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Review Article

**A REVIEW ON DRUG ADDICTION, DRUG ABUSE AND ITS
TREATMENT AND PREVENTION****Dr. Rama Rao Tadikonda^{1*}, Dulam Nandini Goud², Kammari Sneha Deepika²,
Syed Shoeb Ali²**^{1*} Professor and Principal, Department of Pharm D, CMR College of Pharmacy,
Hyderabad, Telangana.² Doctor of Pharmacy, CMR College of Pharmacy, Hyderabad, Telangana.² Doctor of Pharmacy, CMR College of Pharmacy, Hyderabad, Telangana.² Doctor of Pharmacy, CMR College of Pharmacy, Hyderabad, Telangana.**Article Received:** January 2023**Accepted:** January 2023**Published:** February 2023**Abstract:**

Drug Addiction is a chronic illness and has become a worldwide problem, the leading cause of death. The global problem of drug addiction is responsible for millions of deaths and millions of new HIV cases every year. Drug abuse or substance abuse is a disorder characterized by excessive use of the habit-forming drugs and misuse of over-the-counter medicine, the illegal use of drugs which in turn leads to severe addiction and it refers to the use of certain chemicals for the purpose of creating pleasurable effects on the brain. There are over 190 million drug users around the world and the problem has been increasing at alarming rates, especially among young adults under the age of 30. Drug addiction causes long-term damage to the organs and drug addicts who use needles are also at a risk of contracting HIV and Hepatitis B and C infections. Economic burden, disturbed family, environment, violence and psychological problems are the main consequences of drug abuse in the family. The most common use of drug in India is alcohol, followed by cannabis and opiates.

Key words: Drug addiction; Drug abuse; cannabis; opiates.

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INTRODUCTION:**Drug addiction:**

Addiction is a disease that affects brain and behavior. When a person is addicted to drugs, they can't resist the urge to use them, no matter how much harm the drugs may cause. The earlier they get treatment for drug addiction, the more likely they are to avoid some of the more severe consequences of the disease. [1] The words addiction or dependence are used to refer to more severe cases of drug seeking. Dependence usually refers to a physical dependence which is characterized by symptoms of withdrawal without being addicted while addiction is marked by biochemical changes in the brain making them act irrationally when they don't have the drug.[2] Addiction is more serious and includes more of a loss of control over drug seeking and drug taking in spite of distress and or negative consequences. Note that both loss of control over behavior and distress or negative consequences are emphasized.[3] Drug addiction is not about just heroin, cocaine, or other illegal drugs. A person can get addicted to alcohol, nicotine, sleep and anti-anxiety medications, and other legal substances [4] [6]

Tolerance, which is the need to take larger quantities of the drug to get the same effect, develops. Also, perhaps there are withdrawal symptoms when the effect of the drug wears off. Thus, an individual might have a problem with drugs even though there are no distressing feelings or negative consequences that are evident.[5]

Drug addiction is comprised of three stages: Preoccupation/anticipation, binge/intoxication, withdrawal/negative effect. Different drugs produce distinct patterns of addiction that engage different components of the addiction cycle, depending on dose and length of use.[6] [7]

Stages of drug addiction:

- 1. Preoccupation/Anticipation:** This stage defines drug addiction as a chronic relapsing disorder. This stage has been often linked to craving, which is difficult to measure in human clinical studies. Executive control over craving and impulsivity is key in maintaining abstinence and is mediated by pre frontal cortex. This stage is marked by dysregulation of signaling between the pre frontal cortex and areas of the brain which controls decision making, inhibitory control, self-regulation and working memory and may involve disrupted GABAergic and glutamergic activity.[8]
- 2. Binge/Intoxication:** It is characterized by a spontaneous or continuous and unresistant use of

drug despite of negative consequences associated with such use. This stage involves hyperactivation of mesocorticolimbic dopaminergic reward pathway of the brain associated with the positive reinforcement of the rewarding effects of drugs.[9]

- 3. Withdrawal/negative effect:** It is the stage where intoxication leads to changes in the brain therefore in the absence of drug the body craves for drug and the person get stressed and require more drug.[10]

Substance Abuse:

Substance abuse arises out of a maladaptive pattern of substance use, manifested by recurrent and significant adverse consequences related to the repeated intake of the substance. The criteria for substance abuse do not include tolerance, withdrawal, or a pattern of compulsive use, and instead include only the harmful consequences of repeated use.[11] [12]

