CHAPTER II

REVIEW OF LITERATURE
The spread of substance abuse is often described as a global pandemic, with similarities to epidemic diseases. Since antiquity, human beings have sought ways of altering mood, thought processes, and behaviour. Human beings have always, it seems, eaten, drunk, chewed or smoked substances that produce intoxication, stimulation or euphoria. The most important substances that are subject to abuse may be grouped into following categories according to their pharmacology: (i) Central nervous system depressants, including alcohol, barbiturates, benzodiazepines and inhalants; (ii) Central nervous system stimulants, including cocaine, amphetamines, nicotine, and caffeine; (iii) Opiates, including heroin and morphine; (iv) Hallucinogens; (v) Cannabis.

The depressants slow the activity of the central nervous system. Depressants are substances that induce relaxation and sometimes intoxication by lowering the activity of the brain, the neurons, the muscles, and the heart, and even by slowing the metabolic rate (Julien, 2005). Depressants are also called sedatives. Tranquilizers, and hypnotics, these substances include alcohol, barbiturates, general anesthetics, antiepileptic substances and the inhalants. In moderate doses, they make people relaxed and somewhat sleepy, reduce concentration, and impair thinking and motor skills. In high doses, they cause loss of consciousness and can result in coma and death as a result of their inhibitory effect on the brain center that controls respiration.

The condition of euphoria, which is induced by substances, is called “high”. The “high” that depressant abusers describe may be compared with the sense of peace or numbness that occurs just prior to sleep in normal individuals. Depressants can cause an initial rush plus a loss of inhibitions. These pleasurable sensations are then followed by depressed mood, lethargy, and physical signs of central nervous system depression. Alcohol is the most common abused substance in this category. At low doses, alcohol produces relaxation and a mild euphoria. At higher doses, it produces the classic signs of depression and cognitive and motor impairment (Abbey et al., 2000; Standridge et al., 2004; McIntosh et al., 2005). Benzodiazepines and barbiturates are dangerous in overdose and when mixed with other substances (Shorter, 2005). Inhalants can cause permanent organ and brain damage and accidental deaths due to suffocation or dangerous delusional behaviour (Williams, 2007).
The stimulants including nicotine, caffeine, cocaine, and amphetamines, make people feel more alert and energetic by boosting activity in the central nervous system. At low doses, the stimulants reduce fatigue, elevate mood, and decrease appetite. In higher doses, however, the stimulants may cause irritability, insomnia, and anxiety. Because the effects of stimulants mimic the actions of adrenaline—one of the neurotransmitters that activate the fight-or-flight response of the sympathetic nervous system—stimulants are often referred to as sympathomimetic agents. Cocaine and the amphetamines are the two types of stimulants associated with severe substance-related disorders. Both substances are abused by people to get a psychological lift or rush. Both substances cause dangerous increase in blood pressure and heart rate, changes in the rhythm and electrical activity of the heart, and constriction of the blood vessels, which can lead to heart attacks, respiratory arrest, and seizures (Miller, 1991; Wyatt & Ziedonis, 1998; Gatley et al., 1998; Johnston et al., 2001). Caffeine and nicotine are also stimulants, and can result in diagnosable substance-related disorders.

The opiates have been used widely throughout human history for medical, religious, and recreational purposes. The trend toward increased abuse of opiates is more prominent among teenagers than among young or older adults (Johnston et al., 2005). Morphine, heroin, codeine, and methadone are all known as opiates. They all derive from the sap of the opium poppy, which has been used for thousands of years to relieve pain. It can be ingested by swallowing, or injecting under the skin, into a muscle, or intravenously, making it one of the most versatile substances for transmission into the body. The initial symptom of opiate intoxication is euphoria; it is followed by a sense of drowsiness, lethargy, and periods of light sleep. Severe intoxication can lead to respiratory difficulties, unconsciousness, coma, and seizures (Chouvy, 2009).

Hallucinogens are substances that cause hallucinations. Hallucinations may be visual, auditory, or sensory and may reduce rapid, intense emotional swings. Hallucinogens such as Lysergic acid diethylamide (LSD), Methyleneoxydamphetamine (MDMA) (also called ecstasy), psilocybin, and mescaline are powerful psychoactive substances that produce profound distortions in perception, thinking and consciousness. The hallucinogens produce perceptual changes
even in small doses. Hallucinogens such as LSD and mescaline alter sensory perception and induce visual and auditory hallucinations as they separate the abuser from reality (Johnston et al., 1999). These substances also disrupt thought processes and, in some abusers, trigger behaviour resembling that of patients with severe psychological disorders (Halpern, 2005; Fantegrossi et al., 2008).

The cannabis is the most widely abused illicit substance in the world. It is also known as marijuana, pot, grass, reefer, ganja and bhang. When it is smoked, the effects of cannabis begin within a minute or two and can last for an hour or more. The substance usually produces relaxation and enhanced sensory awareness. Time perception may be distorted, so that there is an illusion of time passing very slowly. Effects of ingesting marijuana, include, altered thought processes, memory impairment, feeling of relaxation and euphoria, increased appetite and coordination impairment (Nicoll & Alger, 2004).

In the present research, adolescents who have been abusing pain killers or abusing inhalants were included in the sample. Inhalant Abuse is a lesser-known form of substance abuse, but is no less dangerous than other forms. The inhalants are a class of substances that include a broad range of chemicals found in hundreds of different products, many of which are readily available to the general population. These chemicals include volatile solvents (liquids that vaporize at room temperature) and aerosols (sprays that contain solvents and propellants). Examples include glue, gasoline, paint thinner, hair spray, lighter fluid, spray paint, nail polish remover, correction fluid, rubber cement, felt-tip marker fluids, vegetable sprays, and certain cleaners.

The inhalants share a common route of administration—that is, they are all drawn into the body by breathing. They are usually taken either by breathing in the vapors directly from a container (known as "sniffing"); by inhaling fumes from substances placed in a bag (known as "bagging"); or by inhaling the substance from a cloth soaked in it (known as "huffing"). Inhalants take effect very quickly because they get into the bloodstream rapidly via the lungs. The "high" from inhalants is usually brief, so that abusers often take inhalants repeatedly over several hours. This pattern of abuse can be dangerous, leading to unconsciousness or even death. Most inhalants produce a
rapid “high” that resembles alcohol intoxication with initial excitement, then drowsiness, disinhibition, lightheadedness and agitation. Short term effects include headache, muscle weakness, abdominal pain, severe mood swings and violent behaviour, slurred speech, numbness and tingling of hands and feet, nausea, hearing loss, limb spasms, fatigue, and lack of coordination (Meadows & Verghese, 1996; Fendrich et al., 1997; Beauvais, 2002). Long term effects include central nervous system or brain damage. Serious effects include damage to the liver, heart, kidneys, blood oxygen level depletion, unconsciousness and death (Maruff et al., 1998; Ramon et al., 2003; Williams, 2004; Spiller, 2004; Basu et al., 2004).

The most common abusers of inhalants are young children and adolescents. The reasons for the increase in inhalant abuse among young children and adolescents are: easy availability (at all stationary/ general stores, with no legal control over the sale), low cost, small/ easy to hide container, quick and definite "high," and lack of awareness of the abuse potential on the part of the public-sellers and parents in particular. In a study Kumar et al. (2008) found that easy availability, cheap price, faster onset of action, and a regular “high” makes inhalant a substance of abuse especially among the youth.

Prescription medicine abuse is one of the most common substance abuse amongst teen substance abusers today. Getting hooked onto prescription medicine happens so silently that the abuser does not even realize it till it is too late. Most people also seem to be under the false notion that being addicted to prescription medicines is ‘safer’ than being addicted to regular substances. Unfortunately this could not be farther from the truth. Prescription medicines are as harmful as any other substance. Painkillers are the prescribed substances, and can cause drowsiness, inability to concentrate, apathy, lack of energy, constriction of the pupils, flushing of the face and neck, constipation, nausea, vomiting, and most significantly, respiratory depression (Morris et al., 2006; Kroutil et al., 2006). Abuse of painkillers by a teen for a period of time, can make the teen addicted to the substance and give the experience of withdrawal symptoms after stop taking the substance. Physical signs of painkiller overdose include pinpoint pupils, cold and clammy skin, confusion, convulsions, severe drowsiness, and slow or troubled breathing (Hartney, 2009).
The National Institute on Drug Abuse (NIDA, 2007) published a list of commonly abused substances and their street names, along with intoxication effects and adverse health consequences. All of the substances pose a high potential for addiction.

