Chapter II

ADDICTION: A CRITICAL ANALYSIS

2.1 ALCOHOLISM

Day by day alcohol is becoming increasingly available and is used widely. Addiction has become really a curse upon human beings. It affects not only the alcoholics but also others directly or indirectly. For common people it is a weakness of character. A moral theologian may see it as a matter of vice while sociologists see it as a social problem. It is considered a sin by religious people, and as a crime by law enforcement groups. The psychiatrist can describe it as a personality disorder problem. The alcoholics anonymous groups and the treatment centres call them patients and alcoholism is handled as a disease.

2.1.1 Historical Aspect

Alcohol menace is as old as human history. The history of Babylonia, Sumeria, Egypt, China, India etc. gave ample evidence for the use and abuse of alcohol. In the Gilgamesh epic, one of the oldest mythologies of the world, it is stated that the powers of the evil fought with the powers of good in bloody combat for control of earth. The powers of good succeeded with much causality. The fallen gods were consumed by the mother earth and produced wines at the place of their burial place. So people considered wine as a source of good.
Many commentators of the Bible consider ‘the tree of knowledge’ in paradise as a grape vine. Adam and Eve by eating this fruit became disobedient and were expelled from the garden of Paradise. Though wine was used in rituals the abuse was always condemned. It is worthy to note that the use of alcohol is described in the Bible but the spirit of the writings is against the use of alcohol. There are almost 64 passages, which condemn the usage of alcohol.

From the high mountains of Switzerland stone pots, dating from Old Stone Age containing mild beer or wine were found out. If we put fruits or cereals starches such as barley or berries in a warm place for a long time they produce alcohol. By Neolithic age beverages like wine, beer or mead came in to common use. Ramses II distributed beer to his people and made them believe that the tingling they felt radiated from him.

There are a lot of folktales about vine. God created plants. Seeing wines Satan was delighted and poured the blood of a peacock on the roots of the vine. It grew stronger than other plants. Next time the Satan poured the blood of a monkey on the roots of the vine. Satan knew that this plant can yield fruits which can produce liquor. The wine plant grew faster than other plants. Seeing its growth and small bunches of grapes Satan became very proud. He then killed a lion and poured the entire blood on the roots. After a small period of time Satan again appeared with the blood of a wild pig and poured the whole blood on the roots of the wine plant. Grapes became ripe and peasants collected them and made liquor out of them. After getting drunken people began to show the respective characters of
these four animals. The drunkards at first began to move as a dancing peacock, then made troubles like a monkey and later began to attack like a lion. At last slept like a pig. As a result, Satan got a lot of evildoers.

In certain parts of the world the powers of alcohol are considered as gifts God. Egyptians adored Osiris: the Romans and the Greek had Bacchus and Dionysus respectively as gods of wine.

In many traditions wine was used as libations in rituals. It was often poured on the ground or altar. In many rites priest consumed it. Ritual sacrifices of wine are mentioned in the Bible too. Hebrews offers bread and wine to Yahweh on their successful return from battle.

As time passed on. Alcohol became part of the meal. The ancient Assyrians used to get ‘gallons’ of bread and a gallon of fermented brew.

In ancient Greece and Rome in all gatherings wine was used as a beverage. In Roman orgies it was used for fun and games. Nobody can think about a reception accorded for a victorious army with cool drinks. Alcohol in the middle ages became part and parcel of human life. Birth, marriage, death, the crowning of the kings, diplomatic missions, councils and other festivals were accompanied with alcohol. The monasteries had good wine brewery. For the fasting season they produced good beer with limited alcohol content and rich starch content.

Ancient Persian history narrates an interesting incident. The king called Jamshid liked grapes very much and used to keep it in big cartularies. One day he found that a vessel full of grapes was spoiled. After having labeled on it ‘poison’ he kept it aside. The king had many
concubines. One of them because of unbearable headache decided to commit suicide. She searched for some poison in the wine room. Without much hesitation she ate the poisonous grapes. Instead of becoming dead she felt delighted and was cured. Because of her persuasion the king also tasted the juice. King Jamshid was also delighted and he immediately ordered the brewing of wine. It was called Zcher-e-koosh, which meant the delightful poison.¹

Mesopotamians had been using beverages made out of cereals from 400 B.C. onwards. “The clay tablets from this culture contain recipes for using wine as a solvent in Medicine, a practice that has continued in other cultures for many centuries. The importance of wine for the Mesopotamians was suggested by the fact that a personal drinking cup accompanied most of their wealthy citizens on the funeral pyre”.²

Later the medicinal effect of wine became popular. It was used as a cure even for jaundice, hiccups etc.

Fermentation

In Kerala we do have a lot of fruits and if they are fermented they will produce alcohol. The content of natural alcohol will be lower than 14%. According to Jean Kinney and Gwen Leaton the sugar in potatoes, fruits and grains etc. when exposed gets contact with wild yeast in the air or commercial yeast produce an enzyme which in turn converts sugar into

¹ Cfr. Ambooken, “Psychosocial Contributions to Alcoholism”, Institute of family counselling, Trichur, p.6
alcohol. Therefore survival of fermentative yeast in solutions stronger than 14% alcohol is not possible. The yeast, being a living thing, ceases to produce and dies when the content of alcohol becomes 14%.

It was Galen in third century B.C. who used medicinal products for symptoms of disease. Galen reported that ancient Greek athletes used stimulants for better physical performance. Very little documentary evidence is available to substantiate the use of drugs till the middle 20th century.

The pure ethyl alcohol (C₂H₅OH) is produced by a natural process of fermentation or distillation. All the fruit juices in Kerala can be fermented to obtain alcohol. It is a clear, thin liquid with a harsh burning taste. And is present in all the alcoholic beverages like brandy, whisky, rum, bear and wine. As a matter of fact, it supplies zero calorie. Fermentation is that chemical process in which plant products are converted into alcohol by the action of yeast on carbohydrates.

**Distillation**

Distillation is a process of first heating mixture to separate the more volatile parts and then cooling the resulting vapour to produce a purer product. This liquid is called distilled spirit. Later on distilleries were established all over the world and the distilled spirit began to be known as liquor. The concentration of alcohol in different beverages is signified with the term proof which is calculated by doubling the

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1. Cfr. Ambooken, op cit., p.4
percentage of alcohol concentration. eg. 80% proof means it contains 40% alcohol.

2.1.2 Different Types of Alcohol

1) Ethyl alcohol (Ethanol)\((\text{CH}_3 \text{CH}_2 \text{OH})\)

   It is the 'grain alcohol' widely abused by drinkers. It is made by fermentation or distillation of grains, fruits etc. The micro-organisms that live on the skin of the fruits ferment with the sugar content creates alcohol.

   It is socially accepted all over the world. Large-scale production, extensive advertisement, wide range of consumption and development of tolerance make it number one drug of the world. It is used in industry too.

2) Ethyl alcohol (Methanol) \((\text{CH}_3 \text{OH})\)

   It is produced by distilling hard woods and is highly toxic. The villain behind the liquor tragedies in Kerala was methyl Alcohol and is used in organic chemicals as anti-freezers, industrial solvents etc.

3) Butyl alcohol (Butanol) \((\text{CH}_3 \text{ (CH}_2 \text{)} 2\text{CH}_2 \text{OH})\)

   It is used in industry.

4) Isopropyl alcohol (Propanol) \((\text{CH}_3 \text{ (CH}_2 \text{)} (\text{CH}_2\text{OH})\)

   It's main usage is in preparation of hand and shaving lotions etc. It is also called as 'rubbing alcohol'.
These are a variety of alcohol productions namely isobutyl, amyl etc. which are used in industry and other special purposes.\(^5\)

**Distribution and Absorption Factor**

Alcohol unlike other food, need no digestion. Almost 20% of the alcohol is absorbed into the venous drainage through the stomach walls and the remaining 80% is absorbed through the walls of the small intestine. Except the body chemistry, the user can control all other factors related to the absorption of alcohol.

