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An overview on psychoactive drugs and its forensic significance

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Abstract

Psychoactive drugs are the drugs which affect a person's emotions, behavior and perception. Everyone knowingly, unknowingly use these drugs in day to day life. So actually what are these drugs, types of drugs need to be known. In History psychoactive drugs are used from at least 10,000 years, ago. Mainly these drugs are classified in 4 types: stimulants; depressants; narcotics; hallucinogens. How these effect on our brain is most important. These drugs are used in various sectors like for medicinal use and some just for fun. If the drug is removed what happens to patient (withdrawal symptoms) is necessary to know. There is an act which deals with these type of drug it is Psychoactive Substances Act (PSA) which comes into force on 26th May 2016. There is forensic significance also which helps in justice in criminal and civil justice system.

Keywords: Psychotropic• Drug Abuse• Forensic Significance• Neurotransmitter

Introduction

Drugs are a part of almost everyone's life. Most of us have taken, vitamins, aspirin, or flu medication assistance. This drug rarely produces an altered state and not considered psychoactive. A psychoactive drug, also known as psych pharmaceutical, or psychotropic is a chemical substance that affect a person's emotions, behavior and perception. Impacts on neurotransmitter function Neurotransmitter are the chemical signals that affect how happy, thirsty, anxious, scared, tired, Ex: dopamine, GABA, noradrenalin etc. For example If you ever have a cup of coffee or a beer, you have taken that psychoactive drugs. However, the majority of psychoactive drugs are more dangerous. These types of substances can be used medically or intentionally to improve performance or to change one's consciousness; as entheogens; for the ritual, spiritual, or the purpose of shamanism; or for research. Some psychoactive drugs, which have a therapeutic value, prescribed by doctors and other health care.

Drug

Any substance intended for use as medicine or in form of medical preparation.

Drug of abuse

Any substance the possession or supply of which is restricted by law because of its potential harmful effects on the user.

Narcotic drugs

Drugs that have analgesic effects, depress the CNS and tend to promote sleep.

Psychotropic substances

Drugs which in therapeutic doses diminish awareness of sensory impulse especially pain by the brain (mind altering drugs).

Important Terms to Know

- Physical dependence: The user of the drug needs the drug to continue performing everyday activities.
- Psychological dependence: The user feels as if they need the drug to maintain emotional stability.

History

Psychoactive drug that is used on a very long time. The use of psychoactive substances were found as archaeological evidence (mostly plants) dating back at least 10,000 years, and historical evidence of cultural use over the last 5000 years. Chewing coca leaves is the best example of which date back more than 8,000 years ago in the Peruvian community

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Types of Psychoactive Drug

Stimulants

Stimulants are drugs that accelerate nerve stimulant found in relievers Stimulants system. Some very addictive. Range sick of nicotine and caffeine to cocaine and methamphetamine. Blocking reuptake or reabsorption of a neurotransmitter. For example; Serotonin and dopamine which can lead to increased energy, panic and anxiety. Think about how coffee and cigarettes can make you restless

Example: Nicotine, amphetamines, cocaine, caffeine.

Depressants

Depressants are drugs that reduce the speed of the central nervous system. Very addictive. Becomes very deadly with higher doses. Increasing the production of the neurotransmitter GABA (gamma-aminobutyric acid). Affects impair cognition memory. Depressants help neurotransmitter GABA binds to receptors that receive chemical signals leading to reduced activity of the nervous system and induces sleep.

Example: alcohol, sedatives such as benzodiazepines and barbiturates.

Narcotics

Drugs that relieve pain by dulling the pain receptors. All narcotics is the resultant of opium. Pain seems to be worse when the drug wears off. Makes highly addictive drug. Administered as painkillers Used recreationally to create a sense of euphoria. They stimulates your endorphins are neurotransmitters which naturally reduces pain.

Example: Morphine, codeine, etc.

Hallucinogens

Drug created by humans to change senses. Drug lead to poor decision making and become dangerous when experience trip. Often the worse part of religious rituals and culture. They trick the brain into seeing or hearing things that are not.

There actually. Warps sense of the time and space. These altered states of consciousness can cause paranoia and mescaline anxiety.

Example: LSD and ecstasy, marijuna.

How Drugs Work on Brain

Psychoactive drugs alter communication between brain cells. Individual brain cells (neurons) communicate with each other through a series of biological messengers called neurotransmitters. This neurotransmitter is released from neurons send messages and binds to receptors on neurons receive message. When drug-dependent people are exposed to stimuli that provoke cravings, specific regions of the brain before they become activated. Moreover, some other parts of the brain have been proven to work normally after use drugs or dependence.