**Chart No. 2.1: Commonly Abused Substances’ Chart (NIDA, 2007)**

<table>
<thead>
<tr>
<th>Substance Name/Class</th>
<th>Commercial and/or Street Names</th>
<th>How Taken</th>
<th>Intoxication Effects</th>
<th>Adverse Health Consequences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marijuana</td>
<td>Dope, pot, joints, grass, reefer, weed etc.</td>
<td>Smoked, swallowed</td>
<td>Euphoria, slowed thinking and reaction time, confusion, impaired balance and coordination</td>
<td>Cough, frequent respiratory infections; impaired memory and learning; increased heart rate, anxiety; panic attacks</td>
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<td>Cannabinoid</td>
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<tr>
<td>Cocaine</td>
<td>Blow, bump, candy, charlie, coke, crack, rock, snow, toot</td>
<td>Snorted, smoked, injected</td>
<td>Increased heart rate, blood pressure, temperature, metabolism; feelings of exhilaration, energy, increased mental alertness</td>
<td>Rapid or irregular heart beat; reduced appetite, weight loss, heart failure, nervousness, insomnia, chest pain, respiratory failure, nausea, abdominal pain, strokes, seizures, headaches, malnutrition, panic attacks</td>
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<tr>
<td>Stimulant</td>
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<tr>
<td>Amphetamines</td>
<td>Biphetamine, Dextedrine; bennies, black beauties, crosses, hearts, speed, truck drivers, uppers</td>
<td>Swallowed, smoked, injected</td>
<td>Increased heart rate, blood pressure, metabolism; feelings of exhilaration, energy,</td>
<td>Rapid or irregular heart beat; reduced appetite, weight loss, heart failure, nervousness,</td>
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<tr>
<td>Stimulant</td>
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<td>Substance</td>
<td>Common Names</td>
<td>Effects</td>
<td>Side Effects</td>
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<tr>
<td>Methamphetamine</td>
<td>Desoxyn; chalk, crank, crystal, fire, glass, go fast, ice, meth, speed</td>
<td>increased mental alertness, rapid breathing</td>
<td>insomnia, tremor, loss of coordination; irritability, anxiousness, restlessness, delirium, panic, paranoia, impulsive behaviour, aggressiveness, psychosis</td>
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<tr>
<td>Stimulant</td>
<td>Snorted, swallowed, smoked, injected</td>
<td>Increased heart rate, blood pressure, metabolism; feelings of exhilaration, energy, increased mental alertness; aggression, violence, psychotic behaviour</td>
<td>Rapid or irregular heart beat; reduced appetite, weight loss, heart failure, nervousness, insomnia; memory loss, cardiac and neurological damage; impaired memory and learning</td>
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<tr>
<td>MDMA</td>
<td>Adam, clarity, ecstasy, eve, lover’s speed, peace, STP, X, XTC</td>
<td>Increased heart rate, blood pressure, metabolism; feelings of exhilaration, energy, increased mental alertness; mild hallucinogenic effects, increased tactile sensitivity, empathic feelings</td>
<td>Rapid or irregular heart beat; reduced appetite, weight loss, heart failure, nervousness, insomnia; impaired memory and learning, hyperthermia, cardiac toxicity, renal failure, liver toxicity</td>
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<tr>
<td>Nicotine</td>
<td>Cigarettes, cigars, smokeless tobacco, snuff, spit tobacco, bidis, chew</td>
<td>Smoked, sniffed, chewed</td>
<td>Increased heart rate, blood pressure, metabolism; feelings of exhilaration, energy, increased mental alertness; increased tactile sensitivity, empathic feelings</td>
<td>Rapid or irregular heart beat; reduced appetite, weight loss, heart failure, nervousness, insomnia; impaired memory and learning, chronic lung disease, cardiovascular disease, stroke, cancer</td>
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<tr>
<th>Barbiturates</th>
<th>Amytal, Nembutal, Seconal, Phenobarbital; barbs, reds, red birds, phennies, tooies, yellows, yellow jackets</th>
<th>Swallowed, injected</th>
<th>Reduced anxiety; feeling of well-being; lowered inhibitions; slowed pulse and breathing; lowered blood pressure; poor concentration, sedation, drowsiness</th>
<th>Fatigue; confusion; impaired coordination, memory, judgment; depression, unusual excitement, fever, irritability, slurred speech, dizziness, life-threatening withdrawal; respiratory depression and arrest, death</th>
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<tr>
<td><strong>Depressant</strong></td>
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<tr>
<th>Benzodiazepines</th>
<th>Ativan, Halcion, Librium, Valium, Xanax; candy, downers, sleeping pills, tranks</th>
<th>Swallowed, injected</th>
<th>Reduced anxiety; feeling of well-being; lowered inhibitions; slowed pulse and breathing; lowered blood pressure; poor concentration, sedation, drowsiness</th>
<th>Fatigue; confusion; impaired coordination, memory, judgment; depression, unusual excitement, fever, irritability, slurred speech, dizziness, life-threatening withdrawal; respiratory depression and arrest, death</th>
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<td><strong>Depressant</strong></td>
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<tr>
<td>Substance</td>
<td>Method of Administration</td>
<td>Effects</td>
<td>Health Effects</td>
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<td><strong>Inhalants</strong></td>
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<td><strong>Depressants</strong></td>
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<tr>
<td>Solvents (paint thinners, gasoline, glues), gases (butane, propane, aerosol propellants, nitrous oxide), nitrites (isoamyl, isobutyl, cyclohexyl); laughing gas, poppers, snappers, whippets</td>
<td>Inhaled through nose or mouth</td>
<td>Stimulation, loss of inhibition; headache; nausea or vomiting; slurred speech, loss of motor coordination; wheezing</td>
<td>Dizziness; respiratory depression and arrest, death</td>
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<tr>
<td><strong>Heroin</strong></td>
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<tr>
<td><strong>Narcotic (Opiate)</strong></td>
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<tr>
<td>Diacetylmorphine; brown sugar, dope, H, horse, junk, skag, skunk, smack, white horse</td>
<td>Injected, snorted, smoked</td>
<td>Pain relief, euphoria, drowsiness, unsteady gait</td>
<td>Nausea, constipation, confusion, sedation, respiratory depression and arrest, tolerance, unconsciousness, coma, death</td>
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<tr>
<td><strong>LSD</strong></td>
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<td><strong>Hallucinogen</strong></td>
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<tr>
<td>Lysergic acid diethylamide; acid, blotter, boomers, cubes, microdot, yellow sunshine</td>
<td>Swallowed, absorbed through mouth tissues</td>
<td>Altered states of perception and feeling; nausea; increased body temperature, heart rate, blood pressure; loss of appetite, sleeplessness, numbness, weakness, tremors; persistent mental</td>
<td>Persisting perception disorder (flashbacks)</td>
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<tr>
<td>PCP</td>
<td>Dissociative anesthetics</td>
<td>Phencyclidine; angel, dust, boat, hog, love boat, peace pill</td>
<td>Smoked, swallowed, injected</td>
<td>Increased heart rate and blood pressure, impaired motor function, possible decrease in blood pressure and heart rate; panic, aggression, violence</td>
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<tr>
<td>Anabolic Steroids</td>
<td>Other Compounds</td>
<td>Anadrol, Oxandrin, Durabolin, Depo-Testosterone, Equipoise; roids, juice</td>
<td>Injected, swallowed, applied to skin</td>
<td>No intoxication effects</td>
</tr>
</tbody>
</table>
Substance related disorders provide an interesting and fertile field for the study of the biopsychosocial determinants of disease processes. These disorders are determined by multiple factors, including genetic vulnerability, environmental stressors, social pressures, psychiatric problems, and individual personality characteristics (Newcomb et al., 1986).

Numerous biological, psychological, and sociocultural factors appear to be involved in substance abuse. In biological factors genetics play an important role in adolescent substance abuse. Familial and population genetic studies reveal possible genetic bases for some of the inter individual differences in vulnerability to substance abuse. *Family studies* analyze transmission of substance abuse disorders from generation to generation through families. The basic approach determines that family members of substance abusers are at increased risk for substance abuse. A variant, segregation analysis, uses the diagnostic status of family members to determine the relative likelihoods of different modes of genetic transmission. Families with a history of substance abuse are more likely to see that behaviour in their children (Uhl et al., 1995). Family studies have shown that first-degree relatives of alcoholics are more likely to be alcoholic than first-degree relatives of nonalcoholics (Porjesz & Bergleiter, 1998; Biederman et al., 2000).

Extensive family study work supports enhanced frequencies of substance abuse in families of substance abuser probands when compared to general population base rates. Most of these workers have utilized family history and family structure data obtained from the probands, and varying diagnostic criteria have been employed. Rounsaville et al. (1991) studied relatives of 201 opiate addicts and 82 controls obtained in a similar population area. Between 18% and 23% of first-degree relatives of addicts, as well as 3% of first-degree relatives of normal controls, manifested substance abuse. These data suggested an odds ratio of almost 14-fold for substance abuse in first-degree relatives of substance abusers, compared to the normal controls examined. Rates of substance abuse in siblings were almost three times higher than those in parents, and gender differences were significant (Goldberg et al., 1993). Older sibling's alcohol abuse can influence the
alcohol abuse of younger siblings in the family, particularly for same sex siblings (Sharma & Benson, 1996).

When either the mother or father of a male child is alcohol dependent, the son is significantly more likely to later abuse alcohol himself (Cloninger et al., 1985; Browman & Crabbe, 2002). In fact, for males, alcoholism in a first-degree relatives is the single best predictor of alcoholism (Plomin et al., 2001; Dick & Bierut, 2006). Study conducted by Agarwal and Dick (2008) has estimated genetics to account for 50-70 percent of the development of alcoholism, and cocaine and heroin dependence, as well as addiction to cannabis have been shown to have significant heritability. Chen et al. (2008) noted that genetic contribution to the development of opiate addiction can be as high as 60 percent. According to Agrawal and Lynskey (2008), “family studies conclude that substance abuse disorder clusters in families, presumably due to genetic factors.”

Twin and adoption studies have determined that both genetic and environmental influences are involved in substance abuse or dependence. Twin studies compare concordance for a disorder in monozygotic and dizygotic twins. Because monozygotic twins have all common genes, any difference in monozygotic twin pairs must be due to environmental factors. However, since dizygotic twins have only 50 percent common genes, any difference in dizygotic twin pairs may be due to either genetic or environmental influences, or both. By comparing the concordance for a disorder in monozygotic and dizygotic twins, the relative influences of genetic and environmental factors in the etiology of a disorder can be determined. Twin studies have found that monozygotic twins are more likely to be concordant for substance abuse than dizygotic twins (Grove et al., 1990; Pickens et al., 1991; Tsuang et al., 1996; Woodward et al., 1996; Olson et al., 2001). Twin studies have revealed greater concordance for alcohol abuse (McGue et al., 1992; Slutske et al., 2002; Liu et al., 2004), caffeine abuse and heavy abuse of cannabis (Kendler & Prescott, 1998; Chen et al., 2008) in identical twins than in fraternal twins, pointing again toward a possible role of heredity.

Pickens et al. (1995) examined twin concordance for substance abuse in a sample of 50 monozygotic and 64 dizygotic twins in which the proband was identified in
substance rehabilitation programmes. These workers found a significantly greater concordance for substance abuse in monozygotic males than in dizygotic males. Identical twins have nearly twice the concordance rate for substance abuse or dependence. This is true whether the twins were raised together or apart and whether they grew up in the homes of their biological parents or adoptive parents. A study of monozygotic and dizygotic twins revealed that when one monozygotic twin was dependent on or abused alcohol, in 76 percent of the cases, the other monozygotic twin also showed signs of alcohol addiction (Kendler, 1997). Twin studies have clearly shown that a substantial portion of the family transmission of substance abuse and dependence is due to genetics (Lerman et al., 1999; Pomerleau & Kardia, 1999). In a study of over 3,000 male twins, Prescott and Kendler (1999) found concordance rates for alcohol dependence among monozygotic twins of 0.48, compared to 0.32 among dizygotic twins. Cloninger et al. (2001) found that monozygotic twins of alcoholics are at significantly higher risk of developing alcoholism than dizygotic twins.

Adoption studies permit an estimate of the relative influences of genetic and environmental factors in the etiology of a disorder. In adoption studies, the influence of rearing environment can be largely separated from that of genetics by use of children born of affected biological parents but adopted out early in life and raised by non-affected foster parents. Adoption studies have found that adopted-away children of alcoholic parents are more likely to develop alcoholism than adopted-away children of nonalcoholic parents (Goodwin et al., 1973; Cadoret et al., 1980; Cloninger et al., 1981; Pickens et al., 1991; McGue et al., 2000; Enoch, 2006).

Cadoret et al. (1995) found that there was a significant correlation between substance abuse in the adoptee and substance abuse in the biological parent, but there was no increased risk if only the adoptive parent abuses. Adopted children are more susceptible to alcohol abuse if one or both of their biological parents was alcohol-dependent (Wood et al., 2001). Results from several adoption studies indicate a genetic component in substance abuse (Crabbe, 2002). Children of non-alcoholic parents have a low rate of alcoholism, even when adopted by alcoholic parents (Fillmore et al., 2004). This evidence for a genetic basis for substance abuse heritability was accompanied by an
enhanced risk for substance abuse if the biological parent was substance abuser. This work, as well as a replication of the results in a different group of subjects (Nurnberger, 2007), suggests a significant genetic component to heritability of substance abuse.

