

# Intake and Abuse of Psychoactive Substances and Its Relative Consequences: A Review

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**Abstract:** Substance abuse has been a thorny public health concern throughout human history. Manifestly, prevention and treatment are the two main strategies commonly adopted to tackle the problem of substance abuse. They are in fact cross-disciplinary, and they relate to the various domains of heredity, biology, psychology, cognitive science, family, social development and cultural structures. Almost everyone, directly or indirectly, comes in contact everyday with drug/substance use or abuse. The drug scene is a varied one that includes licit and illicit drugs, street drugs, prescription drugs, over-the-counter drugs, drugs for pleasure, and drugs to ease pain. This special issue, “psychoactive substance abuse”, has been reviewed going through the global world and Nigeria in particular to enhance a re-think on processes and influences of substance abuse across different domains, through which a multilevel perspective is considered more helpful for analyzing its complex nature, courses and consequences which include mental illness, liver and kidney related diseases, low productivity, child abuse, sexual abuse, loss of individual integrity, destruction of nasal tissues, lesions in lung unpredictable effects such as convulsion, respiratory paralysis and untimely death. This in turn checked the possible negative consequences of excess intake of these psychoactive drugs in order to discourage the users and alert the necessary authorities to seriously act to this effect.

**Keywords:** Psychoactive, Substance, Drug, Abuse, Use, Illicit

## 1. Introduction

Throughout history, many cultures have found ways to alter consciousness through the ingestion of substances. Since the earliest times, man has sought through curiosity, the desire or need for any substance that will induce in him/her pleasant sensation to physical or mental pain. In current professional practice, psychoactive substances known as psychotropic drugs have been developed to treat patients with severe mental illness. Psychoactive substances exert their effects by modifying biochemical or physiological processes in the brain.

The current trend of substance abuse especially among youth is a major national concern, as it is troubling, and has derogatory effects on youth such as health and behavioural problems, or even death. Yusuf [1] viewed that chronic use of

substance can cause serious, sometimes irreversible damage to adolescents ‘physical and psychological development. Stimulant use and abuse behaviours are problems inducing. A common feature of abusive behaviour is that it involves a loss of self-control. That is, the substance gains control over the individual’s behaviour.

Psychoactive substances have been defined by [2] as substances that, when taken in or administered into one’s system, affect mental processes. In other words, psychoactive substances can be referred to as chemical substances which when ingested, inhaled or injected into the body have the potential to alter mood, behaviour, perception or mental functioning of an individual. [3] described substance abuse as problematic use of alcohol, tobacco, or illicit and /or prescription drugs and it has been referred to as nation’s number one health problem.

These substances could bring about changes in a person’s

emotional state, body functioning or behaviour. These psychoactive substances also exert their effects by modifying chemical or physiological processes in the brain [4, 5].

These substances are categorized as either illicit (illegal) for example cannabis, cocaine and heroin or licit (legal) substances like alcohol, kola nuts, or coffee. Tobacco and alcohol are two main legally approved types of psychoactive substances that have been widely consumed by different social groups across different societies and cultures globally. [6, 7, 8]. Some legally prescribed drugs, such as cough medications and the antibiotics like codeine, can also be easily misused and abused by the general public, and these greatly attract the attention of researchers in different scientific fields [9]. Studies have shown that these substances are misused or abused most especially by University undergraduate students [10]. Therefore, the issue of substance abuse has become a worrisome phenomenon, because youth are dying morally, socially, psychologically and physically. Currently, drugs ranging from alcohol, cigarettes, marijuana, cocaine, heroin to hashish and many others are readily available to youth in Nigeria and this has made many youths to be perpetrators of social vices in the society.

Substance abuse may reduce undergraduate chances of graduating from school or of landing and holding a steady job, it may also be causing student unrest in the campus which will disturb academic calendar and this may also lead to poor academic performance.

According to Staff [11], substances like Indian hemp, which is frequently produced in Nigeria and other substances like methamphetamine and tablets with codeine capable of intoxicating are mostly found in schools. There is no doubt about this as young ones who are mainly from well-to-do homes are increasingly identifying with “big boys”, the use of these substances such as codeine and tramadol in the universities. The persistence use of psychoactive substances in the universities can be traced to peer groups influence, need for high sense of belonging, lack of parental supervision and urbanity conditions of universities. Psychoactive substances are been used due to their euphoric and pleasurable effects on mood, perception, and behaviour despite the dangerous negative consequences of its use. On the other hand, the pleasurable experiences reported by people who use psychoactive substances partly explain why people continue to use them [12].

