who is not a marijuana smoker. Or that there's some other way that the brain has compensated for being exposed to marijuana. It's very hard to know how to interpret that."

Although studies have shown an association between marijuana and schizophrenia, "at this time, it is not clear whether marijuana use causes mental problems, exacerbates them, or is used in an attempt to self-medicate symptoms already in existence," National Institute on Drug Abuse said.

Among Prop. 19 supporters is Dr. Larry Bedard, an emergency physician who practiced 21 years at Marin General Hospital before retiring. Throughout his career, he said, he saw fewer than 10 patients whose chief complaint related to marijuana. That was minuscule compared to the number of people he saw with alcohol-related problems.

"Marijuana is safer, with the least health consequences," he said.

In 2008, California hospitals had 181 admissions in which marijuana abuse or dependence was listed as the primary cause, according to a recent RAND Corp. report. In an additional 25,000 hospital admissions, marijuana was listed as a secondary, third or fourth diagnosis.

State officials said they could not readily produce comparable numbers for alcohol-related hospitalizations, but many experts said, like Bedard, that it would be many times more than the marijuana-related cases. However, Rosalie Pacula, co-director of RAND's Drug Policy Research Center, cautioned that the marijuana numbers may be artificially low because some doctors have been hesitant to code for pot because that can make it tougher to get reimbursement from insurance companies.

Pacula wrote a paper in July concluding that the health care costs associated with an increase in marijuana use, if it is legalized, are likely to be small compared to the expected revenue and criminal justice savings. However, she also noted that as research proceeds, if marijuana is found to be a cause of more significant health problems including schizophrenia and driving under the influence, that conclusion could change.

Studies have shown a much higher percentage of traffic accidents linked to alcohol than to marijuana. After using marijuana, "most people drive slower, so there's less risk of a fatality," Pacula said. She added that studies have also shown that combining marijuana use and drinking impedes people's ability to drive more than does alcohol alone.

"So the question that we really don't have a definitive answer about is whether alcohol and marijuana are going to get used together, or if they're going to be used as substitutes," Pacula said. "People have lots of opinions about that. There's research that shows both. So that is a big, big question."

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