CHAPTER - I

INTRODUCTION
Humans have used substances from prehistoric times, to cure diseases, alleviate pain, and relieve mental suffering. People have often sought, in the words of Shakespeare, “some sweet oblivious antidote” to the hardships of living. Through the ages, people have used substances to alter their mental states - to improve mood, experience euphoria, or reduce anxiety. Despite the often-devastating consequences of taking such substances into the body, their initial effects are usually pleasing, a factor that is perhaps at the root of substance abuse.

A substance is any natural or synthesized product that has psychoactive effects - it changes perceptions, thoughts, emotions, and behaviours. Substance refers to the spectrum of drugs that can be potentially abused, such as illicit drugs (e.g. marijuana, heroin), licit drugs (e.g. alcohol, tobacco), and prescription drugs. Abuse refers to the use of a substance when it is not medically indicated or when its use exceeds socially accepted levels. Substance abuse is the use of a drug or other substance for a non-medical use, with the aim of producing some type of 'mind-altering' effect in the user. This includes both, the use of illegally produced substances, and the use of legal drugs, in a use for which the substance was not intended. Often this involves use of the substance in excessive quantities to produce pleasure, to alleviate stress, or to alter or avoid reality (or all three). Substance abuse is sometimes used as synonym for drug abuse, drug addiction and chemical dependency, but actually refers to the use of substances in a manner outside socio-cultural conventions. All use of illicit substances and all use of licit substances in a manner not dictated by convention (e.g. according to physician’s orders or societal norms) is abuse.

Substance abuse is “the use of any substance in a manner that deviates from the accepted medical, social, or legal patterns within a given society” (Oakley, 1972; Zinberg, 1975; Millman, 1978). According to Callahan et al. (1980), “There are two basic ways in which substance abuse can be defined, the first is de jure- by law, the substance can be defined as a substance of abuse: consumption of any amount of the substance will be considered substance abuse (e.g., heroin), consumption of excess amounts can be considered abuse (e.g., alcohol), or consumption not prescribed by a physician can be considered abuse (e.g., valium). The second means of defining substance abuse involves a functional analysis of the effect of the substance on the behaviour of the individual.
Substance abuse would be seen then as any behaviour, which leads to significantly impaired performance in a defined area of functioning.” According to Mosby’s Medical, Nursing & Allied Health Dictionary (1998), “Substance abuse refers to the overindulgence in and dependence on a psychoactive leading to effects that are detrimental to the individual’s physical health or mental health, or the welfare of others.” Beauvias and Oetting (2002) defined substance abuse as, “Use of substances in a manner for which they were not intended.”

In the early 1950s, the first edition of the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders (DSM) grouped alcohol and substance abuse under Sociopathic Personality Disturbances, which were thought to be symptoms of deeper psychological disorders or moral weakness. The third edition, in the 1980s, was the first to recognise substance abuse and substance dependence as conditions separate from substance abuse alone, bringing in social and cultural factors. The definition of dependence emphasised tolerance to substances, and withdrawal from them as key components to diagnosis, whereas abuse was defined as "problematic use with social or occupational impairment" but without withdrawal or tolerance. In 1987 the DSM-IIIIR category "psychoactive substance abuse", which includes former concepts of substance abuse defined it as "a maladaptive pattern of use indicated by...continued use despite knowledge of having a persistent or recurrent social, occupational, psychological or physical problem that is caused or exacerbated by the use (or by) recurrent use in situations in which it is physically hazardous". It was the first definition to give equal weight to behavioural and physiological factors in diagnosis. By 1994, the DSM-IV defines substance dependence as "a syndrome involving compulsive use, with or without tolerance and withdrawal"; whereas substance abuse is "problematic use without compulsive use, significant tolerance, or withdrawal".

The fourth edition of the DSM issued by the American Psychiatric Association defines substance abuse as-

A. A maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one (or more) of the following, occurring within a 12-month period:
1. Recurrent substance use resulting in a failure to fulfill major role obligations at work, school, or home (e.g., repeated absences or poor work performance related to substance use; substance-related absences, suspensions or expulsions from school; neglect of children or household).

2. Recurrent substance use in situations in which it is physically hazardous (e.g., driving an automobile or operating a machine when impaired by substance use).

3. Recurrent substance-related legal problems (e.g., arrests for substance-related disorderly conduct).

4. Continued substance use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of the substance (e.g., arguments with spouse about consequences of intoxication, physical fights).

B. The symptoms have never met the criteria for substance dependence for this class of substance.

The fifth edition of the DSM, planned for release in 2010, is likely to have this terminology revisited yet again. Under consideration is a transition from the abuse/dependence terminology. At the moment, abuse is seen as an early form or less hazardous form of the disease characterized with the dependence criteria. However, the American Psychiatric Association's dependence term, as noted above, does not mean that physiologic dependence is present but rather means that a disease state is present, one that most would likely refer to as an addicted state. Many involved recognize that the terminology has often led to confusion, both within the medical community and with the general public. The American Psychiatric Association requests input as to how the terminology of this illness should be altered as it moves forward with DSM-V discussion.