According to Olusola & Adegboyega [13], the use of psychoactive substances is not only limited to the youths on the streets but students in tertiary institutions have also been found patronizing these substances. As of today, many undergraduates in Nigeria continue to use stimulants for one or more of the following reasons that may include: They want a pleasurable change in their state of mind, stay awake, study for long hours, elevation of mood, increase confidence feeling, etc. [14, 15]

The motive for non-medical stimulant use may be sociological (status-seeking peer pressure, the news media or substance oriented society), psychological (to banish pain or

discomfort, to attain states of euphoria, fantasy, or to escape from unpleasant reality), out of curiosity, boredom, alleviate fear; derive sexual and physical pleasures, or family background [16].

Though, drug abuse has adverse effect on them, in that it changes their brain perception of difficulties and problems, the number of these undergraduates that use or abuse stimulants has steadily increased in recent years and will probably continue in coming years as new and powerful stimulants use and abuse appear with increasing frequency in the nations' scene [16]. This incessant use and abuse of stimulants has led governments, parents, counsellors, teachers and the larger society to become troubled [17].

## 2. The Global Perspective on Drug Use/Abuse

On the whole, the global drug use situation has remained stable. While there has been some increase in the estimated total number of users of illicit substances, estimate by [18] shows that the number of drug users with dependence or drug use disorders has remained stable. The increase in the annually estimated number of users is, to a large extent, a reflection of an increase in the world population. However, polydrug use, especially the combination of prescription drugs and illicit substances, continues to be a concern. The misuse of sedatives and tranquilizers is of particular concern, with more than 60 per cent of the countries covered in the report ranking such substances as among the first three misused types of substances. The increasing number of psychoactive substances appearing on the market has also become a major public health concern, not only because of increasing use but also because of the lack of scientific research and understanding of their adverse effects [18]. The people particularly vulnerable to substance abuse include the abused or neglected youths, the homeless, the physically or mentally challenged, school drop outs, children of substance abusers, street children and the economically disadvantaged [75].

Globally, for instance, the demand for codeine remains high and has risen by approximately 27% over the last decade. According to [19], it was estimated that in 2017, 271 million people worldwide aged 15–64 had used drugs at least once in the previous year (range: 201 million to 341 million). This corresponds to 5.5 per cent of the global population aged 15–64 (range: 4.1 to 6.9 per cent), representing one in every 18 people. In 2009, the past-year prevalence of drug use globally was estimated to be lower, at 4.8 percent. Also, between 2009 and 2017, the estimated number of past-year users of any drug globally changed from 210 million to 271 million, or by 30 per cent, in part as a result of global population growth (the global population aged 15–64 increased by 10 per cent). This shows that increase in world population results in an uncontrollable increase in the use of hard drugs globally. Also, data show a higher prevalence over time of the use of opioids in Africa, Asia, Europe and North

America, and in the use of cannabis in North America, South America and Asia [19]. Codeine products can be purchased on prescription from a medical or dental health professional and over the counter in pharmacies (Moore *et al.*, 1998). In some countries codeine preparations are available without prescription in combination preparations (paracetamol, ibuprofen or aspirin) from licensed pharmacies and in retail outlets. Psychoactive Substance use and dependence cause a significant burden to the individuals and societies throughout the world. [20] indicated that 8.9% of the total burden of disease comes from the use of psychoactive substances. The report showed that tobacco accounted for 4.1%, alcohol 4%, and illicit drugs 0.8% of the burden of disease in 2010. Much of the burden attributable to substance use and dependence is the result of a wide variety of health and social problems.

People who engage in drug use or high-risk behaviours associated with drug use put themselves at risk for contracting or transmitting viral infections such as human immunodeficiency virus (HIV), acquired immune deficiency syndrome (AIDS), or hepatitis. This is because viruses spread through blood or other body fluids. It happens primarily in two ways: (1) when people inject drugs and share needles and other drug equipment and (2) when drugs impair judgment and people have unprotected sex with an infected partner. This can happen with both men and women [21]. Drug use and addiction have been inseparably linked with HIV/AIDS since AIDS was first identified as a disease.