### 2.1.3 Chemistry of Alcoholism and its Effect on Body

Alcohol is considered as a food because it contains calories. One ounce of alcohol contains about 170 calories. Alcohol requires no prior preparation to be absorbed into the bloodstream and distributed throughout the body whereas proteins, fats, carbohydrates etc. need hours of soaking in the digestive acids secreted by mouth, stomach small intestine etc. Within five minutes the calories supply the body with a boost of energy. Unfortunately, these calories supply only tiny amounts of Vitamins, amino acids and minerals. Practically, zero calorie is the result.

A heavy drinker takes so much calories from alcohol and thereby requires fewer calories from other nutritious foods. Moreover alcohol destroys the ability of the cells to take in and use nutrients from other foods. It also interferes with the absorption of various vitamins from the Gastrointestinal tract. inhibits the absorption of numerous amino acids, and increases the loss of certain vitamins in the urine, including Thiamine,

\(^5\) Cfr. Dr. Thomas Ambooken, Psychological Contributions to Alcoholism, p. 13
Pyridoxine and Pantothenic acid. As a matter of fact, the alcoholic even though eats nutritious food gets only very little nutrients. That is why the alcoholics develop malnutrition regardless of what or how much they eat.

Alcohol is the most popular and widely used drug in the world. Though a small amount of alcohol allows the man to have fun, later it leads him to addiction. Most people start it without knowing its addictive nature and harmful influence on the body.

**Short-term Effects of Depressants**

Effects of sedative hypnotics and alcohol are similar. Alcohol is a depressant that slows down the central Nerve system. Generally a small amount of alcohol can cause good mood and warm feelings. It can give relief from anxiety and tension. It can lower inhibition with larger doses can cause poor concentration and judgment, sedation and sleep, slurred speech and blurred vision etc. Nausea, abdominal pain, vomiting, excited mind, irregular breathing, weak pulse, misbehaviour, slow reactions etc. are common among alcoholics and users of sedative hypnotics. Tolerance develops with alcohol and depressant users. Overdose may cause coma and death.

**Long-term Effects**

It can be passed on from father to son. Constant use of alcohol can produce impairment in the functions respiratory organs, sexual organs, liver, brain, cardio vascular system etc. It can cause impaired memory and poor judgment. Chronic fatigue, increase in morbidity, reduced attention, hangover and sleep problems etc. are reported. Reduced
REM sleep due to drug use makes the sleep so poor so that the user feels that he didn't sleep at all. Alcohol causes the bursting of small blood vessels, which leads to stroke. Breast cancer in women is also reported due to alcoholism. Withdrawal, anxiety, insomnia, general weakness of the body, nausea, high blood pressure, delirium, hallucinations, convulsions, violent nature etc. are seen.

The presence of both oxygen and hydrogen atoms each forming a single unit called Hydrogen group (OH) is the specialty of Alcohol. The number of carbon or hydrocarbon in the distinguishing factor in forming different from hydrocarbon family.

\[ \text{CH}_2\text{CH}_2\text{OH} \]

\[
\begin{array}{c}
\text{H} \\
\text{H-C-C-H} \\
\text{H} \text{OH}
\end{array}
\]

Ethyl alcohol has got 2 carbon atoms and the melting point is the 117.3°C and boiling point 78.5 °C.

Ethyl alcohol or Ethanol is produced through fermentation of fruits, plants grains etc. It is produced by exposing sugar in to yeasts in the air or commercial yeasts, which produces enzymes, which in turn convert sugar to alcohol. Alcohol is not digested like other food items instead it is absorbed. Absorption occurs like diffusion which is the movement of a substance from an area of high concentration to one of lesser concentration.
Following are the 5 factors that influence the absorption.

1) **Strength of the beverage**

   Beverages with higher concentrations of alcohol will produce higher BACS than beverages with lower concentrations. It is needless to say that the higher the concentration of alcohol in a beverage, the more will be the absorption. As a matter of fact, the mixed drink will be absorbed more slowly than the alcohol in a full strength drink.

2) **Quantity of drinks consumed**

   The greater quantity of drinks consumed, the greater the absorption of alcohol. It is proved that distilled spirits, wine or beer contains almost the same amount of pure alcohol.

3) **Rate of consumption**

   Rapid consumption causes light Blood Alcohol Content (BAC) and slower consumption creates lower Blood Alcohol Content (BAC).

4) **Presence of food in the stomach**

   Consumption of alcohol is controlled by the presence of food in the stomach. The slower absorption will be helpful to circulate the alcohol in the blood stream to be oxidized. Wine and champagne etc., which leave carbon dioxide in the stomach, accelerate the rate of absorption.

5) **Body Chemistry**

   Each individual is unique concerning the physiological functioning, which affects the manner of absorption. Moreover, the flow of alcohol from the stomach to the small intestine is controlled by the
condition of the stomach tissues and emotions like anger, fear, illness, stress etc. it is important to note that the drinker himself controls all the above conditions.  

2.1.3.1 Alcohol’s Trip and its Effects

1. Mouth and Esophagus

When alcohol is swallowed, it begins to be absorbed into the blood stream. A small amount of alcohol is taken into the blood stream through the tiny capillaries in the mouth. The rest goes through the esophagus to the stomach. Alcohol being an irritant to the delicate linings of the throat and esophagus it burns as it goes down.

Alcohol causes Cirrhosis of the liver and it produces a secondary increase in the blood pressure in the veins of the esophagus. Due to this pressure the veins become stretched and dilated. Death may happen if this thin, ballooned-out veins rupture. Because of an unknown chemical presence, alcoholics may have the chance to develop the Cancer of esophagus than the non-alcoholics.

2. Stomach

From the stomach approximately 20% of alcohol seeps into the blood stream. Food in the stomach can cause delay in the passage of alcohol into the small intestine. Nearly 80% of the alcohol comes to the small intestine where it is absorbed into blood stream. Since alcohol is extremely irritating the stomach produces an over secretion of stomach acids and enzymes which may cause Ulcers and prevent the healing of

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*Cfr. Drugs: Issues for Today, p.147-148*
existing ulcers. Gastric or Duodenal Ulcers may become acute and can cause Peritonitis or Perforation of the stomach wall. In the small intestine alcohol blocks absorption of Thiamine, Folic acid, Xylose, Fat, Vitamin B1, Vitamin B12 and Amino acids.

In certain cases a small amount of alcohol works as an appetizer. It increases the gastric juice that causes hunger. The over production of the gastric secretions cause 'heart burn'. Excessive use of alcohol causes gastritis that happens in the case of the occasional drinkers too. Excess of alcohol in the stomach can cause nausea and vomiting by irritating the Pyloric duct (Pylorospasm).

In case of large quantity, the drinker is having so many calories from alcohol, and thereby requires fewer calories from other nutritious foods. Alcohol disrupts the ability of cells to take nutrients from other foods. It also blocks the absorption of various vitamins from the gastrointestinal tract, interferes with the absorption of various amino acids, increases the loss of certain vitamins in urine, including Thiamine, Pyrooxidine and Pantothemic acid. That is why alcoholics are denied full benefit of nutritious food and vitamins. Malnutrition is the effect seen commonly among alcoholics.

Approximately 5% of the alcohol consumed leaves the body unchanged through sweat, urine and breath. It is worthy to note that BAC is directly related to the proportion of alcohol in the exhaled air. That is why Breathalyzers measure correctly. Ninety-five percent of the alcohol taken into the body is absorbed into the blood stream and goes to every cell and tissue of the body. The quantity of alcohol in the blood stream is
measured by a percentage of alcohol in the blood presented by Blood Alcohol Level (BAL). BAL is taken as the number of grams of alcohol in 100ml of blood, expressed as a percentage.