The DSM-IV section on substance-related disorders includes several other diagnoses. There are three other substance-related conditions recognized by the DSM-IV: substance intoxication, substance withdrawal, and substance dependence. Substance intoxication is a set of behavioural and psychological changes that occur as a direct result of the physiological effects of a substance on the central nervous system. When people are intoxicated, their perceptions change and they may see or hear strange things. Their
attention is often diminished or they are easily distracted. Their good judgment is gone
and they may be unable to “think straight”. They cannot control their bodies as well as
they normally can, and they may stumble or be too slow or awkward in their reactions.
They often either want to sleep a lot or not at all. Their interpersonal interactions change­
they may become more gregarious than usual, more withdrawn, or more aggressive and
impulsive. People begin to be intoxicated soon after they begin ingesting a substance, and
the more they ingest, the more intoxicated they become. Intoxication begins to decline as
the amount of substance in people’s blood or tissue declines, but symptoms of
intoxication may last for hours or days after the substance is no longer detectable in the
body.

The specific symptoms of intoxication depend on what substance is taken, how
much is taken, how long the substance has been ingested, and the user’s tolerance for the
substance. Short-term or acute intoxication can produce different symptoms from chronic
intoxication. The diagnosis of substance intoxication is only given when the behavioural
and psychological changes the person experiences are significantly maladaptive in that
they cause substantial disruption in the person’s social and family relationships, cause
occupational or financial problems, or place the individual at significant risk for adverse
effects, such as traffic accidents, severe medical complications, or legal problems.

Substance withdrawal involves a set of physiological and behavioural symptoms
that result when people who have been abusing substances heavily for prolonged periods
of time stop abusing the substances or greatly reduce their use. The symptoms of
withdrawal from a given substance are typically the opposite of the symptoms of
intoxication with the same substance. The diagnosis of substance withdrawal is not made
unless the withdrawal symptoms cause significant distress or impairment in a person’s
everyday functioning.

The symptoms of withdrawal can begin a few hours after a person stops ingesting
a substance that break down quickly in the body, such as alcohol and heroin. The more
intense symptoms of withdrawal usually end within a few days to a few weeks. However,
withdrawal symptoms, including seizures, may develop several weeks after a person
stops taking high doses of substances that take a long time to completely eliminate from
the body, such as some antianxiety substances. In addition, subtle physiological signs of withdrawal, such as problems in attention, perception, or motor skills, may be present for many weeks or months after a person stops using a substance.

The diagnosis of substance dependence is closest to what people often refer to as drug addiction. A person is physiologically dependent on a substance when he or she shows either tolerance or withdrawal from the substance. Tolerance refers to the need to increase the dose of substance to elicit the same psychoactive or physiological effects (Millman, 1974; Jaffe, 1975). Tolerance is present when a person experiences less and less effect from the same dose of a substance and needs greater and greater doses of a substance in order to achieve intoxication. People who have smoked cigarettes for years often smoke more than 20 cigarettes a day, when that same amount would have made them violently ill when they first began smoking. A person who is highly tolerant to a substance may have a very high blood level of the substance without being aware of any effects of the substance. For example, people who are highly tolerant to alcohol may have blood alcohol levels far above those used in the legal definition of intoxication but show few signs of alcohol intoxication. The risk of tolerance varies greatly from one substance to the next. Alcohol, opiates, stimulants, and nicotine have high risks of tolerance, whereas cannabis and phencyclidine (PCP) appear to have lower risks of tolerance.

People who are physiologically dependent on substances will often show severe withdrawal symptoms when they stop abusing substances. The symptoms may be so severe that the substances must be withdrawn gradually in order to prevent the symptoms from becoming overwhelming or dangerous. These people may take the substances to relieve or avoid withdrawal symptoms. For example, a person dependent on alcohol may have a drink first thing in the morning to relieve a hangover.

Physiological dependence (i.e., evidence of tolerance or withdrawal) is not required for a diagnosis of substance dependence, however. The diagnosis can be given when a person compulsively abuses a substance, despite experiencing significant social, occupational, psychological, or medical problems as a result of that use. Most people who are dependent on a substance crave the substance and will often do almost anything to get the substance (steal, lie, prostitute themselves) when the craving is strong. Their entire
lives may revolve around obtaining and ingesting the substance. They may have attempted repeatedly to cut back on or quit abusing the substance, only to find themselves compulsively taking the substance again.

There are ongoing debates as to the exact distinctions between substance abuse and substance dependence, but current practice standard distinguishes between the two by defining substance dependence in terms of physiological and behavioural symptoms of substance use, and substance abuse in terms of the social consequences of substance use (Genevieve, 2001). Substance abuse may lead to addiction or substance dependence. Medically, physiologic dependence requires the development of tolerance leading to withdrawal symptoms. Dependence almost always implies abuse, but abuse frequently occurs without dependence, particularly when an individual first begins to abuse a substance. Dependence involves physiological processes while substance abuse reflects a complex interaction between the individual, the abused substance and society.