### 3. Psychoactive Drug Abuse in the Nigeria Scene

The first large-scale national drug use survey conducted in Nigeria, in 2017, found a high prevalence of the non-medical use of prescription opioids (mainly tramadol), which was second only to the use of cannabis, with a past-year prevalence of 4.7 per cent [19]. The results of the first large-scale nationwide drug use survey conducted in Nigeria in 2017, according to [19], the most populated country in Africa, highlighted a considerable level of past-year non-medical use of prescription opioids (mainly tramadol), with an annual prevalence of 6.0 per cent among men and 3.3 per cent among women. *Cannabis sativa* (also known as Indian hemp) is said to be the most significant psychoactive drug in Nigeria, being the most prevalent, most frequently consumed, most trafficked, and most cultivated drug plant in the country [69, 70]. The prevalence psychoactive drugs seem to be on the increase in developing countries as events taking place in Nigeria shows that the use of psychoactive is on the rise. For instance, cases of thuggery, armed robbery, rape, cultism, violent demonstration, religious crisis, prostitution and restlessness among the youths, could be linked to the use/abuse of psychoactive substances. Observation by [1] shows that substance ranging from cigarettes, heroin, alcohol, marijuana, and many more are readily available to Nigerian youths, and this have made the youths to get involved in several social vices. In Nigeria, stimulant plants and their

products have since been harnessed into different forms with the sole aim of changing mood. Examples of these are palm wine, locally brewed alcohol such as ogogoro and burukutu. [22] historically presented that substance use in Nigeria started properly in the early 40s when war veterans brought back cannabis seed from India. Other drugs such as cocaine, heroin, amphetamines and pharmaceutical opioids such as codeine, morphine, etc were introduced in the 70s and 80s. Also, [22] further narrates that drug abuse has taken different dimensions with ingenuity in experimentation and new discoveries. A lot of ugly practices such as smoking/sniffing of lizard dungs, dried human dungs, sniffing of pit toilet/soak away bio generic gas, concoction of unimaginable substances known as goskolo, pharmaceutical formulations such as codeine, tramadol, rohypnol and many more.

According to Agwogie [23], everyday, more than 500,000 bottles of codeine are consumed by young Nigerians across the country, same with the intake of tramadol, rohypnol, marijuana and other opioids, an alarming trend that has subtly eaten deeply into the students' fabric with youths of all classes having a field day abusing these drugs. These generated the reason why federal government of Nigeria, in May 2018, ordered an immediate ban on the issuance of permits for the importation of codeine as an active pharmaceutical ingredient for cough syrup preparation.

## 4. Classification and Relative Effects Some Psychoactive Substances

Different drugs have different pharmacological compositions as well as effects on the users. This has caused misclassifications of drugs of abuse. Drugs of abuse are briefly explained presented by [24] to include stimulants, depressants, hallucinogens, non-conventional drugs and anabolic steroids.

### 4.1. Stimulants

These are drugs which increase up the central nervous system activities. Examples are nicotine (cigarette), caffeine (kola nut), cocaine, pemoline, and amphetamines etc.

#### 4.1.1. Nicotine

Nicotine is a potent para sympathomimetic stimulant and an alkaloid found in the nightshade family of plants. Nicotine is found in the leaves of *Nicotiana rustica* in amounts of 2–14%, the tobacco plant *Nicotiana tabacum*, *Duboisia hopwoodii* and *Asclepias syriaca*. Nicotine constitutes approximately 0.6–3.0% of the dry weight of tobacco [25].

Tobacco is scientifically called *Nicotiana tabacum*. In Nigeria, the rate of tobacco use/abuse is very high. It is given different names by youths such as feg, ciga, stick, and taba. The report estimates that 12,000 people per year die prematurely as a result of smoking. The causes of death were divided as 38 percent heart and circulation disease and, 28 percent respiratory illness [26].

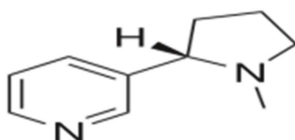


Figure 1. Chemical Structure of Nicotine.

Effects of nicotine/tobacco include physical and psychological dependence, long term use can cause emphysema, aneurysm, lung cancer, and death, damage to the eyes, nose and throat, causes complicated infections, increase heart rate/heart diseases, increase blood pressure, shortness of breath, causes harm to foetus during pregnancy/low birth weight at birth [26].

#### 4.1.2. Cocaine

Cocaine, also known as coke, is a strong stimulant mostly used as a recreational drugs. It is commonly snorted, inhaled as smoke, or as a solution injected into a vein. Mental effects may include loss of contact with reality, an intense feeling of happiness, or agitation [27].