The evidence that family studies, twin studies and adoption studies provide may be powerful, but it has been pointed out that genetic variables, alone cannot account for the expression of substance abuse as a disease. Several behavioural (Schuckit, 1984, 1985), biochemical (Schuckit et al, 1987), and electrophysiological (Begleiter et al., 1984, 1987) studies in high-risk youths suggested the role of biological influences. Blum et al. (1990) provided evidence that the dopamine D2 receptor might influence the expression of substance abuse. This was later supported by additional studies (Smith et al., 1992; Uhl et al., 1992; Li et al., 2004). In addition, other studies have implicated a role for monoamine oxidase, serotonin, and endogenous opioids in the development of substance abuse (Alexopoulos et al., 1983; Goodwin, 1985; O’Malley et al., 1992; Herraiz & Chaparro, 2005; Meyer et al., 2006). The number of different biochemical and genetic findings point to a complex disease process with multiple determinants.

The most influential physiological and cognitive explanation of substance abuse is the tension reduction hypothesis. According to this hypothesis, addictive substances are reinforcing because they relieve tension, in part by stimulating the central nervous system to release neurotransmitters that calm anxiety and reduce sensitivity to pain (Parrott, 1999). Despite its consistency with popular belief, the tension reduction hypothesis has received little support from experimental studies (Greeley & Oei, 1999; Kamboureopoulos, 2003). Substance abusers abuse substances as a way to manage their stress response (Armeli et al., 2003). According to Young et al. (2006), the interaction of pharmacology, expectancy, gender role and situation suggest that tension reduction is of major importance in understanding the substance abuse of many individuals.

Psychiatric factors are important determinants of adolescent substance abuse. Psychiatric factors represent emotional and behavioural conditions of a severity that warrant classification as mental disorders. These psychiatric disorders can co-occur with substance abuse disorder, and the presence of psychiatric disorders can serve as a risk
factor for the development of substance abuse disorder in both adolescents and adults. Although the term "comorbidity" in general refers to the co-occurrence of two psychiatric disorders, in the substance abuse field it typically refers to the co-occurrence of an affective or anxiety disorder with substance abuse disorder.

In discussing comorbidity as a risk factor for substance abuse, it is important to note the order of onset of the two disorders (i.e., whether they start simultaneously or whether one predates the other). Obviously, for a psychiatric disorder to be a risk factor for substance abuse disorder, its onset must precede that of the substance abuse. Depression, anxiety, conduct disorder, attention deficit hyperactivity disorder (ADHD) etc. are some psychiatric disorders that co-occur or comorbid with substance abuse disorder and these disorders play potential role as risk factors for the development of substance abuse disorders.

Depression and substance abuse are the two conditions that are highly comorbid. Several studies have reported an association between depression and substance abuse in adolescents. In a study of inpatient adolescents, 73 percent of adolescents who abused substances met diagnostic criteria for depression. Furthermore, in 80 percent of those cases, the depressive symptoms predated the substance abuse (Deas-Nesmith et al., 1998b). This temporal relationship also has been observed by other investigators (Rohde et al. 1991; Wiesner, 2002; Nunes & Rounsaville, 2006). These observations suggest that depression may be a risk factor for substance abuse among adolescents.

Similar to depression, anxiety disorders have also been found to predate substance abuse, and adolescents with anxiety disorders may self-medicate their symptoms by abusing substances. Female adolescents may be especially prone to self-medication of anxiety symptoms. Rohde and colleagues (1996) reported that alcohol abuse among female high school students was associated with anxiety disorders that preceded the alcohol problems. Some previous studies have examined the association between substance abuse and specific anxiety disorders in adolescents, the existing literature suggests that two anxiety disorders in particular—social anxiety disorder and post-traumatic stress disorder (PTSD)—may be related to the risk of substance abuse disorder.
in adolescents. Social anxiety disorder, which refers to an intense fear and avoidance of social scrutiny, has been particularly associated with substance abuse, and especially alcohol abuse (Kushner et al., 1990). Deas–Nesmith and colleagues (1998a) explored the prevalence of comorbid psychiatric disorders and substance abuse disorders among adolescents who were seeking treatment for substance abuse. The investigators found that social anxiety disorder was the most common co–occurring psychiatric disorder among adolescents with substance abuse disorder—60 percent of the substance–abusing adolescents met the criteria for social anxiety disorder. The investigators also found that when an anxiety disorder coexisted with substance abuse, the anxiety symptoms generally predated substance abuse by about two years, suggesting that the anxiety disorder could be a risk factor for substance abuse. Gao et al. (2006) found that anxiety disorders commonly co–exist with substance abuse disorders in adolescents.

The relationship of PTSD to substance abuse also has been studied. One theory regarding the role of PTSD and traumatic life events as risk factors for substance abuse in adolescents posits that the affected adolescents often abuse substances to cope with the traumatic experiences. This theory is supported by a study exploring the traumatic histories of adolescents with alcohol abuse (Clark et al., 1997a). This study found that the alcohol–abusing adolescents were 6 to 12 times more likely to have a history of physical abuse and 18 to 21 times more likely to have a history of sexual abuse compared with control adolescents. Furthermore, the study suggested that the relationship of PTSD to substance abuse in adolescents may be gender specific because the association of PTSD and alcohol dependence was stronger in females than in males (Clark et al., 1997b). Kilpatrick and colleagues (2000) explored PTSD as a risk factor for substance abuse in adolescents. These investigators found that PTSD increased the risk of abuse of several illicit substances. Katherine et al. (2006) found association between trauma and PTSD and substance abuse disorders. They also found that among those with PTSD, the most commonly abused substance was alcohol.

Conduct disorder, commonly referred to as childhood antisocial behaviour, and has been shown to be particularly strongly associated with the onset as well as continuation of substance abuse. The presence of conduct disorder and related disorders
predicts early initiation of regular substance abuse in early adolescence, onset of substance-related problems in adolescence, and development of substance abuse disorders (Jeffrey & Hans, 2002). A diagnosis of antisocial personality disorder has been found a risk factor for the development of substance abuse among adolescents (Cadoret et al., 1995; Robins, 1998; Clark et al., 2002). According to Mueser et al. (2006) conduct disorder and antisocial personality disorder are established risk factors for substance abuse disorders.

Borderline and psychotic adolescents may abuse substances, to cope with paranoid and angry feelings (Bosch et al., 2001; Zanarini et al., 2004). Borderline psychotic youngsters may abuse a variety of substances in a disorganized, chaotic manner such that they suffer frequent adverse reactions and overdose (Waugaman, 2005). Some of these young people take great pride in calling themselves “garbage heads”, who will take anything in any quantity, regardless of the dangers.

ADHD, which is characterized by the constellation of impulsivity, hyperactivity, and inattention, commonly coexists with substance abuse among adolescents. There has been much discussion and debate whether people with ADHD are more likely to abuse substances than people without the disorder. Studies suggest that the relationship between ADHD and substance abuse in adolescents is moderated by other factors. Biederman and colleagues (1997) prospectively followed adolescents with and without ADHD for four years and found no difference in the rates of substance abuse between the two groups. Instead, the presence of conduct disorder and bipolar disorder was a more valid predictor of substance abuse than ADHD status. On the contrary Bendler (2007) found that adolescents who were diagnosed with ADHD as children faced a higher risk of alcohol abuse and dependence.

Other studies conducted on adolescents indicate that a person's level of cognitive functioning moderates the relationship between ADHD and substance abuse. That is, people with lower cognitive functioning are more likely to abuse substances in response to their hyperactivity than are people with higher cognitive functioning, possibly because the latter employ more effective coping techniques (Span & Earleywine 1999; Dawes et
al. 2000), and problems indicating a conduct-disorder diagnosis appear to increase this risk further.

In some substance abusers superego pathology based on faculty ego ideal information, disordered value systems, or punitive and overly demanding superegos, may exist (Wurmser, 1974; Zinberg, 1975; Noshpitz, 1993). Pathological extremes of narcissism and dependency may be identified (Britton, 2004). Many individuals who abuse substances seem to have an inability to identify and articulate their emotions; they experience these as somatic complaints for which substances offer special relief.

Substance abuse has been related to pre-oedipal pathology based on unresolved issues relating to attachment and separation from the mother. Substances may serve as a loved object of symbiotic attachment for the abuser. One sees children who are unable to pursue their needs for admiration and for love. They seem unable to build a system of activity, interests, and relationships that serve as a buffer against powerful feelings of depression and boredom. Some abusers have personality disorders; others show evidence of psychotic states (Steer & Schut, 1979; Tucker, 1994; Caton et al., 2005; Schanzer et al., 2006).

Psychological factors are also important determinants of adolescent substance abuse. The term "psychological factors" refers to patterns of thought and behaviour that exist along a continuum in the general population—including, temperament, personality traits, self-esteem, and coping skills. Personality influences the choice of substances as well as the patterns of abuse (Justin et al., 2003). In part, personality can determine the psychoactive effects that the substances will elicit in a given setting. Psychological theories of substance abuse tend to emphasize associations between psychological or environmental variables and development of substance abuse.

Researchers no longer attempt to identify a single “substance abusing personality,” focusing instead on specific personality traits that appear to be linked to substance abuse. An important trait is a temperament. Research studies that link temperament and personality to substance abuse provide another clear indication of the
interaction of nature and nurture. A person’s temperament is determined in part by heredity and in part by upbringing. Temperament includes attraction to excitement and intolerance of frustration (Brook et al., 1992; Kaplan & Johnson, 1992). A number of researchers have provided evidence for the role of temperament in the development of substance-related disorders (Lerner & Vicary, 1984; Maziade et al., 1990; Tarter & Mezzich, 1992; Liraud, 2000; Harrington, 2007). Adolescent with “difficult” temperament, such as negative mood, high intensity, social withdrawal, and slow adaptability, appear to be at highest risk (Martel et al., 2009).

Several studies have identified one psychological factor that is consistently related to an increased risk of substance abuse—a personality pattern of high novelty seeking, low harm avoidance, and high reward dependence (Galen et al., 1997). This constellation of traits was first implicated in alcoholism risk in adults, but has also been shown to apply to adolescents at risk for substance abuse (Swadi, 1999). Another psychological factor that has been shown to be predictive of both the initiation and continuation of substance abuse is high aggressivity (Pollack & Miller, 1996; Swadi, 1999). Reinherz et al. (2000) found that both teacher–rated and self–rated aggressivity at age 9 was predictive of substance abuse disorders at age 21. Low self–esteem also has been implicated in many disorders in adolescents. Evidence suggests that it is a risk factor for adolescent substance abuse (Donnellan et al., 2005). Although adolescents with substance abuse disorder may experience low self–esteem, it is unlikely that this low self–esteem was a causal factor for the development of the disorder. Teens that have issues with authority, have low self–esteem or feel like a failure often have voids to fill, and filling those voids become comfortable and easy through substance abuse.

Stressful or traumatic life events also increase adolescents’ risk for substance abuse. Kilpatrick and colleagues (2000) found that adolescents who witnessed or experienced physical and/or sexual assault were at greater risk for developing substance abuse disorders than were adolescents without such experiences. Similarly, in an analysis of factors related to initiation and increase of substance abuse it was found that the number of stressful life events experienced by adolescents was related to both the initiation and continuation of substance abuse (Wills et al., 2001; Erblich et al., 2004).
Curiosity has strong influences in a teen’s life. Veeraraghavan (1980) reported the main reason for starting on a substance habit as “experimentation” or “curiosity” (61.6%) followed by “kicks” (36.1%). According to Samuel (2005) some adolescents may start abusing substances just because they are curious. Adolescents tend to be drawn to abusing substance for many numbers of reasons- to look cool, act older, lose weight, win cool merchandise, or feel independent. Adolescents might start abusing substance because it makes them feel good at first or a temporary thought of escape from their problems for a while.

