

OREGON PUBLIC HEALTH DIVISION • OREGON HEALTH AUTHORITY

MARIJUANA USE IN OREGON: WHAT WE KNOW AND WHAT WE DON'T

The oldest known written record on *Cannabis* use comes from the Chinese Emperor Shen Nung in 2727 BC. Ancient Greeks and Romans were also familiar with cannabis.¹ In the 1840s, Dr. W.B. O'Shaughnessy, a surgeon working in India, introduced *Cannabis* into Western Medicine, promoting its use as an analgesic, sedative, anti-inflammatory, and anticonvulsant.²

Fast forward: In 2012, voters in Colorado and Washington approved ballot measures that legalized the recreational use of marijuana. Oregon is one of 22 states and the District of Columbia that allow medical marijuana,* and in March 2014 Oregon began licensing establishments for the retail sale of medical marijuana.

While marijuana has been tried for medicinal and recreational purposes throughout the world for thousands of years, questions still exist about the risks and benefits of its use. The Controlled Substances Act lists marijuana as a Schedule 1 drug; therefore, it has not been approved for evaluation in clinical trials (the gold standard for determining the efficacy of medications). Nonetheless, there is a growing body of scientific literature on the acute and chronic health effects of marijuana use.

This *CD Summary* provides an overview of marijuana use in the U.S. and Oregon, and summarizes what is known about its health effects from three sources: a 1999 Institute of Medicine (IOM) authoritative report, "Marijuana and medicine: Assessing the science base"³; National Institutes of Health web-based "comprehensive, peer-reviewed, evidence-based" information about *Cannabis* use in treating people with cancer²; and the June 2014 National Institute on Drug Abuse review article "Adverse health effects of marijuana use."⁴

WHAT IS MARIJUANA?

The scientific name for marijuana is *Cannabis* (genus) *sativa* (species);

* http://medicalmarijuana.procon.org/view_resource.php?resourceID=000881

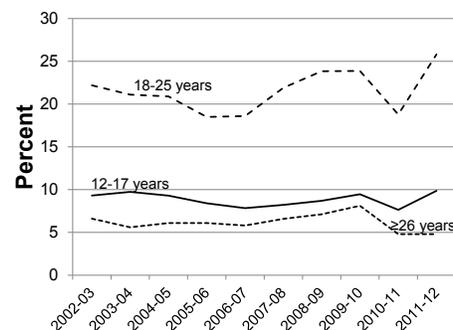
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subspecies: *sativa* and *indica*. The primary psychoactive ingredient in marijuana is δ -9-tetrahydrocannabinol (THC); marijuana also contains cannabidiol (CBD), although this chemical has been less studied. *Cannabis* strains can be cultivated to contain different amounts of THC and CBD. The THC content (i.e., potency) in samples seized by the Drug Enforcement Agency increased 4-fold between the 1980s and 2012. When the flowers and leaves of the marijuana plant are dried, they can be smoked, usually in marijuana cigarettes, pipes, and water pipes. Marijuana can also be ingested (e.g., in brownies, tea), or heated and vaporized so that the oils are volatilized and inhaled.[†]

Figure 1. Marijuana use during past 30 days, by age group, Oregon, 2002–2011



USE IN U.S. AND OREGON

According to the National Survey on Drug Use on Health[†], 43% of persons aged ≥ 12 years in the U.S. report having tried marijuana at least once

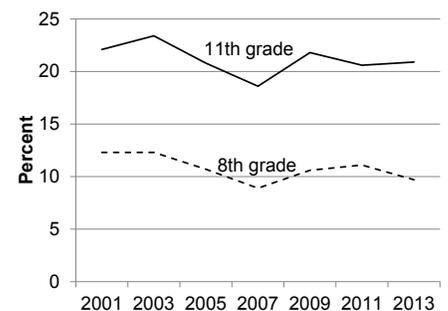
†N.B.: Most marijuana/marijuana products are not routinely tested for "potency".

‡ Substance Abuse and Mental Health Services Agency (SAMHSA) administered face-to-face, household survey

during their lifetime; 12% report current use. In Oregon, "current" use (i.e., during the past 30 days) is highest in 18–25 year olds, followed by 12–17 year olds (figure 1). Current use appears to be relatively stable over the past decade, with a slight increase in 2011–12.

The 2013 Oregon Healthy Teens (OHT) survey[§] found current use among 8th graders to be 10% and among 11th graders 20%; these numbers have decreased slightly during the past decade (figure 2).