Cocaine is the main alkaloid of the coca leaf. It is a synthetic product from the leaves of coca plant (*Erythroxylon coca*). It was formerly used as an anesthetic but it is rarely used today for medical purpose [28].

The abuse of cocaine in Nigeria became more prominent in the 80's. Also abused in Nigeria today is Crack. Crack is highly potent cocaine that is already processed for smoking. It is usually adulterated by adding products such as ammonia or baking soap. Crack is just as dangerous as other forms of cocaine and is extremely addictive [29].

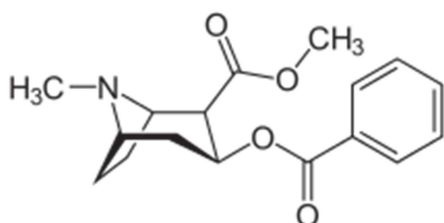


Figure 2. Chemical Structure of Cocaine.

Effects of cocaine are quickened pulse and circulation, depression, Paranoia, nervous exhaustion, restlessness, feelings of confusion, anxiety, hallucinations as a result of heavy doses, hazards of chronic use lead to destruction of nasal tissues, lesions in lung unpredictable effects such as convulsion, respiratory paralysis and death are possible [30].

#### 4.1.3. Amphetamine

Amphetamine is a stimulant type of drug. It is a synthetic product for medicinal purpose such as weight control and treatment of hyperactivity [31].

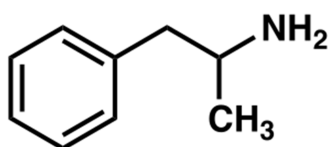


Figure 3. Chemical Structure of Amphetamine.

Effects of Amphetamines are increased heart rate and blood pressure, loss of appetite, increased activity, feeling of alertness, self confidence sometimes followed by depression, hallucination, paranoia, temporary mental derangement as a result of heavy doses, users of amphetamines may push beyond their physical limits and suffer exhaustion, weakness, physical and psychological dependence, withdrawal symptoms includes suicidal depression, continued high doses leads to heart problems, infections, malnutrition and death [32].

#### 4.1.4. Pemoline

Pemoline is a stimulant type drug. It is a synthetic product for medicinal purpose. It is similar to amphetamine and its effects are similar.

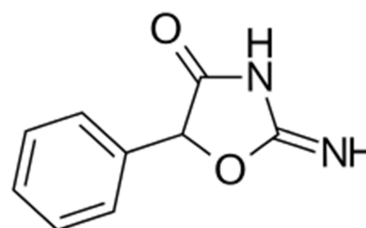


Figure 4. Chemical Structure of Pemoline.

#### 4.1.5. Kolanut

Kolanut is a stimulant. It is one of the drugs classified as social drugs or gate way drugs. The active ingredient in kolanut is caffeine. It is mostly consume in the northern part of Nigeria. In the southern part of Nigeria, however kolanut has traditional values. Some traditional rites in this part of the country cannot be performed without kola nut [33]. Effects of Kolanuts include dependence increased alertness, headache, tolerance, insomnia, dizziness, poor motor coordination, peptic ulcer [34].



Figure 5. Kola nut.

#### 4.2. Depressants

These are drugs which slow down the central nervous system. Examples are alcohol, narcotics (opium and its derivatives), benzodiazepines (valium, librium and lexotan), barbiturates (Amytal and phenobarbital), and methaqualone.

##### Alcohol

Alcohol is natural, distilled or fermented liquor which exists in the form of beer, wine, burukutu, palm-wine, pito,

distilled spirit (ogogoro, gin, whiskey, hot drinks, etc). Alcohol is usually liquid, an intoxicant and taken orally. On the basis of historical evidence, alcohol is as old as human history and its consumption in different socio-cultural milieu sited extends beyond the last ten years [35]. It is important to note that small quantity of alcohol has some health benefits. What constitute small to an individual is, however relative. Intoxication arising from alcohol depends on a number of factors on the individuals. Consumption of alcohol should be more of health purposes than for pleasure. This will help to control the quantity taken at a time as against losing control of what quantity to take [36, 37].