Another set of explanation for why people abuse substances comes from cognitive-behavioural approach. This approach incorporates the two major types of learning: learning by association and learning by consequences. In learning by association (also called ‘Pavlovian’ or ‘classical’ conditioning), stimuli that are originally neutral can become triggers for substance abuse, or for cravings, as a result of repeated associations between those stimuli and substance abuse. Triggers may be external to the individual, such as objects in one’s environment, settings and locations, or certain people (e.g., the people one uses with regularly), or they may be internal events like thoughts, emotions, or physiological changes (Wikler, 1965). Associations between these various objects/occurrences and substance abuse can develop if they repeatedly occur in close temporal proximity to one another (O’Brien, 1974). As these associations are gradually strengthened during the course of repeated occurrences, the substance abuser becomes subject to cravings that can be stimulated by a growing array of stimuli that were previously neutral but have now become potential triggers (Chance, 2003).

In the learning by consequences model (also called ‘operant’ conditioning), substance abuse behaviours are strengthened by the consequences that follow their use. If after abusing a substance a person feels sexually aroused, more comfortable in social situations, or euphoric, for example, then the act of ingesting the substance is likely to be repeated in the future, because of it’s having received this positive reinforcement (Blume, 2000). If substance abuse reduces anxiety, tension, stress, or depression, again the likelihood of future use is increased, this time by the process called negative reinforcement (in which an unpleasant experience is reduced or terminated) (Carey &
To be sure, there are also negative consequences of substance use, such as depression, anxiety, and withdrawal symptoms, which would be expected to reduce the likelihood of future substance abuse. However, these occur so long after the substance is abused that they have little if any impact on the act of abusing, and are therefore no match for the more immediate reinforcing consequences. Podlesnik et al. (2006) found that the development and maintenance of compulsive substance abuse patterns is often based on conditioned learning.

Socio-cultural variables can also play a widely varying role in substance abuse. Development of substance abuse in children and adolescents is a combination of familial and social vulnerability factors, including the drug culture of social milieu. The social factors which cause substance abuse among adolescents are: The home and family, peer group and society. As we all know, charity begins at home and whatever a child learns from home is most likely to remain in and with him for the rest of his life. Family variables continue to exert a strong influence not only because most adolescents value their family members as models of behaviour, but also because these factors encompass such a wide range of influences. Family factors can protect against adolescent substance abuse (Vakalahi, 2001), or they can place an individual at risk. Several studies report that adolescents whose parents or siblings have past or current substance abuse problems are themselves at an increased risk of developing substance abuse disorders (Reinherz et al., 2000; Butters, 2002; Slomkowski et al., 2005). This association could be related either to a shared genetic predisposition or to nongenetic factors, such as impaired parenting skills (Choquet et al., 2008), greater availability of substances, and/or greater perceived parental acceptance of substance abuse.

It has been found that even if a father is abusing substances, his presence in the home may provide greater protection against the development of adolescent substance abuse than his absence (Tarter et al., 2001). In other words, adolescents who live only with their mothers are more likely to abuse substances than adolescents living with both parents, even if the father abuses substances. Ledoux et al. (2001) found that children from non-intact families, those who were not satisfied with their relationships with their father or mother and those who were less closely monitored, were more likely to be heavy
substance abusers than other students. Molina and Donovan (2008) found that children of parents with alcohol abuse or dependence have an increased chance of growing up to experience alcohol problems themselves and it has also been found that stress in the home is one of the many factors that contribute to substance abuse problem.

Parental monitoring is also an important determinant of teen substance abuse. Parental monitoring is defined as parents accurately knowing where their children are and who they are with. It also includes an active role for the child in the relationship, particularly how open the child is to sharing information with his or her parents (Kerr & Stattin, 2000). Monitoring varies by age, gender, ethnicity, and pubertal maturation, and the influence of monitoring decreases as adolescents get older. Better monitoring has been associated with later initiation and lower consumption of substances, suggesting that it is protective against substance abuse (Dishion et al., 1998; Chilcoat & Anthony, 1996; Lac & Crano, 2009).

If at home, a child sees his parents, elder brother and sisters or member of his extended family smoke, drink or take other substances, the child will likely follow these people. Family variables are important socio-cultural influences. If parents smoke, a child is four times more likely to do so than if no other member smokes (Cloninger, 1981). An estimated 11 million children under the age of 18 live in households with at least one alcoholic parent (Eigen & Rowden, 1996). Parent’s drinking behaviours and favorable attitudes towards drinking have been associated with adolescent’s initiating and continuing drinking (Tildesley & Hops, 1993; Andrews et al., 1993; Hawkins & Graham, 1997). The disruptive effects of parent’s substance abuse are far-reaching and go beyond the poor role modeling that is self-evident. Disruptive consequences of parental drinking include health, financial, and legal difficulties, marital discord and domestic violence; and an inability to promote self-esteem and social competence (Brown, 1989; Johnston, et al., 1991; Rivinus, 1991; Parker & Benson, 2004). Family and emotional disturbances precede substance abuse in the child. Lack of parental support, attachment, monitoring and communication have also been significantly related to substance abuse (Dick et al., 2000; Clark et al., 2004; Kostelecky & Kyle, 2005).
There are many cases where a child received good home training on the evils of substance abuse but on moving out of the home into school, the influence of his peers may cause such a child to indulge in substance abuse. So the foundation, which was built by home, is destroyed. Adolescence is a time for developing a person's sense of self-identity, a process that involves separating from parental attachments and values and establishing new social ties, values and ideals. In separating from parents, youth need to form other meaningful relationships. One of the changes that characterize adolescence is the development of an increasing independence. Part of this process involves looking outside the family for role models. Consequently, although parental guidance and approval remain important influences on adolescent behaviour, peer guidance and approval become increasingly powerful and valued. These shifts in influences shape numerous aspects of adolescent behaviour, including substance abuse.

Peer substance abuse and peer acceptance of substance abuse have also been associated with adolescent substance abuse. The adolescents are most often introduced or “turned on” to the various substances by a close friend (Hughes & Crawford, 1972; Blum & Richards, 1979). Evidence suggests that substance abuse by peer is a strong predictor of adolescent abuse of substance (Hawkins & Graham, 1997; Dick et al., 2000; Borsari & Carey, 2001). In a study of 1,700 adolescents assessed yearly from the 7th to the 9th grade, significant positive correlations (as indicated by correlation coefficients of 0.53–0.56) existed between the level of substance abuse in the respondent and the number of peers who abused substances (Wills et al., 2001). In fact, the relationship between these two variables was stronger than with any other factor measured (e.g., number of negative life events and coping style indices). According to Mason (2004), substance abusers may have started abusing substance because their friends do or because it seems cool, but they keep on abusing because they become addicted to it.

Fergusson et al. (2002) conducted a study to assess the influence of deviant peer affiliations on crime and substance abuse in adolescence. Data were used from a 21-year longitudinal study of health, development, and adjustment of a birth cohort of 1,265 New Zealand children. Annual assessments of deviant peer affiliations were obtained for the period from age 14–21 years, together with measures of psychosocial outcomes
including, violent crime, property crime alcohol abuse, cannabis abuse, and nicotine dependence. Affiliating with deviant peers was found to be significantly associated with each of these outcomes. These results suggest that deviant peer affiliations are associated with increased rates of a range of adjustment problems in adolescence/young adulthood with deviant peer affiliations being most influential at younger ages.

The society, which is the larger home of the young adolescents, is another factor, which causes substance abuse among adolescents. Society in which adolescents live heavily affects their attitudes and behaviour about substance abuse. Societal influences on substance abuse include: acceptance of substance abuse by society; availability (including price, number of outlets, and server practices); advertising and marketing both nationally and locally; and public policies regarding substance and enforcement of those policies. Adolescents are heavily influenced by television, movies, advertising. Alcohol advertising helps create an environment that suggests that alcohol consumption and over-consumption are normal activities, and contribute to increased alcohol consumption (Saffer, 1997). Research has shown that media and advertisements are perhaps the most significant predictor of adolescents' knowledge about beer, current drinking behaviour, and intentions to drink (Gentile et al., 2001). A study of 5th-through 11th-grade students found that those who are exposed to and enjoy alcohol advertisements have more favorable beliefs about drinking and say they are more likely to drink in the future and consume more alcohol (Chen & Grube, 2001). Cigarette advertisements still show smokers as attractive and hip, sophisticated and elegant, or rebellious and cool. Children and adolescents are easy targets for the tobacco industry. Pierce and his colleagues (2005) have examined the influence that movies have on young adolescents and have found that they are highly influenced by viewing their favourite movie stars smoking on film.

The primary or important factors that seem to affect increased or decreased substance abuse among adolescents are perceived risk, perceived social approval, and perceived availability (Lifrak et al., 1997). In some previous studies it was found that the more risky or less accepted a substance is thought to be; the less likely it will be abused by adolescents. Perceived availability is often associated with overall social approval, and so, a substance that is readily available is considered socially acceptable and will likely
increase in abuse. In some previous studies it was found that the levels of drinking and participation in binge drinking are higher when there are more alcohol outlets near campus (Chaloupka & Wechsler, 1996; Scribner, 2000). Lack of negative consequences, either formal (laws, enforcement) or informal (social disapproval) for those who engage in substance abuse or create problems while abusing, send the message that substance is accepted, as is intoxicated behaviour (including drunk driving, assault, vandalism and public nuisance). Adolescent substance abuse is inversely correlated with conventional behaviour and societal values (Kaminer, 1995; Beck & Treiman, 1996; Caudil & Kong, 2001; Ayman et al., 2007).

Whether the causes of adolescent substance abuse come from genetics, family, or community, it affects the individual abuser, his family, communities and the entire society. Substance abuse is mainly a health concern but over the past decades, it has escalated into one of the worst social ills. Substances can be harmful in a number of ways, both through immediate effects and through damage to health over time. The health effects of adolescent substance abuse can vary, depending on such factors as frequency of abuse, the kind of substance taken, how much is taken, how quickly it gets into the brain, what other substances are taken at the same time, the differences in body size and chemistry, the length of time the substances are abused, and other components (Chastain, 2006).

Substance abuse is a brain disease. Brain cells (i.e. neurons) communicate using specific chemicals called neurotransmitters. Neuronal communication takes place at the synapse, where cells make contact. Specialized synaptic receptors on the surface of neurons are sensitive to specific neurotransmitters. Substance abuse can change the activity of the neurotransmitters and cause neurons to respond (excitation) or to interfere with responding (inhibition) (Weiss & Porrino, 2002), and different substances can affect the functioning of different neurotransmitters (Nordahl et al., 2003).