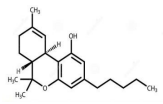
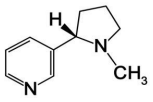
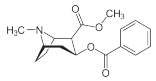
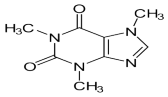
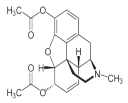
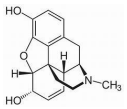
DRUG	TYPE	MOLECULAR FORMULA, MOLECULAR WEIGHT	STRUCTURE	ADVERSE EFFECT
Marijuana	Mild Hallucinogen	C21H30O2 314.4 g/mol		Disrupted memory, Lowers sex hormones Lung damage
Nicotine	Stimulant	C10H14N2 162.23 g/mol		Heart disease, Cancer(by tar)
Cocaine	Stimulant	C17H21NO4 303.35 g/mol		Suspiciousness, depressive
Caffeine	Stimulant	C8H21N4O2 194.19 g/mol		Insonia In high doses ,anxiety ,restlessness
Heroin	Depressant	C21H23NO5 369.41 g/mol		Depressed physiology, a agonizing withdrawal
Morphine	Narcotic	C17H19NO3 285.34 g/mol		drowsiness, dizziness, tiredness; nausea, vomiting; sweating; or feelings of extreme happiness or sadness.

Table1: Some of drug, chemical properties it's effects.

Withdrawal Symptoms

Experienced when the drug is removed

- Head pain, Sickness, Pain, Cramping, Frustration, Tremors, High blood pressure.

Applied in Various Sectors

Anesthesia

It is used to block physical pain and other sensations generally by doctors during operations. As these induce unconsciousness so medical procedures like surgery can be done without the feelings of physical pain or emotional trauma.

Pain management

Some of Psychoactive drugs are use to prescribe to manage pain. The subjective experience of pain is primarily regulated by endogenous opioid peptides. So pain can be managed using these drugs. mostly narcotics drugs are used.

Mental disorders

Psychiatric medications are psychoactive drugs prescribed for the management of mental and emotional disorders, there are five types or five major classes of psychiatric medications:

- Antipsychotic-Useful in all types of psychosis
- Antidepressant-Useful in phobic states, obsessive compulsive behavior, minor and major depressive illness and some anxiety disorder
- Antianxiety-Useful for anxiety and phobic states
- Antimaniac-Known as “mood stabilizer” effective for mania and to break cyclic effective disorder
- Psychotominetics-Known as “hallucinogens”.

Recreation

Many psychoactive substances are used for their mood and perception altering effects, including those with accepted uses in medicine and psychiatry. Examples of psychoactive substances include caffeine, alcohol, cocaine, LSD, cannabis. Classes of drugs frequently used recreationally include: Stimulants, Hallucinogens, Hypnotics, Opioids analgesics, Inhalants.

Ritual and spiritual

Particularly hallucinogens have been used for religious purposes since prehistoric times. Peyote cacti containing mescaline for religious ceremonies used by native Americans for as long as 5700 years. Throughout prehistoric Europe muscimol containing amanita muscaria mushroom was used for ritual purposes. During the counterculture movements of the 1960s and 70s. Use of entheogens for religious purposes resurfaced in the West.

Military

Psychoactive drugs have been used in as non-lethal weapons. Both military and civilian American intelligence officials are known to have used psychoactive drugs while interrogating captives apprehended in its war of terror. Additionally, militaries worldwide have used or are using various psychoactive drugs to improve performance of soldiers by suppressing hunger, increasing the ability to sustain effort without food, increasing and lengthening wakefulness and concentration, suppressing fear, reducing empathy, and improving reflexes and memory-recall among other things.

Psychoactive Substances Act

The Psychoactive Substances Act (PSA) comes into force on 26th May 2016.this act is for the offence to supply or offer to supply, to produce any psychoactive substance if the substance is likely to be used for its psychoactive effects and regardless of its potential for harm. The only exemption to the PSA are those substances already controlled by the Misuse of Drugs Act, nicotine, alcohol, caffeine and medicinal products. However the Intoxicating Substances Supply Act (1985)* will be scrapped. The PSA doesn’t replace the Misuse of Drugs Act (1971) so laws around existing illegal (controlled) drugs will remain the same. Temporary Class Drug Orders (TCDOs) can still be applied and the Human Medicines Regulations (2012) will remain the same. Possession with intent to supply, importing or exporting a psychoactive substance are all offences under the PSA.

Forensic Significance

Psychoactive drugs are used in forensic psychiatry .Examination of drugs are done. Identification and quantification of drugs and metabolites can be done by examining nails hairs etc. Death due to overdose can be known. Cause of death and manner of death can be known. Victim or suspect is drug abuse or not provide great link in some of crimes. Mental behavior and social culture of person can be known. Past life of person can be predicted.

Case studies

A case of serial killing by poisoning by a 59-year-old practical nurse is discussed. In the absence of ordinary post-mortem toxicology samples in the medical cases, extraordinary evidence-paraffin-embedded liver tissue samples originally taken for histology at autopsy-was successfully recovered in two cases and analyzed for drugs. In all five cases, drugs not prescribed to the patient were detected, including digoxin, dixyrazine, citalopram, venlafaxine, and benzodiazepines (diazepam, chlordiazepoxide, temazepam, and oxazepam). The nurse was eventually found guilty of five murders by poisoning, five attempted murders, and three aggravated assaults. The nurse was sentenced to life imprisonment.

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