Effects of alcohol cannot be overemphasized. In spite of some medicinal and health benefits of alcohol, it has been identified as having several health and social consequences. These consequences are neurological damage, impair memory and judgment, fast aging, impotence, traffic/domestic accident, douche courage, weakness, thiamine and other deficiencies, violence/crime, intellect psychosis, liver cirrhosis, liver cancer, hepatitis C, fatty liver, stomach ulcer, immune system dysfunction, decrease in blood cell leading to anemia and slow-healing wounds, weight loss and impair oxygen flow to the brain.

According to Hilliard [73], alcohol is one of the widely used drugs in the world. The degree by which the brain is affected by this central nervous system depressant (alcohol) depends on how much, and how fast a person drinks. However, the more someone drinks, the more the brain is affected and the likelihood that a negative emotional response will take over. Alcohol can actually increase anxiety and stress rather than reduce it, and elicit other negative reactions such as anger, aggression and depression [73].

It is a teratogenic drug, meaning that prenatal exposure can cause adverse effects to the offspring such as still birth, malformations, growth deficiency, and functional deficits [38]. At lower dosage, alcohol can act as a stimulant including feelings of euphoria and talkativeness, but drinking too much alcohol at one session can lead to drowsiness, respiratory depression (where breathings becomes slow, shallow or stops entirely), coma or even death [39].

### 4.3. Narcotics

Narcotics generally lower the perception of pains. Constituting this group is opium and its derivatives most of which have medicinal values.

#### 4.3.1. Opium

Opium is a unique compound taken from the juice of opium poppy (*Papaver somniferum*). Examples of its derivatives are heroin, morphine, codeine, mephedrone and methadone. Opium has a long history of medicinal use, dating back almost six thousand years [1]. UNODC [71] reported that in 2020, illicit opium production in Myanmar which was estimated to about 405 metric tons was recorded to be a decline in its cultivation when compared to the production in 2013 with an estimated 870 tons. The corresponding decrease in cultivation of opium as reported

above is as a result of drug market's continued shift to synthetic drugs such as tramadol.



Figure 6. *Papaver somniferum* plant; sources of opium.

The abuse of opium in Nigeria became more prominent in the 80's just like Cocaine. The abuse of morphine, codeine, mephredine, methadone, and other opium derivatives in the mid 80s gave way to indiscriminate sale of these drugs by patent medicine vendors until late 80s when such drugs were legally withdrawn from the market only to be administered by a pharmacist and with the prescription by a medical expert [1, 26].

#### (i) Codeine

The name codeine is derived from the Greek word *kodeia* for 'poppy head' and is found naturally in the poppy plant '*Papaver somniferum* var. *album*'. Codeine is a phenanthrene derivative extracted from opium or produced synthetically by the methylation of morphine. Codeine or 3-methylmorphine is the most commonly consumed opiate worldwide and is used for its analgesic, antitussive and anti-diarrheal properties [40, 41].

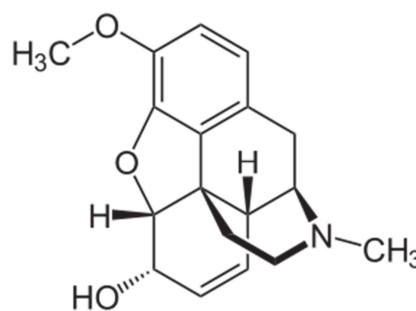


Figure 7. Chemical Structure of Codeine.

Hence, codeine abusers consume large quantities of codeine-containing cough syrup which ultimately leads to adverse effects like dependence, sedation, euphoria, tolerance, etc [42].

Codeine exists as a base and a number of salts, but is used mainly as codeine phosphate, which occurs in a number of hydrated forms. It is formulated in a number of ways for use



in various conditions and by different routes of administration [43].

The harmful effects of codeine abuse are well recognised by the medical community [44-47]. Adverse health effects as a result of codeine use are reported by a significant number of studies. In general reported health outcomes of excessive, long term or dependent use of codeine and combination codeine products include perforated gastric ulcers, gastrointestinal bleeding, hepatotoxicity, hypokalaemia, inflammatory bowel conditions, and profound hypokalaemia associated with a severe myopathy, and often in users with no history of substance use disorders and co-morbidity [48-51]. Serious chronic health consequences relating to gastrointestinal haemorrhage, nephro-toxicity, hypokalaemia and opioid dependence are associated with the misuse of ibuprofen-codeine combination products [52]. Many of these health effects are a result of additives in combination products. Chronic headache is also reported among those who use/misuse codeine.

