

## Addiction withdrawal syndrome: Needs medications, education, counselling & support

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### Abstract

Addiction is a feel good or euphoria like condition which is commonly associated with drug abuse (opioid & non-opioid), alcohol and nicotine intake. There are many reasons behind a man gets addicted to these substances such as recreation purpose, drugs used for long time for treatment of any disorder and gets addicted, unemployment, stress, emotions, professional pressure and social status. It provides enjoyable feelings which results in creating a strong urge to use the substances again and again. These drugs can cause physical dependence or psychological dependence or both. Over time, drug tolerance is produced which means to get the same effect more quantity of the drug is needed. These substances are very harmful physically, mentally, financially and socially too. If someone suddenly terminates using these substances after heavy or long term use, the body needs time to recover and number of withdrawal symptoms arises. These withdrawal symptoms can't be treated by medications only but it needs counselling and support as well. This article reviews i. the drug abuse (opioid & non-opioid), alcohol and nicotine addictions with their withdrawal symptoms and medications used to treat these symptoms ii. Rehabilitation centers running and other steps taken by Government of India to aware people especially the youths of the country about the harmful effects of these substances.

**Keywords:** Drug abuse; Addiction; Addiction withdrawal; Withdrawal symptoms; Addiction withdrawal syndrome; Addiction withdrawal symptoms

### 1. Introduction

#### 1.1. Addiction, withdrawal & withdrawal symptoms [1]

##### 1.1.1. Addiction

Addiction or dependence is the condition in which a person finds it hard to stop doing something that makes him/her feel good. It can develop physical addiction (withdrawal symptoms appears if the person stops the addictive substance like pain and shivering) or psychological addiction (occurs when a person believes that he/she need the addictive substance to function, without that they can't work) or both. Addiction is commonly associated with opioid drug abuse

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(illicit & prescription), alcohol and nicotine. In simple words we can say that addicted person can't have control on its use and they may become dependent to run the daily life. There are many reasons behind a man gets addicted to these like for recreation, addiction arises due to medications used for prolonged period for treatment of any disorder, unemployment, stress, emotions, professional pressure and social status.

### *1.1.2. Withdrawal*

Withdrawal is the process of reduced intake or giving up addictive substances such as opioids, alcohol or nicotine.

### *1.1.3. Withdrawal symptoms*

When a addicted person stops using above substances physical, mental or both problems arises. These problems are called withdrawal symptoms. Withdrawal symptoms depends on type of addictive substance and how long it was used, age, physical and psychological characteristics and withdrawal process used. These symptoms vary from person to person which may be mild to severe. Common withdrawal symptoms includes insomnia, irritability, changing mood, depression, anxiety, aches and pains, cravings, fatigue, hallucinations, nausea, goose bumps and runny nose. Severe withdrawal symptoms may include paranoia (state of mind in which a person believes that others are trying to harm, cheat or exploit), confusion, tremors and feeling of illness. In some conditions, people become unpredictable and violent. Symptoms can lasts for a few days, week or some weeks.

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## **2. Opioid addiction & withdrawal symptoms [2, 3, 4, 5, 6, 7]**

Opioid drugs are big source of drug abuse as they can assist with mental relaxation and pain relief and can produce a sense of euphoria. Abuse of opioid drugs can be categorized into illicit drugs and prescription drugs. Illicit means those drugs whose transport, sale and use are totally prohibited. On the other hand, prescription drugs are those which are used for treatment of disorders and over the time the patient gets addicted to the medications. Examples of common opioids include codeine, fentanyl, hydrocodone, hydromorphone, morphine, oxycodone, oxymorphone, Heroin, Methadone, Meperidine and oxycontin.

### **2.1. Illicit opioid drugs**

Some people become addicted to illicit recreational drugs such as heroin and marijuana. Heroin, an opioid drug made from morphine, a natural substance extracted from the seed pod of various opium poppy plants. It is injected, smoked or snorted. Marijuana (Cannabis) is made from the hemp plant, Cannabis sativa. The main psychoactive (mind-altering) chemical in marijuana is delta-9-tetrahydrocannabinol (THC).

#### *2.1.1. Common withdrawal Symptoms of heroin and marijuana addiction*

Major symptoms which arise after withdrawal are irritability, trouble sleeping, decreased appetite, anxiety, restlessness, muscle and bone pain, diarrhoea, vomiting and sudden shivery cold feeling with goose bumps.