Cigarette smoke reduces the delivery of oxygen to the developing person’s brain, so the resulting fetal hypoxia can cause irreversible intellectual damage (Collins et al., 1994). Long-term marijuana abuse may create changes in the brain that make a person
more at risk of becoming addicted to other substances (Gruber et al., 2003). Alcohol has a depressing effect on the activity of the central nervous system. Several neurological disorders have been found to be correlated with chronic heavy abuse of alcohol (Moselhy et al., 2001; Bates et al., 2002). Irreversible damage of the peripheral nervous system, brain damage, and psychiatric problems has been observed in chronic heavy abusers of alcohol (Oscar-Berman, 2000; Petrakis et al., 2002; Testino, 2008).

Ecstasy abuse has increased among adolescents. The substance may permanently damage brain cells called neurons, specifically the ones that deal with serotonin, a chemical that regulates emotions, memory, sleep, pain and other functions (Ricaurte & McCann, 2001). This substance may also damage the neurotransmitter dopamine (Cottler et al., 2001; Boyd et al., 2003). This can cause motor problems similar to Parkinson's disease. Symptoms begin with lack of coordination and tremors, and can eventually result in paralysis (Kraner, 2001; Leung & Cottler, 2008).

Adolescence is a transition time when the body is undergoing many significant changes, such as hormonal alterations and brain development. Exposing the brain to substances during this period may interrupt key processes of brain development, possibly leading to mild cognitive impairment as well as to a further escalation of substance abuse. Consuming large amounts of alcohol over a period of time can impair normal brain development in humans (Tapert et al., 2001; White et al., 2002). Deficits in retrieval of verbal and nonverbal information and in visuospatial functioning were evident in youths with histories of heavy drinking during early and middle adolescence (Brown et al., 2000; Crews & Hodge, 2007).

Substances also damage the physiological maturation of the young person's brain, even in the short term (Harvey & Kosofsky, 1998). Experts have indicated that any substance that interferes with alertness during working hours, or is abused as a major way of coping with stress slows down normal development (Changeux, 2001; Rosenbloom et al., 2003). Thus substances abused by adolescents to make themselves seen as more mature will, eventually make them less mature than other people of their age.
Substance abuse is also a factor in developing other health risks. Lung disease, cancer, stroke, HIV/AIDS, hepatitis, and cardiovascular disease can all be affected by substance abuse. Substance abuse may also play a role in problems with the respiratory and immune systems (Robert & Martin, 2001; Reneman et al., 2001; Connor, 2004). Some of these effects occur when substances are abused at high doses or after prolonged abuse, however, some may occur after just one use.

Guidot and Roman (2002) found that chronic alcohol abusers have an increased vulnerability to lung injury and respiratory problems. Alcohol affects many organs and systems in the body, but the liver is mainly in charge of detoxifying alcohol. Liver damage is the main health consideration for long-term heavy drinkers. The oxidation that occurs during alcohol metabolism may be toxic, destroying cell membranes and causing liver damage (Tuma & Casey, 2003). With prolonged heavy drinking, scarring occurs, and this scarring is typically followed by cirrhosis, or the accumulation of nonfunctional scar tissue in the liver. Mandayam (2004) found that cirrhosis has a significant association with heavy alcohol abuse. Heroin abuse can also lead to liver diseases (Tennant, 2001; Pogromov et al., 2002; Goran et al., 2005).

Smoke, or any partially burnt organic matter, is carcinogenic (cancer-causing). The damage that continuing smoker’s do to their lungs can take up to 20 years before its physical manifestation in lung cancer. Those who smoke marijuana face increased risks for respiratory problems and lung cancer (Kalant, 2004; Tashkin, 2005). Smoking is a factor in cancers of the mouth, larynx, stomach, pancreas, esophagus, kidney, bladder, and cervix (Newcomb & Carbone, 1992; Calle et al., 1994; Kuper et al., 2002; Cui et al., 2006). Given the same lifetime exposure to tobacco smoke, the risk for developing lung cancer is higher in women than men at every level of exposure, indicating that women are more susceptible to the carcinogens in tobacco (Byrd, 1992; Feng et al., 2006; Iodice et al., 2008).

A meta-analysis of more than 200 studies (Bagnardi et al., 2001) showed that drinking poses the strongest risk for cancer of the oral cavity, pharynx, esophagus, and larynx. In addition, alcohol also significantly raised the risk for cancers of the stomach,
colon, rectum, liver, breast, and ovaries. This meta-analysis confirmed the relationship between alcohol and breast cancer in women and also showed a strong dose-response relationship. According to Cargiulo (2007) high levels of alcohol consumption are correlated with an increased risk of cancer of the respiratory system, digestive system, liver, breast and ovaries.

Alcohol promotes the formation of fat deposits on heart muscle, which lowers the efficiency of the heart and contributes to cardiovascular disease (Hanna et al., 1992). Heavy chronic drinking doses have a direct and harmful effect on the cardiovascular system (Standridge et al., 2004). Smoking of marijuana also increases the chance of heart disease, stroke, atherosclerosis, and peripheral vascular disease (Mittleman, 2001; Hall et al., 2004). Cigarette smoking may cause as many as 75 percent of the cases of coronary heart disease. The longer a person smokes, the higher the risk of coronary heart disease. More than 80,000 people die each year from coronary heart diseases caused by smoking (Doll & Hill, 2004). Carbon monoxide in tobacco smoke exerts its negative effects by reducing the blood’s ability to carry oxygen. Inhalation of tobacco smoke causes several immediate responses within the heart and blood vessels. Within one minute the heart rate begins to rise, increasing by as much as 30 percent during the first 10 minutes of smoking (Willigendael et al., 2005). The stimulant effects of increased cocaine can endanger the cardiovascular system, increasing the risk of heart attack (Kloner & Rezkalla, 2003; Goldacre, 2008).

Cigarette smoke leads to bronchial congestion by increasing the production of mucus in the throat and lungs while simultaneously damaging the hairlike cilia that line the respiratory tract. This leads to higher-than-normal incidence rates of bronchitis, emphysema, and respiratory infections (Colditz, 2000). Benzoapyrene (BPDE), a chemical in cigarette smoke, has been identified a causative agent in lung cancer (Denissenko et al., 1996; Peto et al., 2000; Feng et al, 2006; Hung et al., 2008). BPDE damages a cancer suppressor gene, causing a mutation of lung tissue.

Substance abuse can also lead to other health risks. Chronic excessive intake of alcohol can cause destruction of the pancreas resulting in severe chronic pain, which may
progress to pancreatic cancer (Nair et al., 2007). Alcohol misuse is a leading cause of both acute pancreatitis and chronic pancreatitis (Frossard et al., 2008; Bachmann et al., 2008). Chronic pancreatitis often results in malabsorption problems and diabetes (Tattersall, 2008).

Long term alcohol abuse can lead to damage of the central nervous system and the peripheral nervous system resulting in loss of sexual desire and impotence in men (Taniguchi & Kaneko, 1997). Substance abuse can also lead to hormonal imbalance in abusers. It has been speculated that alcohol beverages may contain estrogen like compounds. In men, high levels of estrogen can lead to testicular failure and the development of feminine traits including development of male breasts, called gynecomastia (Gavaler, 1998; Weiss et al., 2005). In women, increased levels of estrogen due to excessive alcohol intake have been related to an increased risk of breast cancer (Boffetta & Hashibe, 2006). Excessive alcohol intake can result in hyperoestrogenisation (Fentiman et al., 2006). Smoking decreases the size of male testicles, which shrink to 8/10 of their full grown size (Michaels, 2008).

Although initial substance abuse might be voluntary, substances of abuse have been shown to alter gene expression and brain circuitry, which in turn affect human behaviour. Once substance abuse develops, these brain changes interfere with an individual’s ability to make voluntary decisions, leading to compulsive substance craving, seeking and abuse. Abuse of substances can lead to numerous psychiatric disorders, such as mood and anxiety disorders, sleep disorders, sexual dysfunction, delirium, dementia, amnestic disorder, and psychosis (Kandel et al., 2001; Cornelius, 2003). Dependence on substances is associated with several psychiatric problems, such as: oppositional defiant disorder, antisocial personality disorder (Karrol, 2002; Young et al., 2008), depression and anxiety (Windle & Windle, 2001; Marinkovic et al., 2009). Substances alter a teen’s personality and can cause unpredictable mood swings. This can lead to violence and hostility.

The more frequent alcohol abusers were nearly three times as likely to engage in antisocial behaviours such as stealing and vandalizing property, and more twice as likely
to be sexually active (Lammers et al., 2000). Approximately 30 to 50 percent of drinkers meet the criteria for major depression, 33 percent have a coexisting anxiety disorder (social phobias being most common in men, agoraphobia in women), 14 percent have antisocial personalities, and 36 percent are addicted to other substances (Julien, 2001).

Surveys and studies both of non-clinical and clinical samples consistently find a high prevalence of psychiatric diagnoses in substance abusing adolescents, primarily affective and conduct disorders. In one study of adolescents admitted for substance abuse treatment, 42% were given a diagnosis of conduct disorder, and 35% were given a diagnosis of major depressive disorder (DeMilio, 1989). Other studies (Kaminer, 1995) report relationships between substance abuse and conduct disorder and major depressive disorder as ranging between 44% and 62% for conduct disorder and 18% and 30% for major depressive disorder. Reports of triple diagnosis (substance abuse, conduct disorder, major depressive disorder) range from 12% to 38%. In some later studies comorbidity between substance abuse and major depressive disorder have also been found (Kalman et al., 2005; Hasin et al., 2005; Schuckit, 2007; Fergusson et al., 2009).

Substance abuse alters cognitive functioning (Gmel & Rhem, 2003). Substance induced cognitive impairments are especially destructive during adolescence, perhaps because even low doses can impair the judgment of young teens, who are already distracted by the ongoing psychological, physiological, and social challenges of puberty (Lowry et al., 1994; MacDonald et al., 1996; Dorn et al., 2006).

Poor attention and concentration processes have been reported in individuals at risk for substance abuse (Martin et al., 1994; Moss et al., 1995; Najam, 1997). An alternative to extensive psychological testing was examined by Fals-Stewart (1997). The Neurobehavioural Cognitive Status Examination provides information about examinee's level of consciousness, orientation, and attention and functioning in five major areas, including language, memory, and higher level reasoning. This assessment was administered to 51 patients after they had been in a residential substance abuse program for 3 weeks. Results were compared to a neuropsychological screening battery that has been shown to reliably identify cognitive impairment in substance-abusing patients.
Mann et al. (1999) investigated the pattern of cognitive deficits in a group of 49 alcohol-dependents, and found that alcohol has detrimental effects on cognitive functioning, particularly for memory of verbal material. It was also noted that the alcohol-dependent men scored significantly lower than the controls on five of twelve of the neuropsychological measures. Substance abuse does affect short-term memory and can impact long-term memory, or the ability to retain new information (Atkinson, 2000). In a study it was found that students with the highest levels of substance abuse as teenagers got the lowest scores on tests of memory and learning (Monique et al., 2003).