Substance abuse has been showing a rising trend all over the world. Substance abuse and substance dependence are not only adult problems, they also affect a significant number of adolescents and young children. Consumption of licit and illicit substances has increased all over the world and the age of initiation of abuse is progressively falling. Adolescents may be involved with legal or illegal substances in various ways. Experimentation with substances during adolescence is common. Unfortunately, adolescents often don’t see the link between their actions today and the consequences tomorrow. They also have a tendency to feel indestructible and immune to the problems that others experience. Abusing alcohol and tobacco at a young age increases the risk of abusing other substances later. Some adolescents will experiment and stop, or continue to abuse occasionally, without significant problems. Others will develop a dependency, moving on to more dangerous substances and causing significant harm to themselves and possibly others.

According to the World Health Organization (2000), the most widely abused substance is tobacco. Across all grades, nearly 34 percent of all high school students smoke cigarettes (Centers for Disease Control and Prevention, 2000). Globally one in three people aged 15 or older, or 1.1 billion people, smoke. In the United States, every
year 440,000 people die from tobacco abuse (American Cancer Society, 2003). Cigarettes
kill more than alcohol, car crashes, suicide, homicide, AIDS and illegal substances-
combined (American Cancer Society, 2003). Khuder et al. (2008) examined the
prevalence of smoking among adolescents. They found that the prevalence rates for
adolescents that ever tried smoking were 7.4% in elementary school grades (4–5), 17.7%
in middle school grades (6–8), and 41.4% in high school grades (9–12). According to
Centers for Disease Control and Prevention (2008), in 2007, 20 percent of high school
students reported smoking in the last 30 days.

Next to tobacco, alcohol is the most widely abused substance. Alcohol is available
in all areas of the world and in few countries with strict religious prohibitions (World
Health Organization, 2000). According to the National Institute on Alcohol Abuse and
Alcoholism (2003) the average age when children first try alcohol is 11 years for boys
and 13 years for girls. It has been found that children who begin drinking before age 15
are four times more likely to develop alcohol dependence than those who begin drinking
at age 21 (National Institute on Alcohol Abuse and Alcoholism, 2003).

Abuse of illegal substances has also increased throughout the world. Based on
estimates of the United Nations Drug Control Program, the annual global rate of illegal
substance abuse is in the range of 3.3 to 4.1 percent of the world’s population. Globally,
marijuana is the most commonly abused illicit substance, with an estimated 141 million
abusers (2.5 percent of the world population, mostly in developed countries) (World
students, marijuana abuse is followed by MDMA, or ecstasy, steroids, and heroin.

In a study it was found that 33.9% of ninth-grade students reported having
consumed alcohol before they were age 13. In contrast, only 18.6% of ninth-graders
reported having smoked cigarettes, and 11.2% reported having used marijuana before
they were age 13 (Centers for Disease Control and Prevention, 2006). In a survey among
middle and high school students indicated that 6.0% of 8th graders, 17.6% of 10th graders,
and 30.2% of 12th graders had been drunk at least once in the past 30 days, while past 30-
day substance abuse ranged from 11.2% (8th grade students) to 24.2% (12th grade
students) (Johnston et al., 2006).
Substance abuse among adolescents is a growing problem in India. The abuse of major psychotropic substances has been accepted during festivals in India, but restricted to young children or adolescents. Since the early 1980’s, the Indian teens have been introduced to more potent synthetic psychotropic substances and addiction to these substances has spread like an epidemic among the affluent in rural and urban population. In India, the use of illegal substances is increasing among adolescents. The commonly abused substances from past till today are smokeless tobacco, alcohol, marijuana, nicotine, amphetamines, solvents, inhalants like type writer correction fluid, gasoline and glue, etc. (Subramaniam et al., 2005). According to Saluja et al. (2007) the average age when child first tries alcohol is 11, for marijauna, its 12. And many teens start becoming curious about these substances even sooner. In a study Chavan et al. (2007) found that in India alcohol was the primary substance of abuse and dependence for majority of urban and rural substance abusers. In a rural population of Uttar Pradesh alcohol was found to be commonest substance abused (82.5%) followed by cannabis (16.1%).

According to a nationwide survey spread over 13 states by the NGO Prayas (2009) in association with the Ministry of Women and Child Development and other organization, 32.1% adolescents, below the age of 18, have tasted alcohol, bhang, ganja, heroin or some other form of narcotics. It also reveals that 70.3% of those teens have been first exposed to one or the other form of substances by their friends and relatives, 11.7% by their parents. This survey also reveals that of the adolescents who came for treatment to various NGOs, 63.6% were introduced to substances at a young age below 15 years. Overall 0.4% and 4.6% of total treatment seekers in various states were children. 20 million adolescents are estimated to be getting addicted to smoking every year, and nearly 55,000 young children or adolescents are becoming smokers every day in comparison to 3,000 in the United States. Recent available data points out that among the alcohol, cannabis and opium abusers about 21%, 3% and 0.1% respectively were below 18 years.

Adolescence is a time for trying new things. Teens abuse substances for many reasons, including curiosity, because it feels good, to reduce stress, to feel grown up or to fit in. It is difficult to know which teens will experiment and stop and which will develop serious problems. There are many approaches, ideas, and theories pertaining to substance
abuse. The most important point to keep in mind is that substance abuse is a complex phenomenon that results from an interaction of many factors. The goal is not to develop a unitary theory of substance abuse, but rather to understand as much as possible the biological, psychological and social conditions that contribute to substance abuse disorders. Theories about why people abuse substances can be grouped into three general categories: biomedical models, personality and psychological models, behavioural and cognitive models.