When alcohol enters the venous drainage, it is immediately led to the liver for Oxidation. The liver can oxidize 2/3 ounce of alcohol per hour. Surplus alcohol is circulated throughout the body raising the Blood Alcohol Content (BAC). It falls down as oxidation goes on.

Alcohol causes red blood cells to clump together in sticky wads, slowing circulation and depriving tissues of oxygen. Anemia may occur due to the reduction of the number of red cells. Alcohol also reduces the ability of white cells to destroy bacteria and degenerates the clotting ability of the blood platelets.

**Oxidation process**

In the liver it is the enzyme dehydrogenase that breaks down the ethyl alcohol into acetaldehyde. Acetaldehyde is a poison that is toxic to the body breaks down to ascetic acid, carbon dioxide and water. The multistage process of alcohol oxidation can be shown as below.

1) Alcohol $\rightarrow$ Acetaldehyde

Alcohol dehydrogenase

2) Acetaldehyde $\rightarrow$ Acetic acid

3) Acetic acid $\rightarrow$ CO$_2$ + H$_2$O + Energy

\[\text{Ibid., p.151}\]
The kidneys filter the blood and excrete toxic substance into the urine and send out of the body.

The rate of absorption of alcohol may vary due to several reasons. But oxidation of alcohol cannot vary and happens at a constant rate. Therefore alcohol that has not been oxidized continues to circulate and influence the functions of the body. Blood alcohol concentrations comes down as the liver oxidizes the rest of the alcohol.

3. Liver

Three kinds of liver damage commonly occur in alcoholics

Alcoholic Hepatitis

Alcohol inflames the cells of the liver, making it swell and blocking the tiny canal to the small intestines. This may prevent the bile to be filtered properly through the liver. Scar tissue formation is also occurred for alcoholics.

Fatty liver (Stenosis)

It is a universal condition for alcoholics. Jaundice may be the result making colour of the body and the white of the eyes yellow. Blood sugar imbalance, altered protein production etc. are the result.

Cirrhosis

Cirrhosis of the liver increases as every drink destroys the cells of the liver. It is eight times more frequent among alcoholics than among non-alcoholics. One in ten cases of cirrhosis occur without a warning symptom of any kind, the other nine show signs of fatigue, abdominal
pain, fever or jaundice. Treatment is never to drink again plus a nutritious diet. In case of relapse, the irreversible damage may occur. Since liver is very sensitive to the short-term effects of alcohol the small amounts of alcohol could lead to accumulation of fat in liver cells.

4. Pancreas

Alcohol irritates the cells of the pancreas resulting in swelling and thereby blocking the flow of digestive enzymes. The chemicals unable to enter the small intestine begin to digest the pancreas, causing Hemorrhagic Pancreatitis. Pancreatitis may destroy the pancreas and create the deficiency of insulin, which ends up with diabetes.

5. Heart

Alcohol causes inflammation of the heart muscle. Because of its toxic effect on the heart, amount of fat collection increases and normal metabolism is disrupted. The scientist attests the following effects on the heart.

1) Alcoholic Cardiomyopathy: Enlargement of the heart, heart failure, shortness of breathes

2) Dysrhythmias: Cardiac insufficiency.

3) Coronary artery disease: angina pectoris, Myocardial infarction, Hypertension, "holiday heart", beriberi heart disease etc. are also reported.  

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6. **Kidneys and urinary bladder**

Increased urine output is related to the effect of alcohol or the posterior portion of the pituitary gland, a gland located at the base of the brain. This pituitary gland secretes a hormone that regulates the amount of urine produced. Alcohol depresses the function of the pituitary gland and the amount of the hormone produced becomes too little. As a result, the kidney forms a larger amount of dilute urine. In kidneys alcohol causes an increased loss of fluids through its irritating effect. This does have a dehydration effect on the body and usually leads to "cotton mouth" but can be serious on occasion.

Alcohol inflames the lining of the urinary bladder, making it unable to sterile properly. The genitourinary system can be affected leading to urinary tract infections.

7. **The circulatory system**

Moderate amount of alcohol acts as vasodilator of surface blood vessels causing a person to feel warm while heat is actually being lost. This effect is used beneficially in some cases of high blood pressure or heart disease where the patient is advised by certain doctors to have a small peg with dinner.

8. **Effects on brain**

The most dramatic effect of alcohol is on the brain. It depresses the brain centers, causing progressively in co-ordination, confusion, disorientation, stupor, anaesthesia, coma and finally death. It starts working like an anaesthetic, increasingly putting the brain to sleep. It's
Chemical structure is exactly the same as Ether. The notable difference is that Ether is gas and alcohol is a liquid. Alcohol kills the brain cells. Any brain damage is permanent because it does not grow any new cells.

The brain has a protection from chemicals and drugs by an electro-chemical filtering system known as "the blood-brain barrier" which makes sure that only very simple molecules such as those of oxygen and water pass through it. The specific structure of alcohol allows it to penetrate into the brain and spinal cord. Though small doses act as a stimulant high doses make the person behave overjoyed, sad, angry etc.

Alcohol affects every section of the brain.

**Cerebrum** (Forebrain): Controls our reasons, inhibitions, intelligence, memory, self-control and judgment. These capacities gradually diminish as the result of alcoholic usage.

**Cerebellum** (Midbrain): It is the portion of the brain at the rear of the skull, which controls our motor coordination and balance. Severe alcoholism may cause a withering of the top portion of this organ with permanent damages.

**Medulla** (Hindbrain): controls all automatic functions such as breathing and heartbeat. When medulla is depressed with alcohol, breathing and heartbeat are slowed down or stopped resulting in death.

9. **Sex gland**

Swelling of the prostate gland leads to male impotency. It also interferes with the ability to climax during intercourse.
Among women skipped menstrual periods, sterility, miscarriage, etc. may occur. When pregnant women drink alcohol the foetus is also affected causing child birth defects known as Fetal Alcohol Syndrome (FAS). As a result the child may develop decreased brain growth, smaller head size, lower weight, facial hair etc.

10. **The haematological system**

Red cells in the blood are affected by alcohol. The number is reduced considerably causing anaemia. Alcohol destroys the red cells and thereby defective blood cells are formed and at times bleeding occurs.

White blood cells too are affected by alcohol. Production and mobilization is blocked by alcohol. The number of platelets is decreased.

11. **The pituitary**

The pituitary or ‘master gland’ is affected by alcohol. As a result the ability of other glands to respond to hormones is blocked.

12. **Central nervous system**

Alcohol is considered as significantly affecting the production and activity of neurotransmitters. They transmit message from one nerve cell to another by crossing the synapses or spaces between cell and activating the receptors on the "receiving" nerve cell. Decreased neurotransmitter, serotonin levels have connection with the behaviours associated with the intoxicated states, depression, aggressiveness, suicidal tendencies and poor impulse control etc.
13. Alcohol and cancer

Heavy alcohol intake may cause cancer of mouth, pharynx, larynx, esophagus, and liver. Smoking as well as heavy drinking have co-carcinogenic effect on human body especially on the mouth, pharynx, and larynx.

14. Effects of alcohol on sleep

Restless sleep that leads to headache and fatigue may be the result of heavy drinking. Excessive drinking, before sleep causes Rapid Eye Movement (REM), a dream state. Disturbance to REM causes damage to concentration and memory which may lead the person to anxiety, tiredness, irritation etc.

The hangover is the protest of the body against the excessive alcohol intake. This may be due to distended arteries in the head, which put pressure on cranial nerves, or due to the allergic reaction to congeners or may be because of the loss of body fluids. So far no scientific remedy is suggested for hangovers.

15. Other effects of alcohol

Synergism, nausea due to mixed drinks, sledging effects, alcohol dilates etc. are reported. Withdrawal, chugging, coating stomach, Delirium tremers etc. are seen among alcoholics.