Drowsiness and nausea are common side effects with oral doses of 30-60mg and with regular dosing constipation is seen with 8-16 mg [53]. At high dose it has a depressive effect on respiration and alertness, but to a lesser extent than morphine [54]. Codeine toxicity syndrome with risk of coma or death occurs at very high oral doses, when part of poly drug or pharmaceutical use, and when injected intravenously [55].

#### (ii) Tramadol

Tramadol was first synthesized in 1962 by Grünenthal GmbH in Germany by coupling of the corresponding cyclohexanone with 3-methoxyphenylmagnesium bromide in a Grignard reaction. More recently, the chemical synthesis of tramadol and two of its metabolites has been described by the same coupling reaction using organolithium derivatives [56].

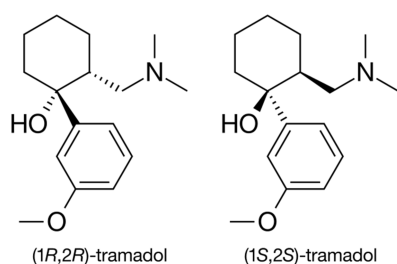


Figure 8. Chemical Structures of Tramadol.

Adverse reactions of therapeutic use of tramadol include nausea and dizziness, drowsiness, fatigue, headache, increased sweating, vomiting, dry mouth, constipation, diarrhoea, and cardiovascular dysregulation (palpitations, tachycardia, postural hypotension - particularly after rapid intravenous administration). Respiratory depression, epileptiform convulsions, tremor, bradycardia, hallucinations, loss of appetite, sweating and anxiety [57, 74].

#### 4.3.2. Heroin

Heroin is white, off white or brown crystal powder. It is a major derivative of the opium poppy. It is scientifically called diacetylmorphine, a highly potent depressant. Heroin is

usually taken through intravenous, snorting or dissolving heroin powder and inhaling the vapours [58].

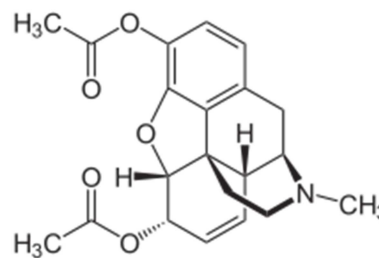


Figure 9. Chemical Structure of Heroin.

The effects of heroin include addiction, respiratory breakdown, liver disease, blood Poisoning, HIV/AIDS arising from infected needles, brain damage, depression, irregular sleep pattern, impaired mental function, dependence, weight Loss, mood swing, memory loss, lack of energy [58].

#### 4.3.3. Barbiturates

Barbiturates are depressants and are referred to as sedative-hypnotics. They slow down the central nervous system. Barbiturates like some other depressants were primarily used for medicinal purposes such as the treatment of epilepsy, insomnia and to relax patients before and during surgery. Barbiturates are taken orally. Some abusers however take it intravenously for quick action. Barbiturates have addiction potential, both physical and psychological [59].

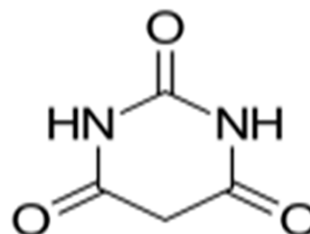
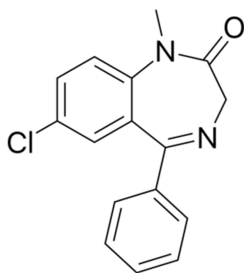


Figure 10. Chemical Structure of Barbiturates.

The effects of Barbiturates include slowed heart rate and breathing, lowered blood pressure, slowed reactions, confusion, violence, anaemia, diarrhoea, intoxication, nightmare, nausea and vomiting, dependence, dizziness, Coma and death, memory loss, weakened emotional control, distortion of reality, paranoia and reduced awareness [60].

#### 4.3.4. Benzodiazepines

Benzodiazepines (BZD, BZs), sometimes called "benzos", are a class of psychoactive drugs whose core chemical structure is the fusion of a benzene ring and a diazepine ring. Benzodiazepines are prescription drugs used to induce sleep and relieve anxiety. Examples are diazepam usually referred to as valium, librium and lexotan. They have become drugs of abuse for people who for one reason or the other cannot sleep whether or not there is medical need to take the drugs. Benzodiazepines are also abused because of the drowsiness and euphoric effects that accompanied their use [4].