Small amounts of substances may result in improved performance under certain circumstances, but performance on tasks requiring selective attention, psychomotor coordination, and abstract thinking is often impaired by moderate amount of substances (Forney & Harger, 1965; Rosselli & Ardila, 1996). Heavy substance abuse is usually accompanied by one or more of the following symptoms: disorientation, slurred speech, impatient in vision, and poor muscular control (Soetens et al., 1995; Bolla et al., 2000). The short-term effects of marijuana include: distorted perception (sights, sounds, time, touch) (Jones, 1981; Ogborne, 2000); trouble with thinking and problem solving (Pope & Yurgelun, 1996; Pope et al., 2001); problems with memory and learning (Harder & Reitbrock, 1997; Tjepkema, 2004); loss of motor coordination. An altered and enhanced perception of visual, auditory, tactile, and gustatory stimuli is described by abusers (Plancherel et al., 2005). The usage of tobacco also creates cognitive dysfunction, which include brain shrinkage (cerebral atrophy) (Brody et al., 2004; Knishkowy & Amitai, 2005), reduced memory and cognitive abilities in adolescent smokers (Jacobsen, 2005) and decline in cognitive abilities (Anstey et al., 2007; Panza et al., 2008).

An “amotivational syndrome” has been reported, in which chronic substance abusers become apathetic and are unable to pursue useful goals. In predisposed young people substance abuse contributes to an impairment of goal-directed activity and ambition (Marczinski & Fillmore, 2005). In addition, brain imaging studies show that repeated heavy abuse of alcohol, stimulants, and other substances disrupts frontal lobe activity, which impairs decision making and planning and lowers a person’s normal threshold for violence (Oscar-Berman & Marinkovic, 2003; Panza et al., 2008).
In addition to direct physiological and psychological effects, substance abuse is associated with several indirect effects. Most of the indirect effects arise from substance’s effects on aggression, judgment, and attention. The most frequent and serious indirect effect of substance abuse is the increased likelihood of unintentional injuries (Rehm et al., 2003). According to Kalant (2004) substance abuse poses health risks, the most prominent of which is its increased risk of injury. Lane et al. (2005) found that under the influence of marijuana, people tend to make riskier decisions.

Substance abuse increases the chances of being a victim of crime (Koss & Dinero, 1989; Norris, 1994). About half of all sexual assault victims report that they were drinking alcohol at the time of the assault (Abbey et al., 1998). Research suggests that alcohol abuse by the offender, the victim or both, increase the likelihood of sexual assault by a male acquaintance (Tim & Cummings, 2001). Substance abusers are apt to behave irresponsibly. This essentially translates to undertaking dangerous sexual activities and making wrong decisions that are otherwise prevented by sobriety. Irresponsible sexual activities can lead to the spread of sexually transmitted diseases, HIV/AIDS (Gerry, 1992; Grant et al., 2005).

Substance abuse is also one of the fastest ways to spread the HIV virus, through the sharing of needles and other drug paraphernalia. It is also spread through just abusing substances, because of the effect of substances on a person's judgment. This can cause people to make bad decisions and participate in dangerous sexual activities with an infected individual. According to the National institute on Drug Abuse (2003), substance abuse is now the single largest factor in the spread of HIV in the United States. National Institute on Drug Abuse (2004) states that from 1998 to 2003, an estimated 240,000+ AIDS diagnoses were due to the use of injecting substances.

Substance abuse plays a significant role in adolescent deaths involving suicide and homicide. Two early studies (Wolfgang, 1957; Mayfield, 1976) indicated that either the victim or the perpetrator, or both, had been drinking in two-thirds of the homicides studied. Later research (Martin, 2001) confirmed this relationship and extended the findings to assaults, including sexual assaults and incidents of domestic violence.
Substance abuse among adolescents has also been associated with considering, planning, attempting, and completing suicide (Chignon, 1998). Substance abuse is associated with a variety of negative consequences, including increased risk of serious substance abuse later in life, school failure, and poor judgment which may put teens at risk for accidents, violence, and suicide (Suominen et al., 2000). Substance abuse interacts with conditions such as depression and stress to contribute to suicide, the second leading cause of death among adolescents (Aron et al., 2004).

A study of people hospitalized for suicide attempts found that those who were alcoholics were 75 times more likely to go on to successfully commit suicide than non-alcoholic suicide attempters (Frank, 2000). In one study, 37 percent of eighth grade females who drank heavily reported attempting suicide, compared with 11 percent who did not drink (Kattie, 2002). In the general alcoholic population the increased risk of suicide compared to the general public is 5 - 20 times greater. About 15 percent of alcoholics commit suicide. Abuse of other substances is also associated with an increased risk of suicide. About 33 percent of suicides in the under 35s are due to alcohol or other substance misuse (Appleby et al., 2004). Hallucinogens are particularly dangerous because the effects are so unpredictable. They can cause violent behaviour in some and suicidal tendencies in others (Kelly et al., 2004; Catherine et al., 2006). As memory, perception, and judgment are clouded under the influence, abusers are at risk of severe injuries, overdose, and death from drowning, burns, falls, and car accidents.

At the worst extreme, substance abuse may lead to death of the person who has been abusing. Substance abuse is the single most preventable cause of illness, disability, and premature death in much of the world. The death rate for smokers is 70 percent higher than for nonsmokers (Julien, 2001). Each time a person lights up, 4000 different chemical compounds are released. It is these chemicals that while they provide pleasure and energy-cause disease and eventually death. Over-consumption of alcohol is one of the leading preventable causes of death worldwide (Lopez et al., 2006). One study links alcohol to 1 in every 25 deaths worldwide and that 5% of years lived with disability are attributable to alcohol consumption (Rehm, 2009).
Substance abuse does not only affect the individual himself but everyone around him. Ultimately, the society is largely affected by his predisposition for substance abuse even when he’s just one person. It is a social ill because practically every country in the world is compelled to come up with legislation, policies and other ideas geared at addressing the problem. Most experts agree that substance abuse has a ripple effect. It brings discord not only into the home but to the society as well.

When a teenager begins to abuse substance, it isn't just the physical body that suffers. Everyone around the teen also suffers, particularly the family (Le Poire, 2004). When a teen begins to abuse substances, the entire atmosphere of the household changes. Adolescent substance abuse affects the family unit as adolescents become more hostile, and their decision-making becomes greatly impaired. They set bad examples for any younger siblings and create much more hostility to the family as a whole. In cases where the younger siblings admire and respect the teen, the younger siblings may be more inclined to abuse substances as well. Risky behaviours of younger siblings are often increased when they are subject to their older sibling's risky behaviours (Kristi et al., 2003; Averett et al., 2009).

Substance abuse negatively affects school performance of teens. Lost interest in studies and extra curricular activities, drop in grades, discipline problems, stressful relations with teachers etc. are some major manifestations of teen substance abuse (Hawkins et al., 1992). Research suggests at least two potential mechanisms are responsible for it. First, substance abuse itself may impair cognitive development which, in turn, reduces academic achievement and disrupts academic progression. Studies have shown that adolescent substance abuse can lead to problems with working memory and attention due to changes in adolescent brain activity (Monti et al., 2005). In turn, these memory and attention problems may lead to decrease in academic performance and engagement in school, and ultimately increase risk for school problems and dropout (Paschall & Freisthler, 2003; Lyn, 2006).

Substance abuse is related to many school-related outcomes that have a strong behavioural and social component. That is, outcomes such as school grades, attendance,
school completion and dropout are influenced not only by intellectual functioning, but also by motivation, organizational skills and social/behavioural skills (Lammers et al., 2000; Godley, 2006). In other words, the effects of substance abuse on academic outcomes may have motivational, social and behavioural components in addition to any effects on cognition and cognitive development (Engberg & Morral, 2006). Thus, negative academic outcomes may be due to both the direct effect of substance abuse on cognitive skills as well as the constellation of motivational, social and behavioural risk factors associated with substance abuse in adolescence (King et al., 2006).

Substance abuse continues to be a major concern for society. Not only does substance abuse affect the abuser and his or her loved ones, but also society at large with rippling effects. With the rising number of substance abuse cases and the decreasing average age of abusers, society’s problem with substance abuse is gravely serious. Because substance abuse is a disease of the brain, which is the center of judgment and behavioural patterns, substance abusers have a disturbingly high propensity to commit unlawful and immoral acts to obtain these substances. Moreover, once under the influence of substances, the abuser’s inhibitions are drastically lowered with a sense of indestructibility, which leads to aggressive and irresponsible behaviour (Orwin et al., 2004). Excessive substance abuse has been associated with a variety of other social problems, including difficulties in interpersonal relationships, school failure, and various types of violence, including homicides, assault, robbery, suicides, and familial abuse (Vajda & Steinback, 2001; Sher, 2004). Substance abuse causes the government to spend a lot of money that could otherwise be spent on education or other channels. Estimates of the economic costs of alcohol abuse, collected by the World Health Organization, vary from one to six per cent of a country's GDP (World Health Organization, 2004). Substance abuse, therefore, is a problem that has to be fully addressed.

Prevention of substance abuse is as important as its treatment. Instead of waiting for our youth to become substance dependent or to be involved in an accident or crime involving substance abuse we should be taking proactive measures to stop it happening. Whether the causes of teen substance abuse come from genetics, family, or community, it is important to talk with youngsters about substance abuse before it happens and seek
advice for teens, who have started experimenting. Because many psychoactive substances pose a serious health threat, considerable efforts have been made to deter people from abusing them.

Many prevention efforts have been aimed at adolescents because substance abuse in adulthood often follows experimentation in the teens and earlier. According to Ezekoye et al. (1986) the three major approaches to prevention of psychoactive substance abuse are school-based, family-focused, and community-based prevention programmes. Schools assume a primary role in substance abuse education, prevention, and early identification. Effective school-based substance education programmes that target all students at a particular grade level or series of grade levels are seen as an ideal prevention intervention. According to Faggiano et al. (2005) schools are appropriate settings for substance prevention programmes for three reasons: (1) prevention must focus on children before their beliefs and expectations about substance abuse are established; (2) schools offer the most systematic way of reaching young people; and (3) schools can promote a broad spectrum of substance-related educational policies.

Many health promotion efforts to prevent substance abuse have been directed at children and adolescents through school-based educational programmes and campaigns in the mass media. Early campaigns which focused on providing children with information about the dangers of substance abuse generally met with little success. School-based programmes include cognitive, affective-interpersonal, alternative, behavioural-skills-training, and comprehensive-school-climate approaches. Educational and cognitive programmes tend to increase substance knowledge without decreasing or delaying the onset of abuse (Moskowitz, 1983; Schinke et al., 1991). Programmes, usually conducted in schools, have been directed at enhancing the young adolescent’s self-esteem, teaching social skills, and encouraging the young person to say no to peer pressure (Hansen, 1993; Jansen et al., 1996).

Prevention programmes in schools focus on children’s social and academic skills, including enhancing peer relationships, self-control, coping, and substance-refusal skills. If possible, school-based prevention programmes should be integrated into the school’s
academic program, because school failure is strongly associated with substance abuse (Tobler et al., 2000). Integrated programmes strengthen students’ bonding to school and reduce their likelihood of dropping out. Most school prevention materials include information about correcting the misperception that many students are abusing substances. Other types of interventions include school-wide programmes that affect the school environment as a whole (Dishion et al., 2002).