2.1.3.2 Syndromes connected with Alcohol

1. Wernicke’s Syndrome

It may cause paralysis of the eye muscles, memory loss, Stumbling, comma and listless condition.
2. Korsakoff's Psychosis

It follows Wernicke's syndrome. Vitamin deficiencies are the root cause of these two syndromes. Due to Korsakoff's psychosis the patient will have delirium, memory loss, severe disorientation and confabulation (contriving stories to fill in gaps in memory) etc.

Drinking and Driving

Due to drinking the following are the effects on the driver. Sensory-motor co-ordination and reaction time are reduced. Slowing of the response time and the change of attitude from subtle to bizarre can be noticed. Drowsiness, giddiness and impaired vision, turned vision, etc. are noteworthy. Also ability of tolerance to glare, dark adaptation, distance and depth perception, deep muscle sense, estimation of speed etc. are reduced.

For youngsters less alcohol affects quickly. Their strong inclination to take risks would be accentuated by alcohol.

2.1.4 Various Causes of Alcoholism

In the case of alcoholism it is not proper to ask questions 'why?' eg. "why do you drink?". The 'effect' is the reason for drinking. The alcoholics may give certain explanations without coming to the point. Mini-maxi syndrome is worthy to note. They want to minimize the pain and maximize the pleasure.

1) Alcoholic parents

Children of alcoholics are highly prone to alcoholism. The parents, being alcoholic, can disturb the whole life of children.
2) Biochemical factors of the body

Due to the lack of certain biochemicals, enzymes or hormones in the body a person may fall into alcoholism. In certain cases genetic deficiency may cause lack of necessary enzymes in the body. This can be balanced by the intake of alcohol. Rats with a vitamin B1 deficiency prefer a mixture of water and alcohol to water alone.⁹

Collective unconscious is one of the most famous theories of Carl Jung. It promulgates the idea that humans are not only products of their personal histories but also of the heritage of the human species. Genetic peculiarities of previous generation motivate, shape and influence the development of those who are yet to come. Clemmont E. Vontress (George Washington University) has also pointed out the influence of the ancestors.¹⁰

3) Psychological aspect

Some people take alcohol as a remedy for depression, guilt feeling, anxiety, insecurity, dissatisfaction with their lives, cowardice, shamefulness etc.

4) Financial situation

Failure in business, loss of job, financial crisis etc. may tempt some to take refuge in drinking. Drinking habit may lead them to further crisis.

⁹ Drugs: A factual Account. p.69
5) Socio-Cultural background

The Culture of the existing society points out drinking as a means to escape from problems. The attitude towards drinking as a sign of grown ups and as a socially accepted behaviour. If society has other ways to release tension and avoid self-destructive habits this drinking and drug culture can be prevented.

6) Curiosity

Adolescents and youngsters are often tempted to taste alcohol beverages. They also join in the party and begin to drink out of curiosity. This kind of gatherings may lead them to alcoholism.

7) Misconcepts

If society considers the alcoholic as a weak sinner that itself may cause inferiority and guilt feeling etc. As a matter of fact this may cause an increase in the drinking habit.

8) Tension reduction

Drinking alcohol is a learned coping device that may help the drinker to control stress. Severe stress and strain cause excessive drinking. To reduce tension, advertisements and other features advise people to take a peg.

9) Peers -Company’s sake

As a custom, there is usually a supply of alcoholic beverages in parties. In Kerala it has become part of our day-today life. Absence of alcoholic drinking may affect the standard of the gatherings. Society
considers it as a criterion to measure the status of the celebration. The influence and pressure of peers lead into alcoholic drinking.

10) Personality disorder

Personality maladjustment is a basic characteristic of alcoholics. We can assume that personality disorder is one of the causes of alcoholism.

11) Psychiatric problem

Alcoholics develop psychiatric problems and they are considered as psychiatric patients. They may have personality characteristics such as dependence, confusion of sex roles, immaturity, low self-esteem, compulsivity, low frustration, intolerance etc.

12) Effects of alcohol

The peculiar effects of alcohol in reducing stress, causing euphoria, forgetting depression and loneliness, minimizing pain, tackling conflicts etc. attracts the common people. Whenever there is a similar problem many resort to alcohol.

2.1.5 Family of Alcoholics

More than 16% of Kerala population is brought up in alcoholic families. Majority of the alcoholics have good family, job and home. As a matter of fact, they are our friends, neighbours and parents of good children. The following list of behaviours may be indicative of children of alcoholics in the school setting.

- Morning tardiness (especially Monday mornings)

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11 Cfr. India Today, Sept. 8, 2004 p.43
• Consistent concern with getting home promptly at the end of a day or activity period.
• Malodorousness.
• Improper clothing for the wealth.
• Regression: thumb bucking, enuresis, infantile behaviour with peers.
• Scrupulous avoidance of arguments and conflict.
• Friendlessness and isolation.
• Poor attendance.
• Frequent illness and need to visit nurse, especially for stomach complaints.
• Fatigue and listlessness.
• Hyper activity and inability to concentrate.
• Sudden temper and other emotional outbursts.
• Exaggerated concern with achievement satisfying authority in children who are already at the head of the class.
• Extreme fear about situations involving contact with parents.¹²

2.1.6 A Disease

Alcoholism is a chronic and progressive illness involving the excessive inappropriate intake of ethyl alcohol, whether in the form of familiar alcoholic beverages or as a constituent of other substances. It is thought to arise from a combination of a wide range of physiological, psychological, social and genetic factors. As a disease it is characterized

¹² Children of Alcoholics, pp 103-104
by an emotional, spiritual and often physical and psychological dependence on alcohol. It may lead to damages of brain, liver etc.

In 1952 it was Jellinek who distinguished alcohol addiction as specific diagnostic category and pointed out the different stages of development. In 1956 the American Medical Association accepted addiction as a disease. In the same year it was officially promulgated by the UNO.

Alcoholism is considered as a primary disease. In many cases alcoholism is associated with psychic disorder. In the developmental stage it may not show any signs of psychiatric disorder. After recovery also many are free from psychiatric problems.

Alcoholism is a progressive disease. An alcoholic passes through many stages of progress. He develops tolerance to alcohol. Later his body demands alcohol. He increases the timings of drink. Not only in the evenings but in the mornings too he begins to drink. He shows physical as well as mental disorders like loss of control, black out etc.

Alcoholism is a permanent disease. It is treatable but not curable. It can be arrested. The patient then becomes absolutely free from the clutches of alcoholism. If he starts drinking again his status will be like an alcoholic patient.

Alcoholism is considered as a terminal disease. It is because of the tendencies of committing suicide and high chances of getting crashed. Drunkards may engage in criminal activities as well as participate with
anti social elements. After getting intoxicated they have no inhibition in violating the rules and regulations of society.