### **2.2. Prescription opioid drugs**

Opioids are a class of powerful prescription medicines that are used to manage pain when other treatments and medicines cannot be able to provide enough relief in pain. They have serious risks including abuse, addiction, overdose and death. When prescription drugs are taken without prescription for an unintended purpose, instead of becoming beneficial, it becomes dangerous, addictive and even deadly. These drugs can cause physical dependence. This means that a person relies on the drug to prevent withdrawal symptoms. Over time, more of the drug is needed for the same effect. This is called drug tolerance. When the person stops taking the drugs, the body needs time to recover. This causes withdrawal symptoms. Opioid withdrawal syndrome may be life-threatening. Commonly abused prescription drugs of this category are:

#### *2.2.1. Oxycodone*

Oxycodone is an opioid medication available singly or in combination with acetaminophen. It changes how your central nervous system (CNS) responds to pain.

#### *2.2.2. Codeine*

Codeine is typically prescribed to treat mild to moderate pain. It's also combined with other medications to treat cold and flu symptoms. For example, it is commonly found in prescription-strength cough syrup. When consumed in high quantities, codeine-based cough syrup has a sedative effect. It can also cause altered levels of consciousness.

### 2.2.3. Fentanyl

Fentanyl is a synthetic opioid. It's prescribed for acute and chronic pain, typically in people with cancer. It is 50 to 100 times stronger than morphine. It creates feelings of euphoria and relaxation. Fentanyl misuse may lead to hallucinations and bad dreams.

### 2.2.4. Meperidine

Meperidine is a synthetic opioid. It's typically used to treat moderate to severe pain. Like other opioids, it produces feelings of euphoria.

Other drugs are hydrocodone, oxycodone, hydromorphone, diphenoxylate, morphine sulphate.

## 2.3. Prescription non-opioid drugs

### 2.3.1. Central Nervous System (CNS) Depressants

Used to treat anxiety and sleep disorders. Commonly abused prescription drugs of this category are:

#### 2.3.2. Clonazepam and diazepam

These drugs come under Benzodiazepines. These are prescribed to treat anxiety, seizures and panic disorders. It depresses the CNS, which has a calming effect. Some people misuse it for its fast-acting sedating effects. They produce "highs" and produce the same feeling as that of alcohol.

Other drugs are pentobarbital sodium, alprazolam, zolpidemtartrate and sertraline.

### 2.3.3. CNS Stimulants

Stimulants increase brain activity, boost alertness and energy levels, used to treat attention deficit hyperactivity disorder (ADHD). Commonly abused prescription drugs of this category are:

#### Amphetamine

It's a CNS stimulant. It's used to treat attention deficit hyperactivity disorder.

#### Methylphenidate

Methylphenidate is a stimulant that affects the CNS. It increases dopamine levels in the brain, results in improved attention. It is used to treat ADHD and narcolepsy.

Other drugs are dextroamphetamine and Concerta.

### 2.3.4. Stages of withdrawal symptoms

Withdrawal symptoms arise when an addicted person stops to use opioids and non-opioid prescription drugs. This includes:

#### Early stages

Symptoms begin around 6 to 30 hours after stopping taking the drug. The timing depends on the type of opiate addiction. During these early stages of withdrawal, the addicted person experiences anxiety, irritability, muscle pain, body aches, tiredness and sweating.

#### Later stages

About 72 hours, early symptoms become more severe and worse and other symptoms start appearing which include drug cravings, anxiety, depression, extreme fatigue, restlessness, muscle and bone pain, insomnia, diarrhoea, vomiting, shivery cold feeling with goose bumps, difficulty in leg movements, panic, excessive sweating, headache, nausea, increased blood pressure/heart rate/breath rate, joint pain, backache, dilated pupils, photophobia, agitation, loss of appetite, abdominal cramps, irritability and eye tearing.

### Overall timeframe

It is observed that the first week of withdrawal is typically worst. After that some symptoms disappears and some lasts longer. These symptoms can lasts up to one month to several months which includes tiredness, depression, anxiety and trouble sleeping.

#### 2.3.5. Medications used for treatment

Termination on own from opioid drugs can be very hard and may be dangerous. Medications are available that can help a person get through withdrawal. Treatment most often involves medicines, counselling and support. Medicines must be taken under medical supervision. For instance, some treatments can shorten the withdrawal process and make symptoms less severe. Drugs used for the treatment are listed below with their purpose. (Table 1).