The usage of drugs among younger people has been shown to be higher than that among older people for most drugs. Drug abuse is also on the rise in many ASEAN (Association of Southeast Asian Nations) countries, especially among young males between 15 and 30 years [13]

Five Substances with the Highest Potential for Addiction Worldwide [14]

- Heroin
- Alcohol
- Nicotine
- Cocaine
- Sedatives

Factors responsible for drug abuse: [15] [16]

1. Families whose members have a history of alcohol abuse and/or histories of Antisocial behavior or criminality.
2. Inconsistent parental supervision, with reactions that swing from permissiveness To severity.
3. Parental approval or use of dangerous substances.
4. Friends who abuse drugs.
5. Children who fail in school during the late elementary years and show a lack of Interest in school during early adolescence.
6. Children who are alienated and rebellious exhibiting antisocial behavior, particularly aggressive behavior during early adolescence.
7. Individual factors include attention deficit hyperactivity disorder (ADHD), depression and persons who are diagnosed with post-

traumatic stress disorder (PTSD) or mental illness are at greater risk for adolescent substance abuse.

Effects of drug abuse on brain [17] [18]

- Mind altering drugs may slow down or speed up the central nervous system and autonomic functions necessary for living, such as blood pressure, respiration, heart rate and body temperature.
- Levels of some of the brain's chemical messengers, or neurotransmitters, are also impacted by drug abuse, including:
 - Dopamine: This neurotransmitter regulates moods, enhances pleasure and is involved with movement, reward and reinforcing behaviors, motivation and attention.[15] [19]
 - Drugs that can impact dopamine levels are: Marijuana, heroin and other opioids, stimulants, ecstasy, PCP
 - Serotonin: This neurotransmitter is responsible for stabilizing moods and regulating emotions.
 - Drugs that can impact serotonin levels are: ecstasy and hallucinogens.
 - Gamma-aminobutyric acid (GABA): GABA acts as a natural tranquilizer, mitigating the stress response and lowering anxiety levels as well as slowing down functions of the central nervous system.
 - Drugs that can impact GABA levels are benzodiazepines.
 - Norepinephrine: it is also called as stress hormone, as it speeds up the central nervous system in response to the fight-or-flight response. It also homes focus and attention while increasing energy levels.

Misuse of prescription drugs:[20]

Misuse of prescription drugs means taking a medication in a manner or dose other than prescribed; taking someone else's prescription, even if for a legitimate medical complaint such as pain taking a medication to feel euphoria (i.e., to get high). The term non- medical use of prescription drugs also refers to these categories of misuse. The three classes of medications most commonly misused are:

- Opioids- Usually prescribed to treat pain.
- Central nervous system depressants- used to treat anxiety and sleep disorders.
- Stimulants- Most often prescribed to treat attention-deficit-hyperactivity disorder

Treatment of Drug addiction:[21]

Based on scientific research since the mid-1970s, the following key principles should form the basis of any effective treatment program for drug addiction:

1. Addiction is a complex but treatable disease that affects brain function and behavior.
2. No single treatment is right for everyone.
3. People need to have quick access to treatment.
4. Effective treatment addresses all of the patient's needs, not just his or her drug use.
5. Staying in treatment long enough is critical.
6. Counseling and other behavioral therapies are the most commonly used forms of treatment.
7. Medications are often an important part of treatment, especially when combined with behavioral therapies.
8. Treatment plans must be reviewed often and modified to the patient's changing needs.
9. Treatment should address other possible mental disorder.
10. Medically assisted detoxification is only the first stage of treatment.
11. Treatment doesn't need to be voluntary to be effective.
12. Drug use during treatment must be monitored continuously.
13. Treatment programs should test patients for HIV/AIDS, hepatitis B and C, tuberculosis, and other infectious diseases as well as teach them about steps they can take to reduce their risk of these illnesses.

Types of therapy used in Drug Addiction treatment:[22]

I.Cognitive Behavioral Therapy (CBT): Cognitive-behavioral therapy, or CBT is a type of psychotherapy and commonly used treatment approach for substance use disorders, as well as anxiety and depression. CBT focuses on changing a person's way of thinking and adjusting previously maladaptive behavioral patterns, with an emphasis on problem-solving and correcting faulty patterns of thinking. CBT can be used in both outpatient and inpatient settings.[23][24]

Types of cognitive behavioral therapy:

- **Dialectical Behavioral therapy:** It addresses thoughts and behaviors while incorporating strategies such as emotional regulation and mindfulness
- **Multimodal therapy:** It suggests that psychological issues must be treated by addressing seven different but interconnected modalities: behavior, affect, sensation,

imaginary, cognition, interpersonal factors and some drug/biological considerations.