Jellinek gives the various phases of the development of alcoholism as follows:

A. Pre-alcoholic Phase
1. Occasional relief drinking
2. Constant relief drinking
3. Increase in alcohol tolerance

B. Prodromal Phase
1. Onset of Blackouts
2. Surreptitious drinking
3. Anticipatory drinking
4. Gulping drinking
5. Guilt feelings
6. Avoiding reference to alcohol
7. Frequent Black-outs

C. Crucial Phase
1. Loss of control
2. Rationalized drinking
3. Social pressures
4. Grandiose behaviour
5. Aggressive behaviour
6. Persistent remorse
7. Periods of total abstinence
8. Changing drinking pattern
9. Dropping friends
10. Quitting jobs
11. Behaviour becomes alcohol oriented
12. Loss of outside interests
13. Reinterpretation of interpersonal relations
14. Marked self pity
15. Geograph escape
16. Change in Family habits
17. Unreasonable resentments
18. Protecting supply
19. Nutritional Neglect
20. First hospitalisation
21. Decreased sexual desire
22. Alcoholic jealousy
23. Regular morning drink

D. Chronic Phase
1. Onset of benders
2. Marked Ethical Deterioration
3. Impairment of Thinking
4. Alcoholic Psychosis
5. Drinking Den
6. Drinking technical products
7. Loss of alcohol tolerance
8. Indefinable fears
9. Tremors
10. Psychomotor Inhibition
11. Obsessive drinking
12. Religious needs
13. Admitting defeat

**Note:**

As a result of the emergence of an alcoholic there may have an enabler. The enabler is impelled by his own anxiety and guilt to rescue the alcoholic from his problems. He tries to rescue the alcoholic from the immediate crisis and tensions. The actions of a doctor, social worker etc. can be like an enabler.\textsuperscript{14}

2.1.6.1 Physical Disease

Alcoholism affects the body. The poisonous component in liquor affects the brain and makes the person sick. Alcoholism causes disease like blood pressure, jaundice, ulcer, piles, nervous weakness, impotency, tremor of the limbs etc. It affects the liver, heart and stomach.

2.1.6.2 Psychological Disease

One who becomes addicted to drug or drink starts hating himself. He feels that others hate him. By and by he becomes a victim of mental disease. At this stage he gets suicidal tendencies and is strongly tempted to leave his own home and go somewhere. Mental ailments that addiction brings you are the following: Lack of self reliance (Excessive dependence on others), Fear and disquiet of mind, Criminal instincts, Deterioration in moral integrity and spiritual life, Propensity to loneliness, Lack of responsibility, Anxiety and loss of mental peace, Melancholy, Suspicious nature, Inclination to go away from one’s home, Perturbation of mind, Mental depression of wife and children, Inability to evaluate one’s own actual condition, Discouragement and fear complex, Selfishness, Pride (Self-complacency), Self-contempt, Unsettled life-style, Behavioural

irregularities, Excessive piety, Emotional imbalance, Slipshodness in the performance of duties, Suicidal tendency etc.

2.1.6.3 Spiritual Disease

Addiction is a disease that alienates man from God. Other diseases most often prompt men to seek God, his mercy and help. But one who has been enslaved to drug or drink moves away from God. He loses his moral integrity and easily falls a prey to different vices.

2.1.6.4 Social Disease

People involved in the production and sale of liquor, amass huge profits by exploiting the miserable addicts whose families fall into ruin. Many young people fall into the snares set by liquor industrialists. Easy availability of liquor attracts the youth. The members of the addict’s family suffer continued mental torture and despair beside the pangs of poverty. Loss of manpower, waste of money, huge sufferings caused by accidents, quarrels, criminal cases and a host of such other evils show how terrible and destructive is the disease that alcoholism inflicts on society at large. As a matter of fact, addiction is a social evil.

2.1.6.5 Family Disease

If a person is affected by cancer he alone feels the pain. It is the same in the case of a T.B. patient. But one addicted to drink, though he may not be a sufferer, brings untold grief to his family. A dark cloud of affliction descends on the family, parents, wife, children and all those intimate with the family. This is how addiction becomes a disease of the family. It being a family disease it affects each and every member of the
family. They may react to the alcoholic behaviour of the person resulting in the emergence of family characteristics such as denial, coping strategies and social disengagements.

(a) **Family denial**

According to Robert Ackerman family denial of alcoholism occurs in three ways. In systematic denial the whole system denies the existence of the problem since some consider wife as partly responsible for husband’s drinking. She may pretend that her husband is OK.

Exposure versus protection is the second form. In protection the family members keep silence about the problem. Exposure means experiencing the problem but also recognizing, discussing and eliminating it.

Primary patient philosophy is the third form of denial. Wherever there is an alcoholic the primary importance goes to the patient. As a result the non–alcoholic members do not get much attention. Their needs are often denied.

(b) **Coping strategies**

Non-alcoholic family members can use verbal strategies to communicate with the alcoholic about alcoholism. Knowingly or unknowingly the family members adopt a behaviour to cope with the situation. Hiding alcohol, stay away from home, isolating oneself, refusing to buy alcohol etc. are some of the behaviour coping strategies.

(c) **Social Disengagements**

Social disengagement according to Ackerman is the Withdrawal of family members from interacting with others. Physical disengagement
happens when the family stops receiving and giving invitations for social interaction.

The decline in positive emotional relationship is emotional disengagement. As a result healthy relationship is made impossible. This unhealthy situation may cause various effects on the alcoholic, the non-alcoholic spouse and the children.15

Around forty to sixty percent of the children of the alcoholics become alcoholic. The situation in the family becomes deteriorated. Sharon Wegscheider points out the role inconsistency among the children of alcoholic family. Four roles are often occupied by the children of alcoholics namely the family hero, scapegoat, lost child or mascot. The family hero is the oldest child having the behaviour that is extremely mature for him or her. The scapegoat is the one who suffers due to family frustrations and confusion. Due to internationalisation of these feelings a kind of negative behaviour is displayed. Usually the middle child becomes the lost child. He suffers the bad effects of role inconsistency. He does not have specified role in the family and his identity becomes uncertain. The youngest child of the alcoholic family often becomes the mascot. Because of over protection the child may become over dependent.16 Due to the emotional abuse in the family the grown up children lack opportunities for ventilation of their own feelings.

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15 Coats M. and Peach, Gail in “Alcohol and your patient: A Nurse’s handbook” Canada: Addiction Research Foundation, 1979 as quoted in Robert J. Ackerman, “Children of Alcoholics”, p.25-27
16 Sharon Wegscheider as quoted in Ackerman, “Children of Alcoholics” p.52-53
(d) Co-dependency

Robert Subby says, "Co-dependency is an emotional, psychological and behavioural condition that develops as a result of an individual’s prolonged exposure to, and practice of, a set of oppressive rules - rules personal and interpersonal problems". Those who are not addicted to alcohol and drugs but are victimized by the user can be called co-dependents. Actually they suffer all the consequences of being with an alcoholic. They are the partners in dependency. Slowly they develop an unhealthy situation. They always react to the problems, pains and critical situations. They have to learn to act instead of reacting to the situations. Reactions to the destructive situation will lead the family from bad to worse.

2.2 DRUG ABUSE

The problem of Drug abuse has become one of the ever-growing issues of human life. It is one of the biggest threats over human beings. Drug trafficking is the second biggest business all over the world. Down the centuries we can see the usage of drugs. But it has become as worse as today. India was once only a transit country for drug trafficking. In 1999 an average of 17 kgs. of Heroin were seized every month from North-Western sector. The route between South-East Asia and South-West Asia is through India. Southwest Asia comprises of the Golden crescent countries-Pakistan, Afghanistan and Iran. South East Asian countries like Burma, Malaysia and Thailand are in the forefront of producing Heroin and other drugs. Now India stands as one of the biggest user countries of

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17 As quoted in “Alcoholism and Drug Dependency: The Professional’s Guide” op.cit. p.98
the world. India is the largest producer of licit opium. We grow opium in the states of U.P., M.P. and Rajasthan. The young generation prone to drugs is a threat to the developmental activities of a nation like India.

2.2.1 Historical Aspect

Geographically poppy plants are cultivated in the dry summer season in the Middle East. Around 6000 years ago the use of opium began in the world. There is proof enough to show that opium was used in India centuries back. It might have reached India, China and other parts of the south East Asia by the end of the first millennium A.D.

At first it was used for medical purposes especially to cure diarrhoea. It is useful for 'stomach cramps' because it reduces the strength of smooth muscle contractions in the intestine and causes re-absorption of water. It began to be used as a sedative and euphoriant. Thus it was considered as a cure-all for everything from snakebite to leprosy. Opium is a mixture of many chemicals of which morphine is the chief. In 1806, Frederick Sertturner, was successful in separating the primary pharmacological component of opium which he named Morphine after the name of the Greek god of dreams Morpheus. Morphine is the important alkaloid extracted from opium and is the most effective drug for killing pain. It is in use as a medicine.