**Table 1** Drugs for treatment of opioid and non-opioid withdrawal symptoms

S.No.	Drugs	Purpose
1	Methadone	Relieves by reducing the intensity of withdrawal symptoms and helps in abstaining the body from toxic substances
2	Buprenorphine	Treats withdrawal symptoms by preventing dependence and misuse and also it can shorten the length of period of abstaining the body from toxic substances
3	Clonidine	Used to help reduce anxiety, agitation, muscle aches, sweating, runny nose, hypertension and cramping
4	Naltrexone	Helps to prevent relapse
<b>Some other medications used on basis of symptoms</b>		
5	Loperamide	For diarrhoea
6	Promethazine	For nausea/vomiting
7	Ibuprofen	For muscle pain

### 3. Alcohol addiction & withdrawal symptoms [8, 9, 10, 11]

Consumption of alcohol is a big problem globally. Consuming alcohol harms mentally, physically and socially. Medical consequences of alcohol abuse includes gastrointestinal complications, cancer, changes in the genitourinary system, muscular changes, neurological complications, psychiatric complications and other consequences includes suicides and road traffic accidents. Alcohol withdrawal syndrome (AWS) which is cluster of symptoms occurs when people who are dependent on alcohol either stops drinking or reduce the quantity of alcohol intake. AWS ranges from mild to severe. This results from a shift in the neurotransmitter levels in the brain, from GABA inhibition to glutaminergic stimulation. Severe forms of AWS may be associated with generalized seizures, hallucinations and delirium tremens (shaking, confusion and hallucinations), which can be fatal. After 6 hours of alcohol cessation, withdrawal symptoms usually start. According to American academy of family physicians, stages, timeline and symptoms after withdrawal are given below. (Table 2).

**Table 2** Stages & timeline for alcohol withdrawal symptoms

Stages	Timeline	Symptoms
Stage 1	6-12 hours after cessation	Minor hand tremors, sleep disturbances, low-level stress, anxiety, stomach upset, loss of appetite, sweating and headaches
Stage 2	12-48 hours after cessation	Hallucinations, withdrawal seizures, loss of consciousness and violent muscle contraction
Stage 3	48-72 hours after cessation	Delirium tremens, altered mental state, sweating, increased heart rate, blood pressure & temperature.

Central adrenergic storm occurs during alcohol withdrawal results in rapid breathing, tachycardia, hypertension, tremor, hyperthermia and excessive sweating. Low-grade fever occurs due to increased motor activity. Hypothermia occurs with confusion and loss of mental activity.

### 3.1. Metabolic and other complications of alcohol withdrawal

When an addicted person terminates using alcohol, metabolic and other complications may arise. Table below tells the different complications. (Table 3).

**Table 3** Complications after alcohol withdrawal

Complications	Results of complications
Alcoholic ketoacidosis, Electrolyte disorders	Decreased level of serum magnesium in blood, deficiency of potassium in blood and elevated concentration of sodium in blood
Vitamin deficiencies	Vitamin B1, Vitamin K, Vitamin B12, folic acid
Cardiac complications	Broken heart syndrome (sudden weakening of heart muscles)
Gastrointestinal complications	Inflammation of pancreas
Gastrointestinal bleeding	Peptic ulcer, abnormal and enlarged veins in the lower part of oesophagus, stomach inflammation
Hepatic cirrhosis	---
Infectious complications	Pneumonia, inflammation of brain and spinal cord membranes & painful bacterial skin infection
Neurologic complications	Wernicke-Korsakoff syndrome due to deficiency of vitamin B1, loss of neurons and synapses, death of neurons in cerebellum, bleeding outside the brain due to bursting of blood vessels and damage of peripheral nerves

Delirium tremens usually begins 3 days after the appearance of withdrawal symptoms & lasts for 1-8 days.

### 3.2. Medications used for Treatment

Summary of medically supervised medication for alcohol withdrawal syndrome are given below. (Table 4).

**Table 4** Medications for alcohol withdrawal syndrome

Drugs	Actions
Benzodiazepines (Diazepam, Chlordiazepoxide, Lorazepam, Oxazepam)	Symptom-triggered therapy (anxiety, insomnia and seizures). Diazepam and Chlordiazepoxide are the mostly used first line drugs in the treatment of AWS
Anti-seizures drugs (Phenobarbitone)	Decrease neurotransmission
Beta-blockers (Propranolol)	Decrease blood pressure, pulse rate & tremor
Acamprosate, Naltrexone, Nalmefene & Baclofen	Reduces alcohol cravings and feeling of euphoria
Disulfiram	Produces unpleasant effects e.g. flushed face due to filling of more blood in the blood vessels below the skin, nausea, vomiting, palpitation and headache when alcohol is taken even in small amount.
Magnesium	Protects against seizures & arrhythmias
Clonidine	Reduces central output of adrenergic neurotransmitters & improves abnormal vital signs.
Thiamine	Prevent Wernicke-Korsakoff syndrome
Folic acid and Cyanocobalamin	Prevent megaloblastic anaemia

## 4. Nicotine addiction & withdrawal symptoms [12, 13, 7]

### 4.1. Tobacco/Nicotine

Tobacco is a plant in which its leaves are useful. The leaves are collected, dried and fermented before use. Tobacco contains a highly addictive chemical known as nicotine.