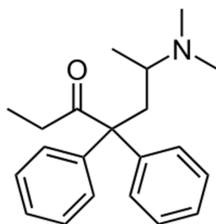


**Figure 11.** Chemical structure of Benzodiazepines (Diazepam).

The effects of Benzodiazepines include loss of judgment and self control, the hazards include tolerance, physical and psychological dependence, heavy overdose leads to insomnia (becomes counterproductive), shallow breathings, drowsiness, heaviness of limbs, apathy loss of ability to concentrate [61].

#### 4.3.5. Methadone

Methadone was once widely used to treat insomnia. It is now rarely used for this purpose. Medically, methadone is used as a substitute for the management of heroin dependence [61].



**Figure 12.** Chemical Structure of Methadone.

The effects of methadone are loss of coordination, dizziness, impaired perception, confusion and hangover, slowed heart rate and breathing, lowered blood pressure, sleepiness [61].

#### 4.4. Hallucinogens

The hallucinogens are mostly synthetic products. They cause changes in perception and consciousness, otherwise known as hallucinations. Umhau [72] revealed that while under the influence of hallucinogens, users might see images, hear sounds or feel sensations that seem to be real but aren't. Examples are Cannabis, Lysergic Acid Diethylamide (LSD), Phencyclidine (PCP, Angel Dust), Mescaline (Lophohora Williamsii), Dimethyltryptamine (DMT), Methylenedioxyamphetamine (MDMA), Methylenedioxyamphetamine (MDA) and Psilocybin (Psilocibe Mexicana). A few of these drugs known and abused in Nigeria shall be discussed.

##### 4.4.1. Cannabis

The classification of cannabis is still a subject of controversy among experts. This is due to the different manifestation from users. Cannabis has been classified among hallucinogens because of the strong hallucinating

effects and other peculiar feelings associated with cannabis use. On the basis of pharmacological composition, cannabis can neither be classified as a stimulant nor as a depressant. In fact the exact chemical composition of cannabis is not known. However, there is strong evidence that tetrahydrocannabinol (THC) is the most psychoactive compound in cannabis [3].

Cannabis exist in the form of Marijuana formerly known as Indian hemp and popularly called grass, weed, stone, ganja, kaya, pot, weewe. It is usually used in the form of smoking or in food. Other derivatives of Cannabis are hashish, hashish oil. Cannabis and its derivatives is the most widely abused illicit drug not only in Nigeria but throughout the world. Although, earlier use of Cannabis was reported to be for medicinal purposes, its social use has exploded thus constituting a threat of different categories [3].

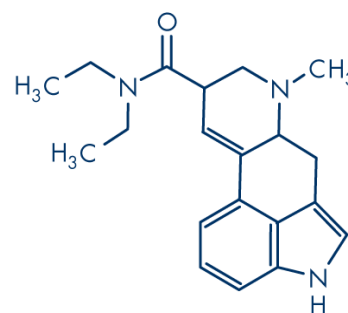


**Figure 13.** Cannabis indica plant).

Effects of cannabis are impaired memory, paranoid ideation, affects sexual behaviours negatively, possible birth defects, psychosis, increased risk of infertility, dependency, lung disease/respiratory illness, brain damage, hallucination, immune system dysfunction, impaired motivation, impaired cognition [3, 72].

##### 4.4.2. Lysergic Acid Diethylamide (LSD)

The lysergic acid diethylamide (LSD) is known for its ion of reality especially to sight, smell and touch. It is iced from lysergic acid, a substance derived from the fungus which grows on Rye or from lysergic acid amide, a chemically manufactured substance. It initially has medicinal and recreational uses. But today it is no longer used [62, 72].



**Figure 14.** Chemical Structure of Lysergic Acid Diethylamide (LSD).

Effects of Lysergic Acid Diethylamide (LSD) include increased heart rate, increased blood pressure, increased blood sugar, irregular breathing, loss of ability to separate fact and fantasy, distortion of sense organs, hallucinations, paranoia, panic and violence, quick development of tolerance, increased risk of birth defects in users children, effects may recur (flashback) days or weeks later, even without further use of LSD, death also occurs from suicide or accident [63].

#### 4.4.3. Phencyclidine

Phencyclidine is popularly known as PCPI or angel dust. It is the most dangerous of the hallucinogens. It is legal" classified as a depressant. It is used medicinally as tranquilizer for animals but it has become drug of abuse man because of the urge or desire to avoid reality [64, 72].