During the mid-1800s two remarkable wars were fought. The first one namely the opium wars were waged between England and China from 1839 to 1842. The success of Britain caused continuation of the smuggling of opium to Asia etc. till the dawn of the twentieth century. The American civil war was the second one (1861-1865). During this war
and afterwards soldiers began to use morphine as painkiller and thereby it became known as 'soldiers disease' or 'army disease'.

2.2.2 Classification of Drugs and its Effect on the Body

Drugs are chemical substances. Pharmaceutical preparation or a naturally occurring substance used primarily to bring about a change in the existing process or state (physiological, psychological or biochemical) can be called a drug. In other words, any chemical that alters the physical or mental functioning of an individual is a drug. Drugs, by interaction change the biochemical systems of the body. If a drug alters sensory perceptions, mood, thought process, feelings or behaviour it is known as a psychoactive drug. Pharmacology is that branch of science, which investigates drug actions.

Certain drugs are legally permitted and at the same time others are illegal. Alcohol and tobacco are legally permitted as certain drugs for medication. Illegal drugs like Heroin, Cocaine, LSD etc. are detrimental to both body and mind. Its use leads to addiction, which develops tolerance and dependence while others cause both physical and psychological dependence. According to Payne, Halin, and Pinger the word use is an all-encompassing term which can be applied when the words misuse or abuse are incorrect or not applicable.

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Drugs, as a matter of fact, can be used with a medical purpose or without a medical purpose. When it is used to cure diseases, to prevent illness, to improve health etc. it is called drug use.

The term misuse is confined to the inappropriate use of legal drugs intended to be medications. Sharing of the prescription with a friend, misunderstanding of the directions concerning the use, taking different dosage other than that recommended, applying the drug for other effects than that of the prescribed one etc. are examples of misuse.

Abuse can be described as any use of an illegal drug or the use of a legal drug when it is detrimental to ones health or the health of others.

Drugs taken for reasons other than medical, in an amount, strength, frequency or manner that damages the physical or mental functioning of an individual, is called a 'drug abuse'.

Medically used drugs can also be abused. It can be used too much, too long, too often, with wrong combinations, etc. As a result, tolerance and dependency is produced.

Now-a-days different classification systems of drug exist. Broadly speaking it can be divided into two major groups - legal drugs and illegal drugs. According to Payne et al. legal drugs are those drugs, which are manufactured, produced, bought and sold within the confines of the law and are divided into 3 categories.

(a) Non-prescription drugs

(b) Prescription drugs

(c) Social drugs - nicotine, caffeine and alcohol.

\footnote{Cfr. Alcoholism and Drug Dependence - op cit., p.1.}
Illegal drugs, with a few exceptions, are those, which are not used legally but are abused. Largely it can be further divided into two according to its potentiality to produce high and low dependence. The amphetamines, cocaine, the depressants and the narcotics etc. produce high dependency while marijuana and other hallucinogens produces low dependency.22

2.2.2.1 Legal Drugs

Drugs like aspirin; cough syrups, laxatives, antacids, vitamins and certain contraceptives etc. are legal drugs, which can be obtained without a prescription from the physician. These non-prescription drugs are used for hunger control, sedation, stimulation, dandruff, constipation, relief etc. and are produced and marketed for billions of dollars throughout the world.

Drugs and medications dispensed by pharmacists on prescriptions given by doctors and dentist are called prescription drugs.23 They include analgesics, contraceptives, antibiotics, medicated shampoos, stimulants sedatives, antidepressants anaesthetics etc. At the same time many psychoactive prescription drugs like amphetamines, barbiturates, narcotics etc. are abused to alter the state of consciousness and sensitivity to pain etc. Huge quantities of alcohol, tobacco, coffee, and tea are used, abused and misused as social drugs. They are legally available psychoactive drugs.24

23 Cfr. Ibid., p. 7.
24 Cfr. Ibid., p. 7.
2.2.2.2 Illegal Drugs

Illegal drugs are varying in nature according to their ability to produce clinical dependency. Heroin, cocaine, amphetamines, barbiturates, etc. are strongly dependence producing drugs. At the same time Marijuana, LSD, Psilocylin etc. are weekly dependence producing drugs.

2.2.3 Classification of Addictive Drugs

Addictive drugs are divided according to its nature, origin, mechanism of action and effects. They are studied under seven categories.

2.2.3.1 Narcotic Analgesics

In Greek language the prefix narco means to deaden or to be numb. Analgesic means 'pain killing' or 'pain relieving'. These drugs slow down a person and create feelings of euphoria. Dentists and doctors mostly prescribe them as painkillers. Codeine, Morphine, Percodan etc. are important among them. Some illegal drugs like Heroin and Brown sugar are narcotics. Medically the term 'narcotic' signifies opium and opium derivatives or synthetic products that have opium-like effects. They are rather painkillers with high addictive nature. Some narcotics are used for suppressing the cough reflex and for controlling diarrhoea. Narcotics drugs can be divided into three major categories according to their production namely natural, semi-synthetic and synthetic. Of these the first two are known as opiates and the last one opioids.
Flow Chart No. 2

1. Natural Narcotics

'Papaver Somniferum' is the scientific name of the poppy plant from which occurs narcotic drugs. This plant has been cultivated for its pleasurable effects. By tapping unripe poppy pods a milky fluid is collected. This fluid becomes a dark brownish or dark grayish tar-like substance with a musty odour. This is called Opium, which is derivative of the Greek word 'opion' means 'poppy juice'. It is marketed in the form of small bricks or lumps. It has got the street names like Afeem, Amar, Bhukki, Doda, Post, Aml, Amal and Reta etc.

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25 Cfr. Drug Addiction and Its management (A comprehensive Field Book for Trainers), Shanthi Ranganathan et al., Madras 2000, p.3
Routes of Administration

1. Oral: The dried opium after having boiled in water the user drinks. Ingestion is rather inefficient method and the effect is felt mildly.

2. Inhalation: opium smokers use a special piece of equipment. It is smoked in the reclining posture to reduce the feeling of nausea.

The Chinese people used to smoke opium and they continued this practice wherever they go. Thus it spread all over the world through Chinese labourers. Morphine can be injected intravenously, intramuscularly or subcutaneously. For the most part it is used intravenously.

Codeine

Another drug of the opiate group is Codeine. It is a natural narcotic with antitussive properties, a component in many prescriptions for cough. It is just like opium, an alkaloid obtained from the poppy plant and contains less percentage than morphine. It is commonly used in painkillers and in cough syrups. People often misuse it since it is available without doctor’s prescription. It is often said that there are persons who use from ten to twenty bottles of cough syrup for attaining a state of mental elation. The route of administration is oral. It is medically prepared with other chemicals and is available in the form of syrups and tablets.

26 Ibid., p.3
Thebaine

This compound is not used as drug itself but as a basic structure in the synthesis of certain quasi-synthetic drugs.

2. Semi-synthetic narcotics

Scientists of Bayer laboratories produced Heroin by chemically altering the Morphine by the end of the nineteenth century. It is commonly known as Smack, No.4, Gard, Samaan, Pudia, funk, Mall etc. It is tenfold stronger than morphine and causes addiction more quickly and generates a feeling of pleasure. Heroin is available in two forms. The purest variety is a white powder, while what we usually get is a brown or pink or a mixture of white and brown. The price as well as colour varies according to the quality.