### 4.2. Symptoms of nicotine withdrawal syndrome

Nicotine withdrawal symptoms are classified as affective, somatic and cognitive. Affective symptoms include smoking cravings, anxiety/depressed mood/sad, unable to experience pleasure from the enjoyable activities, depression, insomnia, restlessness, high sensitivity to pain and irritability/anger/frustration/bad tempered/upset. Somatic manifestations include tremors, slow heart rate, gastrointestinal discomfort, increased appetite and weight gain. Cognitive symptoms manifest as difficult to concentrate and amnesia. According to The diagnostic and statistical manual of mental disorders reports, the syndrome might also include dizziness, unpleasant dreams, nausea and sore throat. Over time, these symptoms will fade as long as a person stay smoke free.

### 4.3. Medications used for treatment

Medications like Bupropion (antidepressant medication helps to quit smoking) and Varenicline (medication for smoking cessation) are used to treat nicotine withdrawal symptoms. These medicines must be taken under medical supervision. Education, support and counselling are also needed with these medications. Nicotine replacement therapy like gums, patches, inhalers and lozenges are also used which controls the cravings.

## 5. Scheme for prohibition and drug abuse prevention in India [14]

The Government of India financially supports Non-Governmental Organizations (NGOs), de-addiction centers, rehabilitation centers, de-addiction camps, counselling and awareness centers for prohibition and drug abuse prevention. Number of centers according to the available data at present under this Scheme is given in table below. (Table 5).

**Table 5** Statistics of centers under scheme for Prohibition and Drug Abuse Prevention

1	NGOs running	361
2	Centres for De-addiction and Rehabilitation & De-addiction Camps	376
3	Centres for counselling and awareness	68

### National drug demand reduction plan

In our country, drug and substance abuse is a serious problem because the threat of drug abuse in the younger generation has been continuously rising. Drug addiction harms not only the individual's health but also affects addict's families and further the whole society. Regular consumption leads to drug dependence and tolerance. These compounds not only create serious health problems but promote road accidents, suicides and violence including domestic. In consequence, drug abuse must be considered as a psycho-social-medical problem. Keeping these in mind, to make provisions to control and regulate the operations/activities relating to narcotic drugs and psychotropic substances The Narcotic Drugs and Psychotropic Substances (NDPS) Act has enacted in our country in the year 1985.

Since 1985-86, Ministry of social justice and empowerment (MSJE) is working with objectives of identification, motivation, counselling, and de-addiction, rehabilitation of drug dependent persons, training and capacity building of the service providers. MSJE is creating awareness and educating people about the harmful effects of alcohol and substance abuse. According to the report of first national survey on status of drug abuse in India conducted by MSJE with National Drug Dependence Treatment Centre of the All India Institute of Medical Sciences, New Delhi during 2018, the common use of psychoactive substance by Indians are alcohol, cannabis and Opioids in the rank I, II and III respectively. Summary of status of drug abuse in India is given below. (Table 6).

**Table 6** Status of drug abuse in India

S.No.	Category	Effected
1	Individuals use opioids	2.26 Crore
2	Estimated individuals need help for their opioid use problems	77 lakh
3	Individuals use cannabis products	3.1 Crore
4	Suffer from cannabis dependence	25 lakh
5	Persons consume alcohol	16 Crore
6	Individuals are affected by harmful or dependent alcohol use	> 5.7 Crore

## 6. Conclusion

Addiction of any form affects physically, mentally, financially and socially too. Substances of addiction cause dependence (physical or psychological or both). Once addicted, it is very difficult to get rid of that. If someone alone tries to withdraw from the habit of addiction, withdrawal symptoms arises (physical and mental or both). It is not easy to fight these symptoms; these symptoms can lead to severe health problems and even to death. For this reason, to counter withdrawal symptoms confidence, counselling, emotional help and cooperation and medical support is required and highly recommended. Government of India is taking lot of steps to prohibit and prevent the drug abuse through laws, public awareness through print and electronic media and also recommended schools/college to students through posters, rallies, street plays, debate, speeches, drawing and painting etc. But in school/colleges that much not implemented. Young generation is the future of the country and highly effected from addiction. Now it is the need of hour to talk on this topic and strictly follow the recommendations given by MSJE to spread awareness among youth because spreading awareness is the only way to prevent and to fight against this national problem.

## Compliance with ethical standards

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The authors declare that there is no conflict of interest.

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