 **BIOMEDICAL MODELS:** These models maintain that people may be at risk for developing substance abuse because of biological factors that may be inherited. Family history, adoption, and twin studies all suggest that genetics may play a substantial role in substance abuse (Kendler et al., 1997; McGue, 2000). Children of people with substance related disorders are eight times more likely to also have a substance abuse disorder than the children of people with no substance-related disorder (Merikangas et al., 1998). Alcoholism in parents is the single best predictor of alcoholism in children (Plomin et al., 2001). The risk factor is true even for children who were adopted away from the alcoholic family into non-abuser families (Wood et al., 2001), suggesting that some genetic predisposition may be at work. These findings do not mean that there are “alcoholic genes” but rather that certain complex genetic factors may contribute to a person’s biological response to alcohol.

Biomedical models of substance abuse view substance abuse as a chronic brain disease caused by the biological effects of psychoactive substances (Leshner, 2001). One view of substance abuse is that it is a form of “self-medication”; people take substances to correct (unknowingly) some predisposing biochemical imbalance in the brain. Certain psychoactive substances might alleviate the emotional distress associated with such states.

Another biomedical model points to altered neurochemistry as the basis for both physical and psychological dependence. According to the withdrawal relief hypothesis, substance abuse serves to restore abnormally low levels of dopamine, serotonin, and other key neurotransmitters (Giannini & Miller, 1989). In support of this hypothesis is evidence that depression, anxiety, low self-esteem, and other unpleasant emotional states
are associated with neurotransmitter deficiencies (Schuckit, 2006). By elevating the release of presynaptic dopamine, substances such as cocaine and the amphetamines restore neural functioning and produce a sense of psychological well-being.

PERSONALITY AND PSYCHOLOGICAL MODELS: For many years, it was believed that a so-called “substance abuser” personality existed. It was thought that substance abusers had some personality flaw that made them vulnerable to abuse and become addicted to substances. Considerable research has examined the comorbidity of specific psychiatric disorders with substance abuse disorders. Antisocial personality disorder is the most prevalent coexisting psychiatric disorder among males with substance abuse disorder (Cacciola et al., 1994). Antisocial personality disorder is characterized by a pattern of irresponsible, destructive, antisocial behaviours beginning in childhood or early adolescence continuing to adulthood. An association has been found between substance abuse in general and antisocial personality disorder (Ball et al., 1994). While the prevalence of this diagnosis is 2 to 3 percent in general population, it ranges from 16 to 49 percent in studies of alcoholics, cocaine, and heroin abusers (Leal et al., 1994; Pavlos et al., 1999; Cottier et al., 2001). It is likely that antisocial personality disorder is a risk factor for the development of substance abuse disorder (McCrystal et al., 2006).

Personality influences the choice of substances as well as the patterns of abuse. Personality can determine the psychoactive effects that the substances will elicit in a given setting. The main area of agreement has focused on the contention that addicts are socially deficient (Rason, 1958; Ausubel, 1961; Cameron, 1961; & Kraft, 1969, 1970). Hyperactivity has been associated with alcohol abuse (Hechtman et al., 1984), with cocaine abuse (Ball, et al., 1994) and with tobacco and cannabis abuse (Wills et al., 1995). In a study it was found that children with attention deficit hyperactivity disorder (ADHD) who had higher IQs and higher levels of academic achievement in childhood were more likely to try cigarettes, to smoke daily, and to have their first drink of alcohol or first cigarette at an early age (Molina & Pelham, 2001).

Psychodynamic views have also contributed to psychological perspectives of substance abuse. The general notion here is that substance abuse is seen as a means to
compensate for defective ego functions (Treece & Khantzian, 1986). Substances are used to reduce painful emotional states or a defensive mechanism in relation to an internal conflict (Couwenbergh, 2006).

BEHAVIOURAL AND COGNITIVE MODELS: These models maintain that people begin to abuse substances for at least three reasons. First, the taste of substance and its immediate effects may bring pleasure (positive reinforcement); second, a person may decide earlier that substance abuse is consistent with personal standards (cognitive mediation); and third, the person may learn to abuse through observing others (modeling).

Children and adolescents learn substance abuse behaviour from the modeling of their parents and important others in their culture. Becker (1953) observed that marijuana smokers learn to become “stoned” or intoxicated by watching others, imitating, experiencing social approval and finally, feeling the pharmacological effects of the substance itself. This is a sequence of events quite compatible with a learning model for the onset of substance abuse. Modeling, imitation, and social and pharmacological reinforcement are also factors critical to continuation of substance abuse, addiction, and relapse.

The first critical step in becoming a substance abuser is the process of first sampling the substance. While stories exist of innocents being slipped into a substance without their knowledge, most substance initiates probably try a substance at the social urging of friends (Savin & Berndt, 1990; Brown et al., 1993; Orford et al., 2004). The friend serves as a model; as a model he or she shows that the substance can be taken safely and gives instructions on what substance effects can be expected. For example, a novice marijuana smoker might be told “you’re really going to get into this music” and a first heroin user might be told “you’ll probably puke right away, but the rush will really be worth it.” In addition to the specific modeling and instructing which occurs, our society provides modeling in the advertising media (Joy & Shejwal, 2005). Here some substance (alcohol or cigarette) is romantically pictured as appropriate, necessary and “cool” for every difficult situation or relaxing moment. This general modeling
phenomenon may facilitate the first substance contact even before specific peer modeling begins.