Heroin was originally introduced as a cough suppressant and later found it more addictive than morphine. In the beginning of the twentieth century around 200,000 Americans (1% of the US population) were addicts to opiates. In 1906 the first law against opiates was passed in U.S.A. Addicts were having criminal nature, practicing prostitution and selling drugs. In 1960's Heroin abuse was accelerated due to the popularity of the hallucinogens. It is calculated that 1.9 million Americans have used heroin once in their lifetime. Pure heroin is white crystalline powder and is called 'white sugar'.

1980 onwards we get in India a variety of heroin, which is unpurified and inferior in quality. Its consumption is usually in big cities.

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27 Drugs: Issues for Today, op. cit., p.235
and among young men and students. It looks like sugar and so is called Brown sugar.

Though not purified it contains a good percentage of heroin. It is cheaper and more easily available. Being cheap it is welcomed by students and people of low income. Brown sugar is a serious threat to the younger generation whose intellectual acumen and creativity are undermined by its use. The residue left over when morphine is processed into heroin, is brown sugar, and it has morphine, heroin, zinc and other chemicals as ingredients. Unpurified Heroin is its chief component.

Brown sugar is very bitter in taste. Orally it does not give much intoxication. So it is usually smoked or 'chased' or 'fixed'. It can cause jaundice, swelling of liver, ulcer in the intestines etc.

'Smack' is the common term for Heroin. In some places smack is considered as brown sugar. Though a large extent opium and heroine are produced in India, they are also brought in plenty from Pakistan.

**Routes of administration**

Injection - The drug after having dissolved in lime and water and injected subcutaneously or intravenously. Among the intravenously users, an immediate high, akin to an orgasm, is reported. Heroine is rarely snorted.

Inhalation is done with tobacco in cigarettes. The user's sprinkle the drug on a silver foil or places it in a bent spoon and heat it from beneath with a matchstick or candle. The thick fumes are chased in through the mouth with a rolled piece of paper.
Generally narcotic analgesics are alkaline in nature and are not absorbed in the acidic medium of the stomach. Heroine molecules are getting contact with other molecules in the stomach and thereby absorption in the stomach is difficult. The liver can destroy which gets through the blood. So oral usage becomes ineffective. Users generally depend on other methods.  

3. Synthetic Narcotics

Synthetic narcotics, which imitate the activity of the natural opiates, are produced only in the laboratory. Substances like Pentazocine, Buprenorphine, Pethidine, Methadone (Dolphine) Meperidine (Demerol), Levo-Acetylcysteine-Alpha-Methadol, Propoxyphene etc. are examples. Buprenorphine has the street names such as Norphine, TDX, Tidigesic, Sangesic, Adnokete.

Propoxyphene is also known as Proxyvon, Darvon, Spasmoproxyvon Butaproxvon etc.

Administration

It is taken orally in the form of tablets. It can be injected intramuscularly, intravenously and subcutaneously. In general the addicts prefer to inject it intravenously. When get this into the blood stream narcotics take only few minutes to be distributed throughout the body. They concentrate in the tissues of the kidney, liver, lungs and spleen. Fat-soluble Heroine gets into blood-brain barrier quicker than Morphine, which is water-soluble. Action of Morphine is less intensive but lasts

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28 Cfr. Drug Addiction and Its management, op.cit. p.4-5
long. The central nervous system is affected even with 0.1% of the narcotic intake. The placenta barrier also is crossed and the foetus is affected in all the tissues.

The central nervous system of the foetus is badly affected because it is not yet developed fully. Newborn babies from addicted mothers even feel withdrawal after birth.

**Excretion**

Narcotic analgesics are bio-transformed into water-soluble products and are excreted largely through urine. The biotransformation processes that result in more active compounds are called bio-activation; those that result in compounds less active than the parent compound are known as bio-deactivation. Excretion routes for biodeactivated products include the kidney, intestine, lungs, saliva and perspiration. Two other important excretion ways are through liver and alimentary canal.

**Physiological and Psychological Effects**

Short-term effects are mainly analgesia, drowsiness, euphoria, depression, impairment of intellectual process, decreased physical activity, apathy, sedation and problems in respiration etc. In many cases suppression of Rapid Eye Movement, constipation, stimulation of the 'vomiting center' in the medulla etc. are seen. Psychologically the person loses concentration, senses, feels peacefulness etc. Tolerance is developed gradually and the user loses the high level of pleasure and feelings achieved in earlier stages.

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Tolerance is another noteworthy effect. As it develops, the user gradually increases the dosage to achieve the desired effect; a dosage plateau is reached where no amount of the drug is sufficient to produce the intensity of effects desired.

Due to long-term usage cross-tolerance is developed. It is a phenomenon in which tolerance to one drug results in tolerance in other related drugs. Psychic craving which is the overwhelming desire or felt need to take a drug to feel its positive effects and avoid the negative effects of withdrawal will be severe. Mood instability, reduced libido, severe constipation, contracted pupils, respiratory impairments, liver damage, brain damage and tetanus etc. may develop. Menstrual irregularity can occur among women addicts.

**Withdrawal Symptoms**

It is usually experienced shortly before the time of the next scheduled dose. Symptoms similar as moderately severe bout of influenza, watery discharge from eyes and nose, yawning and perspiration appear about 8 to 12 hours after the last dose. Restlessness, irritability, loss of appetite, goose flesh, tremors, papillary dilation and yawning are common. Nausea, vomiting, stomach cramps and diarrhoea may occur. High blood pressure and heartbeat are common. Excruciating pains may happen in the bones and muscles of the back and extremities occur, as do muscle spasms and kicking movements. Suicidal attempts may happen at this juncture. Delirium may be developed in the case of infected patients.

*Cfr. ibid., p. 242*
As a matter of fact narcotic withdrawal is not fatal provided effective
treatment is given.

2.2.3.2 Stimulants

Chemicals and drugs, which temporarily stimulate mind and body
and excite or speed up the central nervous system, are called stimulants.
Substances that people take to attain extraordinary powers of mind and
body are called "pep" pills. These are called "uppers" because they lift the
person up from despair and despondency and give them mental balance,
exhilaration and a super sensual feeling of happiness. Stimulants are
available in the form of pills and are prescribed by doctors. But young
men misuse them for getting a kind of intoxication and ecstasy feeling.
They usually reduce appetite and make a person feel energetic, alert and
less tired. Some may feel happiness while others become jittery and
anxious. At first people feel smart and afterwards sluggish and tired.31

Commonly used stimulants are Nicotine and Caffeine. The active
and powerful stimulants are Cocaine and Amphetamines. The younger
generation is madly attracted to these drugs. They reach the brain through
blood and upset the nervous system. Through varied reactions they
adversely affect the bodily organism.

1. Nicotine

After caffeine. Nicotine comes as the largest widely used
stimulant in the world. Nicotine is produced from Tobacco, which is a

31 Schwebel, Robert Ph.D., Saying No is not Enough. New Market Press, New York,
p. 40-41
product of the new world. Inhabitants of San Salvador having the habit of smoking the fumes of tobacco-leaves gave some to Christopher Columbus. The sailors tried it and slowly became addicted to Nicotine, the chief active substance. From the time of the arrival of Columbus in 1492, the tobacco use spread through the Europe. They carried leaves and seeds of the two species of plants in the genus Nicotiana, namely Nicotiana Tobacam - having large leaves cultivated in South America - and Nicotiana Rustica, having smaller leaves native to West Indies and Eastern North America.\(^{32}\)

The usage of Tobacco in different forms became common in Europe, during and after the revolutionary period (1776). A powdered Tobacco can be snuffed or snorted. Historians have pointed out that Napoleon used to snuff 7 lbs of tobacco each month. During the 19th century, chewing became popular in Europe. In America too chewing tobacco was most common in 1805. Later due to the increase of tuberculosis, spitting became a problem. Those who chewed tobacco could not control spitting and they resorted to smoking. By 1911 smoking became popular and later using cigars got the upper hand. But in 1920 cigarettes became dominant and the fashion continued. In 1981 approximately 744 million cigarettes were produced in U.S.A. Since then the number was decreasing year by year. In India the number of smokers have considerably decreased. In Kerala, Cigarette smoking is not attractive in the campus. Youngsters are in a way averse to smoking.