Figure 2. Marijuana use during past 30 days by 8th and 11th graders, Oregon, 2002–2011



OREGON MEDICAL MARIJUANA

Oregon's Medical Marijuana Program is administered by the Public Health Division; currently, more than 60,500 persons hold an Oregon medical marijuana card (renewed annually). Card-qualifying medical conditions are set in state statute. Primary conditions for current card holders: severe pain (59,670); persistent muscle spasms (15,888); nausea (9,101); cancer (2,827); and seizures (1,490) (these conditions are not mutually exclusive). Other conditions include agitation, cachexia, glaucoma, HIV/AIDS, and post-traumatic stress disorder.[¶]

HEALTH EFFECTS

THC is lipid-soluble and accumulates in fatty tissues; the tissue elimination half-life is approximately 7 days. THC stimulates the release of dopamine,

§ a school-based survey administered among 8th and 11th graders

¶ <http://public.health.oregon.gov/DiseasesConditions/ChronicDisease/MedicalMarijuanaProgram/Pages/data.aspx>



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resulting in increased heart rate and blood pressure, increased appetite, and control of nausea and vomiting. Dronabinol is a synthetic THC and is the main active ingredient in Marinol®,⁵ marketed to reduce nausea and vomiting associated with cancer chemotherapy, and to stimulate appetite in patients with HIV/AIDS. THC plays a role in pain modulation and has been shown to reduce neuropathic pain in cancer patients. Other conditions with symptoms that may be alleviated by THC include glaucoma; inflammation (e.g., rheumatoid arthritis, Crohn's disease); multiple sclerosis; and epilepsy.

THC can reduce anxiety and produce relaxation, sedation, and feelings of euphoria. These effects can influence the potential therapeutic value and may be beneficial for some patients and undesirable for others.

THC can alter sensory perception and decrease coordination and reaction time. In some people, THC can cause acute dysphoria, hallucinations, and paranoia. Other adverse effects include: decreased motor control, coordination and reaction time; disinhibited behaviors; and altered judgement, which can increase the risk of injury (e.g., motor vehicle crash), or acquiring a sexually transmitted infection. Data from SAMHSA indicate that in 2011, marijuana ranked second to cocaine as a cause of Emergency Department visits for illicit drug use.⁶ Marijuana use is also associated with impaired short-term memory and ability to learn.

DEVELOPMENTAL IMPACTS

Marijuana can have adverse effects on development. Use during pregnancy has been linked to low birth weight,

preterm labor, higher NICU admissions, and developmental delays. Marijuana use can have a deleterious effect on the developing brains of infants and children. THC concentrates in breast milk, and may produce sedation, reduced muscular tone and poor sucking in infants. Use of marijuana in teenagers has been associated with impaired attention, memory, and learning, and increased risk of addiction.

LONG-TERM ADVERSE EFFECTS

An estimated 9% of those who experiment with marijuana become dependent. While withdrawal symptoms are not as serious as those for opiates or alcohol, they include irritability, anxiety, dysphoria, insomnia. SAMHSA data show that 18% of state-funded treatment episodes in 2009 were related to marijuana usage, compared to 7% in 1993.⁶

Marijuana smoke is associated with abnormalities of cells lining the human respiratory tract, and like tobacco smoke, is associated with increased risk of cancer (including lung, head/neck, bladder, brain, and testis), and lung damage. In addition, marijuana smoke has cardiac effects similar to those of tobacco smoke.

PRUDENT RECOMMENDATIONS

- Smoke of any kind can cause health problems, including lung cancer and cardiovascular disease. Avoiding the inhalation of smoke (including marijuana smoke) is important for health.
- Infants, children and adolescents with developing brains should not be exposed to THC. Further, mothers who are pregnant or breastfeeding should not expose their babies to THC.
- Cognitive impairment, whether from alcohol, the use of medications, or

marijuana can lead to increased risk of injury (e.g. from a car crash). Persons should not drive or operate heavy machinery while under the influence of mind-altering substances.

- Patients should be cautioned about potential adverse effects of use. Acutely, some marijuana users may experience dysphoria, anxiety, or paranoia; and long-term use increases the risk of addiction.

CONCLUSION

As the societal discussions around the role of medical and recreational marijuana evolve, the public health, medical, and drug treatment communities play an important role in grounding these discussions in facts: we need to be clear about what is known, and what gaps exist in current knowledge of the potential health benefits and risks associated with marijuana use. To quote our NIDA colleagues we "need to improve our understanding of how to harness the potential medical benefits of the marijuana plant without exposing people...to its intrinsic risks."⁴

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