- **Rational emotive behavioral therapy (REBT):** It involves identifying irrational beliefs, activity challenging these beliefs and finally learning to recognize and change these thought patterns.

❖ CBT techniques: [25]

Apart from identifying thought patterns, CBT is focused on using a wide range of strategies to help people overcome these thoughts. Techniques include journaling, role-playing, relaxation techniques and mental distractions.

It includes:

- a. Identifying negative thoughts
- b. Practicing new skills
- c. Goal-setting
- d. Problem solving
Learning problem solving skills can help identify and solve problems that arise from stressors, both big and small and reduce the negative impact on psychological and physical illness.

It involves five steps:

- Identifying a problem
- Generating a list of possibilities
- Evaluating the strengths and weakness of each possible solution.
- Choosing a solution to implement.
- Implementing the solution.
 - e. Self-monitoring

CBT is used to treat a wide range of conditions including: [26]

- Addiction
- Anger issues
- Anxiety
- Bipolar depression
- Eating disorders
- Panic attacks
- Personality disorders
- Phobias
- Chronic pain or serious illness
- Low self-esteem
- Relationship problems
- Insomnia
- Stress management

II. Contingency Management (CM) [27]:

- It is a treatment intervention that aims to increase abstinence. It is also called as motivational incentives. This type of treatment provides rewards for the desired behaviors such as clean drug tests.
- It works under belief that substance use is influenced heavily by social, environmental and biological factors.
- Contingency management has been proven effective for treatment of:
 - Alcohol
 - Stimulants
 - Opioids
 - Marijuana
 - Nicotine.
- Contingency management can be used as a stand-alone treatment or in combination with many other treatment styles, including:
 - Cognitive-behavioral therapy
 - Medication management
 - Medication maintenance programs for people in recovery.
 - Motivational interviewing.

III. Motivational Enhancement Therapy (MET) [28]

- Motivational enhancement therapy is a client-centered directive method for enhancing intrinsic motivation, counseling approach that helps individuals resolve their ambivalence about engaging in treatment and stopping their drug use. This approach aims to evoke rapid and internally motivated change, rather than guide the patient stepwise through the recovery process. This therapy consists of an initial assessment battery session, followed by two to four individual treatment sessions with a therapist. In the first treatment session, the therapist provides feedback to the initial assessment, stimulating discussion about personal substance use and eliciting self-motivational statements. Motivational interviewing principles are used to strengthen motivation and build a plan for change. In subsequent sessions, the therapist monitors change, reviews session strategies being used, and continues to encourage commitment to change or sustained abstinence.

IV. Family Therapy: [29]

- Family therapy, also known as family counseling, is defined by the Substance Abuse and Mental Health Services Administration (SAMHSA) as a collection of interventions that address the family system. Goals of family therapy typically include encouraging family

members participation in their loved one's recovery efforts, addressing family conflict and family dysfunction, providing family members and addicted individuals with the information and resources they need to understand addiction and recovery, teaching family techniques and strategies for improving communication within the family.

Types of family-based approaches include:

- Brief strategic family therapy
 - Family behavior therapy
 - Functional family therapy
 - Multidimensional family therapy
 - Multisystemic family therapy
 - Risk reduction through family therapy
- Benefits of family therapy for drug addiction include better communication, healing relationships, goal setting, treatment retention, relapse prevention, reintegration.

CONCLUSION:

Drug addiction is a chronic illness and has become a major problem worldwide and it is one of the leading causes of death. The global problem of drug addiction is responsible for millions of deaths and millions of new HIV cases every year. Drug abuse is a disorder characterized by excessive use of the habit-forming drugs and misuse of over-the-counter medicine, the illegal use of drugs leads to severe addiction and it refers to the use of certain chemicals for the purpose of creating pleasurable effects on the brain. There are over 190 million drug users around the world, especially among young adults under the age of 30. Drug addiction causes long-term damage to the organs and drug addicts who use needles are also at a risk of contracting HIV and Hepatitis B and C infections. Economic burden, disturbed family, environment, violence and psychological problems are the main consequences of drug abuse in the family. Cognitive behavioral therapy, family therapy, motivational enhancement therapy are the ways to prevent this problem.

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