**Substance use disorder/ Drug Addictions**

Substance use disorders result from long-term exposure to substances and subsequent mental and physical dependence. This can lead to social, academic, and occupational impairment, along with negative health effects. To treat these disorders, a combination of pharmacological and non-pharmacological therapies is used to help individuals appropriately.

**What causes it? Why are some people more prone than other?**

The cause of substance use disorders is multifactorial and includes psychological, biological, socio-cultural, and environmental factors. Co-morbid psychiatric disorders have been associated with an increased risk of illicit substance use. For example, those with attention deficit hyperactivity disorder (ADHD) and bipolar affective disorders have an increased risk of developing a substance use disorder in adulthood compared to the general population.

Environmental and genetic factors also play a strong role in substance use disorder. An individual's genetic make-up for stress-response predisposes the risk of dependence on substances. Individual variations in genetics have been demonstrated to influence stress response and predispose some individuals to develop a substance use disorder.[[1]](https://www.ncbi.nlm.nih.gov/books/NBK570642/)

The Adverse Childhood Experience Study (ACES) demonstrated that exposure to a range of traumatic events during childhood is associated with an increased risk of substance use later in life.

**Different types of substance addictions**

**Tobacco**

Tobacco use disorder (Smoking cigarettes/bidis, Chewing gutkha,khaini) is the most prevalent addiction.  Most commonly, nicotine is absorbed through the lungs when individuals burn and inhale tobacco products. It is absorbed & crosses the blood-brain barrier in less than 10 seconds.

Nicotine influx in the CNS leads to neurotransmitters' release, especially dopamine(happy hormone), which stimulates the brain’s reward area.

Chronic nicotine use results in tolerance, when excessive stimulation of nicotine acetylcholine receptors results in desensitization of the receptors; these neuroadaptations produce a state where the brain requires nicotine to function in homeostasis (internal stability). This is referred to as physiological dependence.

 CYP2D6 metabolizes nicotine. Therefore, it can alter the metabolism and thus effect of other medications, such as antipsychotics.

**Alcohol**

Vitamin B1 (Thiamine) and vitamin B9 (Folic Acid) are the two most common B-vitamins deficiencies. Deficiency of thiamine can lead to neurological findings such as hyporeflexia and sensory and motor deficiency.

Alcohol produces euphoric effects through the dopamine neurons of the mesolimbic system.

**Opioids**

Opioids include codeine, heroin, hydrocodone, hydromorphone, methadone, meperidine, morphine, and oxycodone. Opioids bind to delta, kappa, and mu receptors, which provide analgesia for severe pain and produce euphoria feelings. Higher doses carry a risk of respiratory suppression and death. Individuals with chronic exposure to opioids can experience profound withdrawal symptoms if opioid use is stopped abruptly. The withdrawal symptoms include but are not limited to diarrhea, excess sweating, excess lacrimation, nausea, vomiting, and insomnia.

**Cannabis**

Cannabis contains cannabinoids, that cross the blood-brain barrier; the most studied cannabinoids are cannabidiol (CBD) and tetrahydrocannabinol (THC). CBD and THC both come from the hemp plant, also known as **marijuana**; THC, the psychoactive cannabinoid, exerts its effects in the brain’s reward center in increasing dopamine levels in the prefrontal cortex, providing the euphoric effect. Other names hemp, weed, pot, dope, herb, smoke, ganja, buds,

**Sedative, Hypnotic, Anxiolytics** are a class of medications that can cause CNS depression, and if taken inappropriately, the effects can be fatal. They include benzodiazepines: alprazolam, clonazepam, lorazepam, diazepam, chlordiazepoxide; Barbiturates:  phenobarbital, pentobarbital, butabarbital; it also includes other sedative medications.

**Stimulants,** specifically **cocaine and amphetamines**, exert their effect by preventing the recycling of certain neurotransmitters like dopamine, norepinephrine, and serotonin.  This results in increased concentrations of these neurotransmitters which gives the user a euphoric effect.

There are various hallucinogens; the most common one presented in the hospitals is phencyclidine or phenylcyclohexyl piperidine (PCP), or also known by its street name **"angel dust,"** is not only a hallucinogen but also acts as a stimulant.

Another common hallucinogen is Lysergic acid diethylamide (LSD), or known by its street name as "**acid**"; Other hallucinogens include MDMA with street names of “**Molly, Ecstasy**, X,” another hallucinogen is Ketamine with a street name of “K-Hole.”

Further reading

https://www.ncbi.nlm.nih.gov/books/NBK570642/