Once the initiate has taken the substance, the direct pharmacological effects of the substance can occur against the background of the instructions the abuser has heard and read about the substance's effects. Feeling the rush of heroin or the relaxation and good feelings of marijuana, users receive a positive pharmacological reinforcement for substance abuse. The reinforcing effects often include somatic and psychological aspects. A bad acid trip, paranoia from marijuana, vomiting from heroin, and discomfort from amphetamines are all results likely to punish substance initiates and make it less likely for them to continue their substance abuse. However, other substance users may encourage further experimentation in pursuit of positive effects and this will be enough to continue the substance careers of many. In those later attempts, the chances of finding good experiences increase and the use may then be maintained by the positive reinforcement of substance effects. In addition to these positive physiological and psychological effects, many substances offer an escape from noxious psychological states such as depression, fatigue, boredom, or feeling of inadequacy (Read et al., 2005). Thus, substances offer reinforcement by terminating noxious mood states or by facilitating escape or avoidance of an aversive environment. In this way, pharmacological and psychological substance effects can reinforce substance abuse.

Continued substance abuse further increases the likelihood of acceptance into the subculture of persons who regularly abuse the substance. This acceptance can be reinforcing by providing the person with a peer group, friendships, and the opportunity to feel superior to "straights" who fail to lead as exciting a life. All of this would be seen as secondary reinforcement in an operant paradigm. Lifestyle and identity can be affected by classical conditioning as well. When a powerful substance is taken, the positive effects of the substance are paired with the people present so that they and people who look, dress, act, and speak similarly become secondary positive reinforcers in a classical conditioning sense. In this way the subculture is strengthened just as it strengthens the substance abuse of individuals.
The cognitive model of substance abuse has focused on people’s expectations for the effects of substance and their beliefs about the appropriateness of using substance to cope with stress (Marlatt et al., 1985). People who expect substance to reduce their distress, and who do not have other, more adaptive means of coping available to them (such as problem solving or turning to others for support) are more likely than others to abuse substance when they are upset and more likely to have social problems related to substance abuse. Cooper et al. (1992) found that both men and women who believed that alcohol helped them relax and handle stress better and who tended to cope with stressful situations with avoidance rather than problem solving drank more often and had more drinking-related problems. In long-term studies of sons of alcoholics mentioned above, those men who used alcohol to cope and who expected alcohol to relax them, were more likely to develop alcohol abuse or dependence, whether or not they had low reactivity to low doses of alcohol (Schuckit, 1998).

The continuum of substance-related disorders begins with substance use, intoxication, and withdrawal, followed by substance abuse, and then dependence. This progression marks an escalation in the abuse of substances that leads to numerous medical, social, and psychological difficulties. Numerous medical problems have been linked to abuse of substances. There is a higher risk of incurring the negative consequences of substance abuse during the adolescence years than at any other time of life. People, who abuse substances, experience a wide array of physical effects other than those expected. Substances work by altering the chemistry of the brain. Substances of abuse, such as nicotine, cocaine and marijuana, work by affecting the brain’s signaling system (Kloner & Rezkalla, 2003). Continued substance abuse also disrupts the brain circuits involved in reward, motivation and control, leading to the disease of addiction. Marijuana and alcohol interfere with motor control and are factors in many automobile accidents (Kalant, 2004). Abusers of marijuana a hallucinogenic substance may experience flashbacks, unwanted recurrences of the substance’s effects weeks or months after abuse (Blows et al., 2005).

A compulsive long term abuse of psychoactive substances which grows with a tendency to increase dosage is responsible for some biochemical reactions and are supposed to damage or distort the cognitive abilities of substance abusers (Verma, 1972;
Ahmad, 1989; Blatt & Berman, 1990; Narayan, 1992, & Sharma, 1995; Casey, 2000). Overuse of benzodiazepines substances can lead to respiratory difficulties, sleeplessness, coma and death (Harold & Doweiko, 2002). Sharing hypodermic needles used to inject some substances dramatically increases the risk of contracting AIDS and some types of hepatitis (Francis, 2003). Alcohol and tobacco consumption lead to many psychological problems in adolescents like conduct disorders, anxiety disorders, learning disorders, bipolar tendencies and depression (Kenkel, 2004).

According to Samuel (2005), nicotine affects a person’s mood as well as the heart, lungs, stomach, and nervous system. Short term effects of smoking include coughing and throat irritation. Over time, more serious conditions may develop, including increases in heart rate and blood pressure. Smoking also leads to bronchitis and emphysema (breakdown of lung tissue). Young people who start smoking at an earlier age are more likely to develop long-term nicotine addiction than people who start later in life. Almost 90% of adult smokers became addicted to tobacco before the age of 18 (Wagner, 2005). The use of spit tobacco by any name can cause cancers of the mouth, pharynx, and esophagus; gum recession; and an increased risk for heart disease and stroke. Flavored cigarettes, called "bidis" or "beedies", appear to have all of the same health risks of regular cigarettes, if not more. Bidi smokers have much higher risks of heart attacks, chronic bronchitis, and some cancers than nonsmokers. According to Jason and Luty (2006), those who begin smoking before they are 20 have the highest incidence and earliest onset of coronary heart disease and high blood pressure.

