

Chapter 10

Marijuana Abuse and Addiction

Marijuana abuse and addiction

- Marijuana is a plant, a member of cannabis sativa family of plants
- Almost 3,000 years ago Chinese physicians used cannabis as a treatment for malaria, constipation, the pain of childbirth
- Introduced in the US by immigrants
- Widely used during prohibition in 1920s

Marijuana abuse and addiction

- Most commonly abused illicit drug in the US
- More than 50% of the population have used it at least once
- A medico-legal conundrum
 - May be able to relieve some of the symptoms of amyotrophic lateral sclerosis (ALS), multiple sclerosis, rheumatoid arthritis, chronic pain
 - A lot of scientific research have been blocked by various government agencies
 - Some states have legalized the medical use of marijuana, the federal government still takes precedence.

Question of Potency

- The marijuana being consumed today is much more potent (20-32%) than the marijuana than just over 20 years ago (3%) in the 1990s
- There is much variation today between samples of marijuana so that it is impossible to tell the potency of any specific plant unless one is a chemist
- Leads to question previous research using strains with such lower potency

Scope of the problem of marijuana abuse

- 125-203 million people worldwide have abused marijuana at least once in the last year; 32.5 million in the north America
- Peak age of initiation around 18-19 years of age
- If not used by age 20, unlikely to do so

Pharmacology of Marijuana

- In spite of its long history as a popular substance of abuse, the pharmacokinetics of marijuana are still not completely understood
- In the 1960's researchers discovered that the majority of marijuana's effects are caused by a compound known as Δ -9-tetrahydro-cannabinol ("THC"). However other psychoactive compounds are also thought to contribute to its effects
- Chronic marijuana abusers might test "positive" for THC in their urine for up to 30 days, but this is happens only with exceptionally heavy levels of marijuana abuse

Pharmacology of Marijuana

- No known effect on respiration center in brain stem
- THC mimics endocannabinoids which has receptor sites throughout the brain
- Affects the synthesis of acetylcholine
- The mechanism through which marijuana is able to induce a sense of mild euphoria is not understood.
- Even under the best of conditions, the body is not able to biotransform THC quickly, and in chronic abusers the half-life might vary from 24-96 hours

Interactions between marijuana and other chemicals

- There has been relatively little research into potential interactions between marijuana and other compounds
- Given its popularity, there is surprisingly little information regarding the possible interactions between /marijuana and substance of abuse
- Clinical evidence would suggest that marijuana use by patients on lithium can cause the lithium levels in the blood to increase, possibly to toxic levels

Methods of Abuse

- Oral abusers will usually bake marijuana into cookies or brownies, which are then ingested
- Orally administered marijuana is slowly absorbed, with the results being that the abuser does not feel the first effects of THC until 30-120 minutes after ingestion
- Peak THC levels are usually seen 1-5 hours after the marijuana-laced cookie or brownie was ingested. The effects last for 5 to possibly as long as 24 hours after ingestion

Methods of Abuse

- Methods of administration
 - Most popular is by smoking, a practice of more than 5,000 years old
 - Smoking makes 60% of the available THC admitted into the body
 - “joints” a marijuana form of cigarettes typically contains 500-750 mg of marijuana (equivalent to 2.5 to 20 mg of THC)
 - “blunt” are made from unwrapping a cigar and then refilling it with high potency marijuana

Methods of Abuse

- Technique of smoking marijuana is different than cigarette smoking or cigars
 - Inhale deeply into the lungs, holding the breath for 20-30 seconds to get as much THC into the blood as possible
- The effects reach peak intensity within 20-30 minutes and began to decline within an hour

Subjective Effects of Marijuana

- Marijuana smokers achieve the strongest effects, producing a mild sense of euphoria, relaxation, some sensory distortions, and altering the individual's perception of ordinary activities such as eating, watching television or movies, and having sex
- In social settings, marijuana smokers are prone to infectious laughter, excessive talkativeness, and a feeling of relaxation.

Subjective Effects of Marijuana

- Individual's expectations influence effects of marijuana
- Users anticipate the drug will
 - Impair cognitive functions and behavior
 - Help to relax
 - Help to interact socially and enhance sexual function
 - Enhance creative abilities and alter perception
 - Negative consequential effects
 - A sense of craving

Adverse effects of marijuana abuse

- Marijuana is viewed by many as relatively harmless. A 160lb person would need to smoke the equivalent of 900 marijuana cigarettes, simultaneously to reach a potentially lethal level
- Bloodshot eyes
 - Anxiety
 - Drug induced panic reactions
 - Impaired motor skills
 - Toxic or drug induced psychosis
 - Reduce sexual desire
 - Erectile problems

Chronic Marijuana Abuse

- Marijuana abusers are known to be at risk for the development of a *drug-induced* psychosis.
- Permanent brain “shrinkage” in certain areas
- Suppresses REM Sleep
- marijuana smokers who had smoked just one “joint” a day for 10 years had a 570% higher risk of lung cancer as nonsmokers in spite of whether they smoked tobacco cigarettes or not.

Chronic Marijuana Abuse

- Animal research also confirms that heavy marijuana abuse appears to suppress the immune system's effectiveness
- Reproductive system dysfunctions
- “Amotivational syndrome”
- Increase in heart rate

Addiction to Marijuana

- Marijuana is indeed addictive
- 8-20% of chronic abusers will become dependent on it
- Marijuana does not induce the same dramatic withdrawal symptoms seen in alcohol or narcotic-dependent persons who discontinue the abuse of their desired drug
- Tolerance rapidly develops
- May experience irritability, aggression, anxiety, depression, insomnia, sweating, nausea and tachycardia if suddenly stopped

Marijuana use and DSM -IV

- Cannabis intoxication
- Cannabis use disorder
- Cannabis withdrawal
- Other cannabis-induced disorders
- Unspecified cannabis-related disorder