School-based behavioural prevention programmes consist of the social influences approach and personal-social skills training. The social influences approach (Evans et al., 1978) focuses on influences that promote substance abuse (e.g., parental, peer, and media pressure) and promotes coping skills to resist these influences. The personal-social skills training approach builds on the principles of the social influences model while helping students to acquire additional generic personal and social skills (Botvin & Wills, 1985). Both approaches are effective, particularly when they are combined (Botvin, 1986).

More recent programmes have often employed young people to inform their peers about the negative effects of substance abuse, and they have focused more on immediate than on long-term costs. Teens have also been provided with suggestions about how to resist peer pressure towards substance abuse. The goal of this programme was to build skills in students for resisting peer and other forms of social pressure (Hansen & Graham, 1991). Students were taught a variety of techniques for identifying and resisting social pressure. They were taught skills for being assertive in peer interactions and practiced these skills through role played scenarios. By modeling resistance tactics (i.e. showing how the offer of a substance may be rejected), such programmes hope to inoculate children against dangerous influences.

Botvin et al. (2003) examined the effectiveness of a substance abuse prevention programme in preventing tobacco and alcohol abuse among elementary school students in grades three through six. The prevention programme teaches social resistance skills and general personal and social competence skills. Results showed that intervention students reported less smoking in the past year, higher anti-drinking attitudes, increased substance abuse knowledge and skills-related knowledge, lower normative expectations
for smoking and alcohol abuse, and higher self-esteem at the posttest assessment, relative to control students.

Family focused prevention strategies involve parent training and family skills training (Forehand & McMahon, 1982; Patterson, 1982), various forms of family therapy and family self help groups. In a three-pronged Strengthening Families Programme, Kumpfer & DeMarsh (1986) found parent training, children’s social skills training, and family skills training successful in the children’s risk factors. In combination, these three components decreased the abuse of substance in older children, and, despite varying degrees of dysfunction, most parents developed more effective parenting skills that favorably affected risk factors for their children.

Family-based prevention programmes should enhance family bonding and relationships and include parenting skills; practice in developing, discussing, and enforcing family policies on substance abuse; and training in substance education and information (Ashery et al., 1998). Family bonding is the bedrock of the relationship between parents and children. Bonding can be strengthened through skills training on parent supportiveness of children, parent-child communication, and parental involvement (Kosterman et al., 2001). Parental monitoring and supervision are critical for substance abuse prevention. These skills can be enhanced with training on rule-setting; techniques for monitoring activities; praise for appropriate behaviour; and moderate, consistent discipline that enforces defined family rules (Kosterman et al., 1997, 2001). Parental monitoring moderates the association between pubertal timing and trying alcohol (Westling et al., 2008).

Substance education and information for parents or caregivers reinforces what children are learning about the harmful effects of substances and opens opportunities for family discussions about the abuse of legal and illegal substances (Bauman, 2001). Brief, family-focused interventions for the general population can positively change specific parenting behaviour that can reduce later risks of substance abuse (Spoth et al., 2002; Guyll et al., 2004a). Research confirms the benefits of parents providing consistent rules and discipline, talking to children about substances, monitoring their activities, getting to
know their friends, understanding their problems and concerns, and being involved in their learning (Dusenburg, 2000; Catalano et al., 2003; Brody et al., 2006).

The provision of reasonable, rewarding educational, vocational, and recreational alternatives to those at risk should probably be of prime concern. There is no need to belabor the obvious role of the family in substance abuse prevention in the young. Families must appreciate the impact of their own behaviours, particularly with respect to substance abuse, on their children (Millman & Khuri, 1973; Jacobson & Zinberg, 1975). According to the Partnership for a Substance Free America (2003), children whose parents speak to them often about substances have up to a 50 percent less chance of abusing substances than do youngsters whose parents don't talk to them.

Community-based programmes are aimed at the media and at parent and community groups. The focus is on prevention and education (Kumpfer, 1989). Evidence exists that the positive effects of these community sponsored media campaigns are offset by the frequently encountered commercial images of socially condoned substance abuse seen in the press and on television (Atkin et al., 1984; Fisher et al., 1991). Community prevention programmes that combine two or more effective programmes, such as family-based and school-based programmes, can be more effective than a single programme alone (Battistich et al., 1997). Community prevention programmes reaching populations in multiple settings—for example, schools, clubs, faith-based organizations, and the media—are most effective when they present consistent, community-wide messages in each setting (Chou, 1998). When communities adapt programmes to match their needs, community norms, or differing cultural requirements, they should retain core elements of the original research-based intervention (Spoth et al., 2002b) which include: Structure (how the program is organized and constructed); Content (the information, skills, and strategies of the programme); and Delivery (how the program is adapted, implemented, and evaluated). Prevention programmes aimed at general populations at key transition points, such as the transition to middle school, can produce beneficial effects even among high-risk families and children. Such interventions do not single out risk populations and, therefore, reduce labeling and promote bonding to school and community (Botvin et al., 1995; Wilson & Kolander, 2003).
One important strategy for preventing the abuse of substances is to limit their availability. Most societies have passed laws which ban the sale and possession of certain substances, and continual efforts are made to curtail the growing of source plants, and the manufacture and distribution of illicit substances (Williams & Lillis, 1985). The other major prevention strategy involves making substances less attractive to potential abusers. This may be attempted by attaching heavy penalties to substance possession and substance abuse. The idea is that if legal sanctions increase the potential costs associated with substance abuse, some people will evaluate substance abuse as too costly (‘not worth it’) and will not indulge (Coate & Grossman, 1988; Moskowitz, 1989; Manning et al., 1995). However, the effectiveness of this tactic may depend on a (perceived) high rate of detection, and for some potential substance abusers the fact that behaviour is illegal, and the slight threat of discovery and punishment, will actually add to the mystique and excitement of substance abuse. Another tactic used to make substance abuse less attractive involves informing people about the health dangers associated with the abuse of particular substances. Most health promotion programmes have employed this strategy. The rationale is quite simple. If people know about the dangers associated with abusing psychoactive substances, it is argued, they will respond rationally and avoid abusing them (Mackinnon, 1995; Wright et al., 2006).

Public health educators have also used the mass media as a primary vehicle for messages against substance abuse. The mass media have been used in many different types of campaigns and programmes. Television, radio, newspapers, posters, brochures—all of these may reach a large number of persons. If pro-substance abuse advertising is effective, anti-substance abuse advertising can be effective as well. Siegel and Biener (2000) found that antismoking media campaigns are effective with young adolescents, ages 12 to 13.

The religious bodies have a role to play in emphasizing the teaching of moral values in the home and the insistence on the fear of God as the best way to keeping one of evil acts. The government should stop the sale of hard substances in the market. For a better country, a better crop of youths who know and avoid those dangerous substances must be built up to carry the touch of our country into tomorrow.
Prevention programmes are effective in minimizing initiation and experimentation of substance abuse, but not in eradicating it. Although, efforts on school, family and community level have been done and still continue for preventing substance abuse but complete remission does not seem possible and the youth is indulging in substance abuse day by day. Therefore, it is necessary to adopt effective treatment approaches to cure this social ill.

Finding the most appropriate treatment of substance abuse for a specific child or adolescent is often a difficult task, limited in large part by available options. The development of an appropriate treatment plan depends upon the accurate characterization of the adolescent, including his personality characteristics, psychopathology, social and family milieu, as well as the pattern and extent of substance abuse. Immediate dangers must be assessed rapidly. According to Goldfried and Davison (1976), the choice of technique is based on the intrinsic nature of the problem itself and on clinical experience. Two goals continue to underline the treatment of adolescent substance abuse. The first is maintenance of abstinence, which is attainable over the short term. The second involves addressing the personal and familial dysfunctions that underline or accompany substance abuse. This often requires intensive and comprehensive treatment services. Effective treatment programmes typically incorporate many components, each directed to a particular aspect of the illness and its consequences. Substance abuse treatment must help the individual stop abusing substances, maintain a substance-free lifestyle, and achieve productive functioning in the family, at work, and in society (Institute of Medicine, 1990).

Many diverse approaches have been developed for the treatment of substance abuse. This is partly because different substances, and different patterns of substance abuse, require different forms of intervention. Some treatment programmes focus directly on the substance abuse, while others take a much broader approach and principally address psychological or lifestyle issues that may have helped initially to make the substance attractive or which may be playing a part in maintaining the substance abuse. Most programmes begin with a detailed assessment of substance related attitudes and behaviours and an examination of the person's current lifestyle. The various strategies
used to bring about change include controlled detoxification, drug prescription or medication, various counseling approaches and many different forms of social intervention. Many programmes combine a number of these strategies.

People who are physiologically dependent on substances, biological treatment often begin with detoxification. Detoxification is one of the most widely used biological treatments of substance abuse. It is based on the principle that illness can be caused by the accumulation of toxic substances (toxins) in the body. Detoxification involves stopping all supplies of the substance on which the person is physically dependent and then caring for the person through the period of withdrawal. Some treatment programmes use medicines that neutralize the effects of the substance. Medications can be used to help wean individuals off a substance, to reduce their desire for a substance. Although many substance-dependent people can withstand withdrawal symptoms with emotional support, for other people the symptoms are so severe that medications may be prescribed to reduce these symptoms (Ross, 1990; Schuckit, 1996; O’Brien & McKay, 1998; Soyka & De Vry, 2000). For people who are alcohol dependent, a benzodiazepine, which has depressant effects similar to those of alcohol, can be prescribed to reduce symptoms of tremor and anxiety, decrease pulse and respiration rates, and stabilize blood pressure (Ebell, 2006). The dosage of the substance is decreased each day so that a patient withdraws from the alcohol slowly but does not become dependent on the benzodiazepine.

Antagonist substances block or change the effects of the addictive substance, reducing the desire of the addict for the substance (Goeders, 2001). Naltrexone and naloxone are opiates antagonists—they block the effects of opiates like heroin. Gradual withdrawal from heroin can be achieved with the help of a synthetic substance known as methadone (Strain et al., 1993; Eap et al., 1999; Joseph et al., 2000; Donny et al., 2005). This is an opiate itself, but it has less potent and longer-lasting effects than heroin when taken orally. The heroin dependent will take methadone while discontinuing abuse of heroin. The methadone will help reduce the extreme negative withdrawal symptoms from heroin (Connock, 2007; Schwirtz, 2008). Individuals who take heroin while on methadone do not experience the intense psychological effects of heroin because
methadone blocks receptors for heroin. While the goal of treatment is eventually to withdraw individuals from methadone, some patients continue to use methadone for years, under physician’s care rather than taper off their use.

Psychoanalysts view substance abuse and dependence as symptomatic of conflicts that are rooted in childhood experiences. Focusing on substance abuse or dependence per se is seen to offer, at most, a superficial type of therapy. It is assumed that if the underlying conflicts are resolved, abusive behaviour will also subside as more mature forms of gratification are sought (Khantzian, 1986; Jerry, 1997). Traditional psychoanalysts also assume that programmes directed solely at abusive behaviour will be of limited benefit because they fail to address the underlying psychological causes of abuse (Leeds & Morgenstern, 1996; Jaffe, 2002).