Smokers may have started smoking because their friends did or because it seemed cool. But they keep on smoking because they became addicted to nicotine, one of the chemicals in cigarettes and smokeless tobacco. Nicotine is both a stimulant and a depressant. That means nicotine increases the heart rate at first and makes people feel more alert (like caffeine, another stimulant). Then it causes depression and fatigue. The depression and fatigue — and the withdrawal from nicotine — make people crave another cigarette to perk up again. The nicotine in tobacco is as addictive as cocaine or heroin.
According to Mason (2004) over the long term, smoking leads people to develop health problems like cancer, emphysema, organ damage, and heart disease. These diseases limit a person's ability to be normally active - and can be fatal. Each time a smoker lights up, that single cigarette takes about 5 to 20 minutes off the person's life. Smokers not only develop wrinkles and yellow teeth, they also lose bone density, which increases their risk of osteoporosis. Smokers also tend to be less active than nonsmokers because smoking affects lungpower. Smoking can also cause fertility problems in both men and women and can impact sexual health in males.

The abuse of inhalants can also lead to serious health consequences and death. It is every bit as dangerous as alcohol or other substances. It can lead to brain damage and death - sometimes on the very first experience. Sudden Sniffling Death (SSD) syndrome may result when an abuser deeply inhales a chemical for the effect of intoxication. SSD may cause fatal heart failure. Overdose of an inhalant can result in extreme confusion, blackout, coma and convulsions. An overdose can also cause an erratic and accelerated heart beat, which can lead to heart failure and death (Bennett, et al. 2001; Wu et al., 2004).

Substance abusers are more likely to get into fights, carry weapons, attempt suicide, suffer from mental health problems such as depression, and engage in high-risk sexual behaviours. Substance abusers have higher incidence of suicide than normal population (Benensohn & Resnik, 1974; & Conwell et al., 1996; King et al., 2001). Thompson and Briggs (2005) found that children who are exposed to substance abuse are at increased risk of suicidal ideation, even by age eight.

Girls aged 12 to 16 who are current drinkers are four times more likely than their nondrinking peers to suffer from depression (Hanna et al., 2000). Compared with other students, the approximately one million frequent heavy drinkers more often exhibit behaviours that pose risks to themselves and others (Hingson et al., 2006). In a study it was found that of all children under age 14 killed in vehicle crashes in 2005, 21% were killed in alcohol-related crashes (National Highway Safety Traffic Association, 2006).

The abuser’s preoccupation with the substance, plus its effect on mood and performance, can lead to familial problems and poor school or work performance or
dismissal. Research indicates that adolescents who abuse alcohol may remember 10% less of what they have learned than those who don’t drink (Brown et al., 2000). High school students who abuse alcohol or other substances frequently are up to five times more likely than other students to drop out of school (The National Center on Addiction and Substance Abuse, 2001). Compared with other students, the approximately one million frequent heavy drinkers have mostly low grades in school (Hingson et al., 2006).

Substance abuse is a treatable disease and substance abuse can be stopped but adolescent substance abusers often do not come into contact with treatment personnel until their behaviour has progressed to the point that it is recognized by family, school, or legal authorities or they suffer adverse effects of the substance abuse (Institute of Medicine, 1978). They often perceive their substance abuse as enjoyable, safe, and controlled. It may well be, though often extreme denial is evident in their inability to appreciate the implications of this substance abuse (Litt & Cohen, 1974). They are also reluctant to seek help from conventional authorities. They are loath to reveal themselves to people with whom, they believe, they have no rapport. They believe they will not be respected or understood. The therapist, physician, teacher, and parent, though apparently well-meaning, are considered to be alien and even hostile presences (Lecker et al., 1973; Bernstein & Shkuda, 1974). At the same time, there are data suggesting that provision of early treatments to substance abusers before they have lost precious time or their compulsive substance abuse patterns have become chronic, will ensure better results.

Treatment of substance abuse depends upon the severity and nature of the abuse, motivation and the availability of services. A variety of treatment programs for substance abuse are available on an inpatient or outpatient basis. Programs considered are usually based on the type of substance abused. Historically, treatments for substance-related disorders have been based on the disease model, which states that these disorders are medical diseases (MacCoun, 1998). The disease model suggests that biological treatments are most appropriate. It also suggests that people with these disorders have no control over their abuse of substance because of their disease. Psychological interventions have been based on a harm-reduction approach to treatment (Marlatt, 1998). Proponents of this approach focus on the psychological and sociocultural factors that lead people to abuse substances inappropriately, and on helping people gain control over their abuse of
substances through behavioural and cognitive interventions. The main therapy approaches include biological treatments, behavioural therapy, and social treatments.