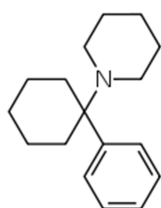


Figure 15. Chemical Structure of Phencyclidine.

Effects of phencyclidine may be unpredictable and it includes distortion of perceptions, depression, hallucinations, confusion, drowsiness, loss of coordination, irrational behaviour, the hazards include tolerance which can develop quickly, overdose can cause psychosis, convulsions, coma, death and use may contribute to murder, suicide and injuries [64].

#### 4.5. Non-conventional Drugs

These are substances, which have been identified to be abused Nigeria but can neither be classified based on their algalogical composition nor on their effects on the users. Examples of these substances are volatile solvents (inhalant), datura metel (zakami), lizard dung/excretes, cocoa paste mixed with tobacco glue, paw paw leaves, and soak away/pit toilet fumes (bio-generic gas) etc [36].

##### Inhalants

Inhalants are volatile solvents. They are classified as non conventional drugs. Volatile solvents are diverse group of deals which produce psychoactive vapour and this vapour goes straight from the nose or mouth to the brain, heart lungs to produce change in the state of consciousness. Examples are gasoline, correction fluid, rubber solution, aerosol, nail polish remover, kerosene, petrol, hair spray, deodorant, paints, paint thinner, dyes, insecticides, furniture polish, butyl nitrates, formaldehyde, formalin (locally called in the northern parts of the country as Madara Sukurdiel). These substances are taken by inhaling them from paper, bag, and saturated handkerchief or directly from the can or bottle [17].

Effects of inhalants are intoxication, damage to body tissue, damage to respiratory organs, damage to liver and kidney, irregular heartbeat, impairs judgment, brain damage,

addiction, and sudden death. The effects of other non conventional drugs such as Datura metel (Zakami), lizard excretes, cocoa paste mixed with tobacco glue, paw paw leaves, and soak away are better imagined. Each of these has different effects. Some have similar effects like depressants, while others have effects like stimulants and hallucinogens [17].

#### 4.6. Anabolic Steroids

Anabolic Steroids are other sets of drugs of abuse. They are drugs, similar to the male sex hormones called testosterone. Testosterone is produced normally in our body and in quantity that makes the effects beneficial to our body. It is responsible for the development of secondary sexual characteristics such as the growth of facial hair, deepening voices as well as the development of increased muscle size and strength. Steroid abused by athletes are produced artificially and are prescribed by doctors especially when one's body is not producing enough hormones. Other anabolic steroids used to enhance muscular development in sporting activities, particularly in football, weight lifting, track and field events are donabol anawar, android, winstrol and oreton [65].

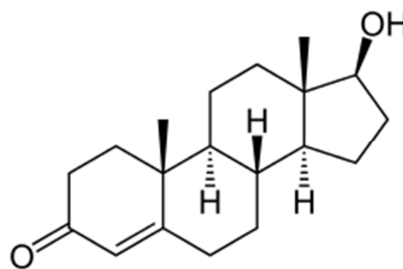


Figure 16. Chemical Structure of Anabolic Steroids.

Effects of anabolic steroids include aggressive and violent behaviour, growth of facial hair by female and abnormal facial hair by male, swelling of feet and lower legs, water retention in the body tissues, shrinking in the size of female breast, deepening of female voice, infertility for female, sterility, decrease sperm production and impotence for male, liver, kidney and heart diseases, female develop male boldness and among other male characteristics, breast development by male, increased in blood cholesterol levels, cancer [66].

## 5. Conclusion and Recommendations

Substance use is a disturbing universal phenomenon with significant adverse impacts on public health. Nevertheless, professionals and researchers of different domains tend to adopt a one-dimensional view based on their particular expertise when examining, explaining and trying to find solutions to this complex problem [67, 68, 75]. Drug abusers exhibit some aberrant behaviour due to their reliance on drugs. Early substance dependence has implications in the future of the youths and may result in psychiatric disorders; hence, preventing early substance-related problems will



reduce the risk of these problems in later adulthood when the magnitude of life stresses is greater. The use and abuse of these drugs in schools and other public places seems to be a good reason why most mentally ill people on our streets today are drop-out youths from various institutions of learning. It has been identified as a social vice that must be eradicated. Effort should be geared towards reducing these ugly trends through forensic detection followed by counselling. Although the government has currently championed the campaign against drug abuse and the effort should be increased to deal with this scenario.

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