Behaviour therapy is an effective treatment approach for the reduction of substance abuse. Behaviour therapy relies largely upon experimentally derived principles of psychology, especially learning principles, to help change maladaptive behaviour. The fundamental tenet of behaviour therapy is that behaviour disorders are learned behaviours that are maladaptive in the life of the individual; they are not caused by unconscious conflict, lack of insight, lack of positive regard, or any other such concept. In other words, a maladaptive behaviour (e.g., a symptom) is itself the disorder, and it is not a manifestation of a more basic, underlying disturbance. All behaviour is lawful, and unadaptive behaviour is learned and unlearned according to the same principles as adaptive behaviour.

Behaviour therapy involves primarily the application of principles derived from research in experimental and social psychology for the alleviation of human suffering and the enhancement of human functioning. Behaviour therapy emphasizes a systematic evaluation of the effectiveness of these applications. Behaviour therapy involves environmental change and social interaction rather than the direct alteration of bodily processes by biological procedures. The aim is primarily educational. In the conduct of behaviour therapy, a contractual agreement is usually negotiated, in which mutually
agreeable goals and procedures are specified. Responsible practitioners using behavioural approaches are guided by generally accepted ethical principles (Franks & Wilson, 1975).

Martin and Pear (2007) mentioned following seven characteristics of behaviour therapy – (i) there is a strong emphasis on defining problems in terms of behaviour that can be measured in some way; (ii) the treatment techniques are ways of altering an individual’s current environment to help that individual function more fully; (iii) the methods are rationales that can be described precisely; (iv) the techniques are often applied in everyday life; (v) the techniques are based largely on principles of learning—specially operant conditioning and respondent conditioning; (vi) there is a strong emphasis on scientific demonstration that a particular technique was responsible for a particular behaviour change; (vii) there is a strong emphasis on accountability for everyone involved in a behaviour modification program.

Behavioural approaches to substance abuse and dependence focus on modifying abusive and dependent behaviour patterns. The issue to many behaviourally oriented therapists is not whether substance abuse and dependence are disease but whether or not abusers can learn to change their behaviour when they are faced with temptation or cravings. Behaviour therapy refers to a range of treatments and techniques which are used to change an individual’s maladaptive responses to specific situations. Behavioural treatments based on aversive classical conditioning are sometimes used to treat substance dependence and abuse, either alone or in combination with biological or other psychological therapies. In aversive conditioning, painful or aversive stimuli are paired with substance abuse or abuse related stimuli to make abuse less appealing. In the case of problem drinking, tastes of different alcoholic beverages are usually paired with chemically induced nausea and vomiting or with electric shock (Wilson, 1991; Miller & Hersen, 2006). As a consequence, alcohol may come to elicit an aversive conditioned response, such as fear or nausea that inhibits drinking. Avoidance of alcohol is then negatively reinforced by relief from aversive responses.

In one large scale study of aversive conditioning in the treatment of alcoholism, 63% of the 685 people treated remained abstinent for one year afterward, and about a
third remained abstinent for at least three years (Wiens & Menustik, 1983). A review article concluded there was consistent evidence that chemical aversion treatment (pairing alcohol ingestion with emetically induced nausea) produced one-year abstinence rates of approximately 60% (Elkins, 1991). A 60% abstinence rate is considered reasonably successful, given the recalcitrance of alcoholism to treatment. Studies have shown such aversive conditioning to be effective in reducing substance abuse (Rice & Schoenfeld, 2006; Nathan, 2006).

Aversive conditioning for smoking aims at making once pleasurable cigarette smoke aversive through some form of overexposure. In rapid smoking, smokers puff at a faster than usual rate, about once every six seconds until they begin to feel nauseated. The nausea acts as an unconditioned stimulus that becomes paired with smoking-related conditioned stimuli such as the taste and aroma of cigarette smoke, the feel of the cigarette in the hand, and so on. After repeated pairing, cigarette smoke becomes aversive and smokers are motivated to avert it by quitting. Generally speaking, the long-term results of rapid smoking and other forms of aversive conditioning in maintaining abstinence from smoking have ranged from poor to modestly successful (Brandon et al., 1987; Glasgow & Lichtenstein, 1987; Sateia, 1987; Taylor & Killen, 1991; Houtsmuller & Stitzer, 1999; Perkins et al., 2006).

Another behavioural therapy is covert sensitization in which substance abusers use imagery to create associations between thoughts of substance abuse and thoughts of highly unpleasant consequences of substance abuse (Cautela & Kearney, 1986; Cautela & Kearney, 1993). Covert sensitization is a form of aversive conditioning that employs imaginal rather than actual aversive stimuli (Rea, 2003). Patients are instructed to imagine becoming nauseous and vomiting when taking a drink or puffing a cigarette. The scenes typically end with rejection of the substance and feelings of relief.

Contingency management is also an effective behavioural approach. Contingency management treatments are based upon a simple behavioural principle - if a behaviour is reinforced or rewarded, it is more likely to occur in the future. These behavioural principles are used in everyday life. For example, parents use allowances or dessert to
encourage their children to make their beds or eat their dinners. Employers use salaries and bonuses to reward good job performance. In the case of substance abuse treatment, substance abstinence, as well as other behaviours consistent with a substance-free lifestyle, can be reinforced using these principles. The premise behind contingency management is to utilize these and other reinforcement procedures systematically to modify behaviours of substance abusers in a positive and supportive manner. Studies have shown improved outcomes when contingency management techniques are applied to patients dependent on benzodiazepines (Stitzer et al., 1992), opiates (Bickel et al., 1997), cigarettes (Roll & Higgins, 2000), cocaine (Higgins et al., 1994; Higgins et al., 2000), alcohol (Petry et al., 2002), marijuana (Budney et al., 20001), and multiple substances (Stitzer & Petry, 2006; Lussier et al., 2006).

Another behaviour therapy that is effective for the treatment of substance abuse is behaviour self-control training (BSCT). BSCT facilitates improved self-control. In BSCT, patients are taught to monitor their substance abuse behaviour, set ingestion limits, use strategies to control their substance abuse, reward successes in achieving goals, analyze and learn from failed efforts, and develop alternative coping skills for achieving some of the benefits previously derived from substance abuse (VanBilson, 1986). BSCT is a multi-component behavioural intervention for teaching skills that target controlled substance abuse (Hester, 1995). Overall, BSCT employs a range of behavioural strategies (e.g. self-monitoring, rate control etc.) to regulate both substance abuse behaviour and urges (Walters, 2000). BSCT appears to be a promising approach for curtailing substance abuse and its related problems (Wang et al., 2003; Carey & Maisto, 2005). Pokhrel et al. (2007) examined associations between adolescent self-control and substance outcomes (cigarette use, alcohol use, marijuana use, hard drug use, and problem drug use) among adolescents from regular and continuation high schools. They found that lack of self-control in adolescents seems to result in increased substance abuse. Thus, they emphasized that self-control is an alterable cognitive-behavioural attribute which can be improved through training-based interventions in order to prevent substance abuse among adolescents.
For the effective treatment of substance abuse management of anxiety and stress is important because anxiety and stress are the important causal factors of initiation and continuation of substance abuse. Progressive muscle relaxation (JPMR) is a behavioural technique for reducing anxiety and stress by alternately tensing and relaxing the muscles. It was developed by Jacobson in 1938. In studies of people with substance abuse, progressive relaxation training has been shown to help reduce tension and anxiety. It has been found that between 10-40% of alcoholics suffer panic-related anxiety disorder, and 10-20% of anxiety disorder patients abuse alcohol or other substances (Fuentes & Cox, 1997). Relaxation and self-management techniques significantly reduce anxiety and tension in alcoholics (Zuroff & Schwartz, 1978; Bernstein et al., 2000). Relaxation seems to be highly recommended for anxious alcoholics (Poppen, 1998; Esch, 2003) who drink to avoid experiencing stress or in response to stress. Relaxation training effects could substitute for alcohol effects.

Wynd (1992) found that the use of relaxation imagery in smoking cessation programmes to be effective. The study targeted smokers aged 18-60, and showed quit rates to be 69%, and abstinence rates of 55%. These findings suggest that relaxation imagery can be a useful tool to deter smoking. Sood et al. (2006) found effectiveness of complementary and alternative medicine, i.e. hypnosis, relaxation, acupuncture, and meditation, for tobacco cessation. Relaxation training is effective for the treatment of substance abuse and it is also effective in controlling relapse of substance abuse.

Any strategy or treatment applied in advance to prevent future symptoms are known as relapse prevention. Relapse, broadly defined as an act or instance of backsliding, worsening, or subsiding, may be the common denominator in the outcome of treatments designed to address psychological problems and health-related behaviours especially those related to substance abuse. Relapse prevention training is a cognitive-behavioural approach to the treatment of addictive behaviours that specifically addresses the nature of the relapse process and suggests coping strategies useful in maintaining change (Marlatt & Gordon, 1985; Parks et al., 2001). Relapse Prevention, which provides a systematic way (a) of assessing the full range of antecedents and consequences of
substance abuse that influence an individual’s relapse potential, and (b) of devising interventions to deal with them that are likely to reduce the probability of a future relapse.

Such training helps substance abusers cope with cravings and high-risk situations to prevent lapses—that is, slips—from becoming full-blown relapses (Marlatt & Gordon, 1985). High risk situations include negative mood states, such as depression, anger, or anxiety (Hodgins, 1995; Willinger, 2002); interpersonal conflicts (e.g. family problems or conflicts with parents or teachers) (Wanigaratne et al., 1995; Grusser et al., 2007); and socially conducive situations such as “the guys getting together”. Participants learn to cope with these situations, by learning self-relaxation skills to counter anxiety and learning to resist social pressures to resume abuse of the substance.

Relapse prevention approach also enhances social support by training substance abuser’s family members or parents to be more helpful in maintaining abstinence (McIntyre-Kingsolver et al., 1986; Lipps, 1999). Social support plays an important role in maintaining a healthy lifestyle. Individuals who are socially isolated tend to abuse substances (James, 2001). Conversely, substance abusers tend to have more difficulty initiating and maintaining relationships due to inappropriate social behaviour. Everyone in the support system should be knowledgeable about the person’s goals, what that person is like when he or she is doing well, and warning signs that the person may be on a path toward relapse (Markowitz et al., 2008). The support system agrees on who will take what role in encouraging, confronting, or otherwise caring for that person. Self-help groups such as Alcoholics Anonymous, Narcotics Anonymous, and Cocaine Anonymous are often examples of artificially created support systems (Toumbourou et al., 2002; Kelly & Myers, 2007; Laudet, 2008). These groups promote abstinence and provide members an opportunity to discuss their feelings and experiences in a supportive group setting. More experienced group members support newer members during periods of crisis or potential relapse.

Thus, it can be said that substance abuse is a plague to our society. Review of literature suggests that numerous biological, psychological, and socio-cultural factors play an important role in initiation and continuation of substance abuse. Substance abuse
affects not only the individual abuser, but it also affects his/her family and society at large. Therefore, problem of substance abuse has to be fully addressed and effectively treated. BSCT is an effective behavioural treatment approach for the reduction of substance abuse. But, when abusers stop abusing substance, many behaviours arise as anxiety, stress, tension etc. and they start abusing substance again. To avoid these problems and to check the re-occurrence of substance abuse JPMR can be effectively used. The role of behaviour modification based treatment of substance abuse is to be still highlighted. The present research is an effort in this direction.