Biological treatments are mostly effective for substance dependence. Biological treatments include detoxification, antagonistic substances, and drug maintenance therapy. Detoxification is the process by which a health professional monitors the patient’s withdrawal from a substance. Detoxification involves either giving patient smaller and smaller doses of the substance until the person is no longer taking the substance, or replacing the original substance of abuse with medications that help minimize withdrawal symptoms. Antagonist drugs interfere with the effects of other substances. Antagonist substances vary by substance of abuse. Finally, substance maintenance therapy has been used primarily for treatment of heroin dependence. A substance such as methadone replaces the heroin, creating an addiction that is medically supervised. For people who are addicted to heroin, the oral medication methadone is cleaner and safer, and its availability through a clinic can eliminate dangerous drug-seeking behaviours.

Behaviour therapy is one of the effective methods used for the reduction of substance abuse. Behaviour therapy is a type of psychotherapy that focuses on changing undesirable behaviours. Behaviour therapy involves identifying objectionable, maladaptive behaviours and replacing them with healthier types of behaviour. The term behaviour therapy and behaviour modification are often equated in scientific and popular literature. Mostly researchers use the terms interchangeably to refer to the total range of methods based on experimentally derived psychological principles, especially the principles of learning. Behaviour modification is the field of study that focuses on using principles of learning and cognition to understand and change people’s behaviour (Sarafino, 1996).

The term behaviour modification appears to have been used first by Thorndike in 1911. His article *Provisional laws of acquired behaviour or learning*, makes frequent use of the term “modifying behaviour.” Behaviour modification developed from the perspective called behaviourism, which emerged with the work of Watson (1913, 1930) and Skinner (1938, 1953). This perspective emphasizes the study of observational and measurable behaviour and proposes that nearly all behaviour is the product of learning,
particularly operant and respondent conditioning. Three lines of research laid the foundation for behaviourism. Pavlov (1927) demonstrated the process of respondent conditioning. Watson and Rayner (1920) showed that an infant, “Little Albert,” learned to fear a white rat through respondent conditioning, and Thorndike (1898, 1931) studied how “satisfying” and “annoying” consequences—which we now call reinforcement and punishment—affect learning. Other studies formed the basis for applying the ideas of behaviourism by showing that conditioning techniques could effectively reduce fears (Jones, 1924) and improve problem behaviours of psychiatric patients (Lindsley, 1956; Ayllon & Michael, 1959). The field of behaviour modification now includes the areas of the experimental analysis of behaviour, which examines basic theoretical processes in learning, applied behaviour analysis, which emphasizes application to socially important problems in various settings.

The field of behaviour modification has several characteristics that make its approach unique (Kazdin, 1978; Wixted et al., 1990). First, professionals in this field focus on people’s behaviour, which can be overt, such as motor or verbal acts, or covert, such as feelings, thoughts, or physiological changes. As a result, their approach typically involves (1) defining people’s current status and progress in terms of behaviour rather than traits or other broad features, (2) measuring the behaviour in some way, and (3) whenever possible, assessing covert behaviours, such as fear, in terms of overt actions. Efforts to improve behaviour can be directed at a behavioural deficit—that is, the behaviour occurs with insufficient frequency, strength, or quality—or a behavioural excess—that is, it occurs too frequently or strongly. The behaviour to be changed is called the target behaviour.

Second, although behaviour modification professionals recognize that injury and heredity can limit the abilities of an individual, they assume that human behaviour is, for the most part, learned and influenced by the environment. The most basic types of learning are respondent (classical) conditioning—in which a stimulus gains the ability to elicit a particular response by being paired with an unconditioned stimulus that already elicits that response; and operant conditioning—in which behaviour is changed by its consequences. The methods applied in behaviour modification generally involve altering the antecedents and consequences of the target behaviour.
Third, behaviour modification has a strong scientific orientation. As a result, there is a major focus on carefully gathering empirical data, analyzing and interpreting the data, and specifying the precise methods used to gather and analyze the data. The field is also quite pragmatic, emphasizing the need to find and use techniques that work, as indicated by carefully conducted research. Fourth, behaviour modification techniques for changing behaviour often have clients or subjects become active participants, such as by performing “homework” and “self-management” activities, in the process of modifying their behaviour.

Behavioural Treatments can include such techniques as assertiveness training, desensitization, environment modification, and relaxation training. The therapist may also use exposure and response prevention to work towards controlling the patient’s actions. Other commonly used techniques include positive reinforcement, modeling, and social skills training (Chaney, 1989). In the behavioural therapy realm, aversion therapy has been used mostly to treat substance abuse and dependence. There are various ways to apply the therapy, which is informed by the principles of classical conditioning. That is, the stimulus, such as alcohol, is paired up with an aversive response that can be a thought or a physiological response such as that of antabuse.

Behaviour Self-Control Training (BSCT) is one of the effective methods used to treat substance abuse and dependence. Self-control is often approached in terms of freeing a behaviour regarding the effects of immediate consequences and forcing the behaviour under the control of long-term contingencies that could protect one against imprudent behaviours (Logue, 1988). Self-control has been defined as internal planner and an internal doer (Rachlin, 1995). BSCT is a cognitive-behavioural treatment. It involves having the patient track their abusing behaviours as well as emotional, cognitive, and other important changes associated with substance abuse. In addition to increased awareness, the patient learns coping strategies to better manage their abusing and related cues. The goal of self-control strategies is to reduce behavioural deficiencies or behavioural excesses. Behavioural deficiencies occur when an individual does not engage in a positive, desirable behaviour frequently enough. The result is a missed future benefit. Behavioural excesses occur when an individual engages in negative, undesirable behaviour too often. This results in a negative future consequence. In the case of
behavioural deficiencies, one may fail to engage in a desirable behaviour because it does not provide immediate gratification. With behavioural excesses, there is usually some type of immediate gratification and no immediate negative consequence. Behaviour self-control strategies help individuals to become aware of their own patterns of behaviour and to alter those patterns so that the behaviour will be more or less likely to occur (Griffin et al., 2000).

Behaviour self-control strategies are based primarily on the social cognitive theory of Bandura (1986). According to Bandura, one's behaviour is influenced by a variety of factors, including one's own thoughts and beliefs, and elements in the environment. Bandura proposed that certain beliefs, self-efficacy and outcome expectancies, are important factors in determining which behaviours an individual will attempt, and how motivated the individual will be when engaging in those behaviours. Self-efficacy is one's belief about how well he or she can perform a given task, regardless of that person's actual ability. Outcome expectancies are what the person believes will happen as a result of engaging in certain behaviour. If self-efficacy and outcome expectancies are inaccurate, the individual may experience behavioural deficits or excesses.

Meichenbaum (1973) developed the idea of self-instructional training, which is a major part of behaviour self-control strategies. Meichenbaum believed that learning to control behaviour begins in childhood, based on parental instruction. Children eventually control their own behaviour by mentally repeating the instructions of their parents. These internal instructions may be positive or negative. Self-instructional training teaches individuals to become aware of their self-statements, evaluate whether these self-statements are helpful or hindering, and replace maladaptive self-statements with adaptive ones.

Kanfer (1970) suggested that individuals achieve self-control by using a feedback loop consisting of continuous monitoring, evaluating, and reinforcing of their own behaviour. This loop occurs naturally in everyone. However, the loop can be maladaptive if (a) only negative factors are noticed and positive factors are ignored during the monitoring phase, (b) standards are unrealistic during the evaluation phase, or (c)
responsibility is accepted for negative behaviours but not for positive behaviours during the reinforcement phase. Behaviour self-control strategies help individuals to be aware of these phases and to make the appropriate changes in monitoring, evaluation, and reinforcement. Rosenbaum and Drabman (1996) found effectiveness of BSCT for smoking behaviour in children. In a study Hamid et al. (2006) found that there is an inverse relation between BSCT and substance abuse.

Progressive relaxation training is also effective in the treatment of substance abuse disorder because it helps to reduce tension, anxiety, depression and physiological arousal. Progressive muscle relaxation is a systematic technique for achieving a deep state of relaxation. Progressive relaxation is a process of training to relax the skeletal musculature consciously. It was developed by Jacobson (1938). Jacobson was one of the first to measure the electrical activity of the muscles. He believed that anxiety showed itself through tension in the muscles, and he believed that if we could reduce the muscular response, then we would also reduce the amount of stress in our bodies, as well. Jacobson discovered that a muscle could be relaxed by first tensing it for a few seconds and then releasing it. Tensing and releasing various muscle groups throughout the body produces a deep state of relaxation, which is found capable of relieving a variety of conditions.

Another approach is relapse-prevention training. Relapse-prevention has been used somewhat successfully to treat marijuana and cocaine abuse (McLellan, 2000). Another behaviourally informed approach, contingency management treatment, has been used to treat cocaine abuse (Stitzer & Petry, 2006). The treatment involves developing a set of incentives that are given once the patients prove, such as through a urine sample, that they are substance-free.

Social treatments have also been popular, especially self-help groups. Self-help groups are often led by community members and exist outside of professional settings. Alcohol Anonymous, for example, provides support from peers and guidelines for living with a strong spiritual component. Meetings take place often and regularly. In addition, group members are available to each other around the clock. Similar programs, such as Narcotics Anonymous, are available for other substances. Some self-help groups have
expanded into more encompassing settings, offering residential treatment facilities to ease the transition into a substance-free lifestyle.

Substance abuse harms everybody and does good to none. Government, society, families, the individual substance abuser and the public - all suffer because it is a social problem. Youth of today are the future of tomorrow. Issue of substance abuse among adolescents has become so troubling that if something is not done urgently about it, our future may be reduced to rubbles. If we wish for healthy and prosperous future, we should check substance abuse. It is necessary to treat this behaviour in the beginning so that it may not be severe. Substance abuse is a treatable disease and substance abuse can be stopped. An adolescent can overcome this with the help of parents and the help of support groups, psychotherapy, medication, treatment programs and family counseling. These programs are customized to help an adolescent to lead a productive and normal life. There are many methods that may be used for the treatment of substance abuse. Behaviour modification is an effective treatment approach for the reduction of substance abuse. There is dearth of Indian researches in the area of effectiveness of behaviour modification based treatment of substance abuse. The present research is an effort in this area. It has been undertaken with the objectives to study the causes of substance abuse among rural and urban adolescents and to study the relative efficacy of behaviour intervention with behaviour self control training only and with behaviour self control training combined with Jacobson’s progressive muscle relaxation, in reducing substance abuse among adolescents.

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