\(^{32}\) Drugs: Issues For Today, op. cit. p. 112.
Studies have shown that cigarette smoking can cause heart diseases, vascular diseases, chronic lung diseases, and cancer of lungs, larynx, mouth and esophagus. It can cause respiratory infections and many other forms of cancer. Smokeless tobacco is also harmful in causing discoloured teeth, bad breath, gum disease and various types of cancer. Addiction to nicotine is strong and it causes severe withdrawal symptoms such as anxiety, irritability, and lethargy etc.\(^{33}\)

**Pharmacology of Nicotine**

Nicotine is the active ingredient in tobacco. Pure nicotine is an extremely toxic, clear, oily liquid with a characteristic odour. It can depress human beings at high doses and stimulate people at low doses.\(^{34}\)

2. **Caffeine**

It is believed that the use of coffee occurred first in Ethiopia where according to legend, a goat-herd observed changes in the behaviour of his goats after they had eaten a particular type of plant. He also ate some of the leaves of the plant, which had a stimulating effect. Through his friends the news spread throughout the country and to other Arabian countries around A.D.1200.

Around 1600 coffee use had spread to Europe. Many people were against the use of coffee and in 1674 a circular was published in England. By 18\(^{th}\) century, coffee houses had become places for chatting gossips and other dealings.

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\(^{33}\) Saying No is not enough, op. cit., p. 43-44

\(^{34}\) Drugs: Issues For Today, op. cit. p. 116-117
Tea was the main drink till 1765 in British colonies in America. But the tax levied on tea was the cause of the popularity of coffee. During the prohibition time 1920-1933 in America coffee began to be widely used.

3. Tea

It was in China that the leaves of Camellia Sinensis were used for the first time to keep people awake. The name tea is mentioned in writing in 350 A.D. Tax was imposed on tea in 780 A.D. in China. Dutch merchants brought tea to Europe in the 17th century. The East India Company took monopoly and in 1657 Tea was sold together with Coffee in England. The main income became the profit from tea and spices. After the Boston Tea party in 1773, it was patriotic to drink Tea and in colonies Coffee became popular. Theophylline is the primary methylxanthine in tea.

4. Cocoa

Theobroma Cocoa is the scientific name for Cocoa, which originated in Mexico. Beans from the bush is roasted and some fat is removed to make drink. Cortez, the conqueror of Mexico, took Cocoa beans with him to Spain. It spread through out Europe and then to Africa. Theobromine is the predominant methylxanthine seen in chocolate. Amphetamines and Cocaine are the two most powerful stimulant drugs.

5. Amphetamines (Alpha-Methyl Phen Ethyl Amine)

Amphetamine, Dextroamphetamine and Meth-amphetamine are synthetic drugs made in laboratories. Amphetamines are used to control

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35 Ibid., p.132
weight, sleep etc. These are white, odourless, crystalline powders with bitter taste eaten in the form of tablets or capsules. The brand name of this commonly misused drug is Dexedrine, Obetrol etc.

It is believed that stimulants are helpful for continuous studies as at examination times. Some support this view while others hold that the use of stimulants will cause a break down at the time of examination or previous to it. To keep up energy these drugs will have to be used continuously and in increasing quantities. And they will cause dependence. Due to the extra ordinary stimulation and energy attainable these drugs are called by the pet name "speed". This is different from the "speed ball" prepared by mixing Cocaine and Heroin.

Even now amphetamines are used medically for the treatment of narcolepsy and hyper kinetic behaviour in children with organic brain damage.

The amphetamines are misused to control weight, to increase physical performance, mental performance, alertness or relief from general lassitude.

Amphetamine affects the limbic system and the hypothalamus, which are responsible for speed, lack of appetite, insomnia, thirst and hyper sexuality. Intravenous, high-dose amphetamine causes some degree of paranoia. Extreme hyperactivity, fatigue, paranoia etc. may lead to violence. Chronic amphetamine abusers develop psychosis. Overdoses of the drug may lead to death.
Amphetamine has been used as a stimulant for many years. In 1927 Alles synthesized an amphetamine (Benzedrine) and studied its stimulatory nature. Benzedrine was first used as a vasoconstrictor for nasal passageways. It was in 1932 Smith, Kline and French laboratories in Philadelphia introduced this inhaler. Later because of the frequent abuse it was banned.

6. Cocaine

This is the most dangerous among stimulants. It is extracted from the leaves of the Coca plant. E.N.T. surgeons use cocaine as potent stimulant to give anaesthesia. It can constrict blood vessels and limit bleeding. This odourless, white crystalline powder with a bitter numbing taste is no longer used medically.

About 5000 years ago the natives of Andes Mountains in South America had been using Cocaine in association with the religious ceremonies to have an exaltation of spirit, freedom from fatigue and a sense of well-being. In the sixteenth century when the Spanish conquerors arrived in South America the native Indians were cultivating Coca plant and where using Cocaine.

It was in the nineteenth century that Europeans started tasting Coca leaves in the laboratory. In 1844 Gaedken made purified Cocaine. The Cocaine alkaloid extracted from Coca leaf was used by physicians as an excellent anaesthetic. It was used as a medication for cough, nasal problems etc. Main proponent of the use of Cocaine was the Austrian Sigmond Freud. It was by 1890 that the dangerous effect of Cocaine was approved. In the beginning of the twentieth century many products like
Coco-cola. Coca wine etc. appeared in the market. Harrison act of enforcement in 1920 made Cocaine expensive and less available.

In 1930's the Amphetamines became popular and the use of Cocaine diminished. Since it was expensive in 1970's it became the drug of the rich. In Columbia Drug Cartels - the groups of illegal, independent drug dealers who join forces for the purpose of controlling the production, distribution and marketing of illicit drugs - killed thousands of common people, judges and government officials. In 1990 February tremendous force of the mafia persuaded president George Bush to travel to Peru, Columbia and Bolivia to seek support for the U.S. government's attempt to curb drug racket. The U.S. government offers $1 million each for these countries. Even though the usage is in decline since 1980's it still remains as the greatest threat to humanity. Cocaine had been used as an inducer of meditative trance and as an aid for communicating with nature in religious ceremonies. The leaves were offered as sacrifice to the gods, chewed during worship and placed into the mouths of the dead to ensure a favourable welcome to the next world.

Immediately after the conquest of Peru the usage of cocaine was prohibited. Later the Spaniards found that after using cocaine leaves, the labourers became energetic and enthusiastic. So a ration system was planned. Even today Indians carry a bag of cocoa leaves and bag of plant ash. Leaves with ash are made a quid in the mouth and chewed for hours. As the physical exercises increased, so also the amount of leaves to be chewed.
Cocaine is available in three different forms.

(1) The rock form
(2) The flake form
(3) The powder form called street coke.

In the pure form, cocaine is a white crystalline powder. Since it looks like sugar it has got the nickname “snow”. In powder form it can be sniffed in the liquefied form. It can be injected. It is smoked after removing the water-soluble adulterants. Cocaine is so powerful that it can change the psycho-physiological state of the user.

Crack is made from Cocaine and is widely used in U.S.A. etc. It being very expensive, is not used in India. ’Crack’ and ’rock’ are the two nicknames for a stable, smoke able lump composed of Cocaine mixed with baking soda or ammonia. The free base-smoker and crack-smoker are different. The free-base smoker makes his own Crack while the Crack-smoker buys it already made.

**Routes of administration**

By chewing leaves of Coca, Cocaine is absorbed through the mucous membranes of the mouth. It being water-soluble, injection is possible but very rare. It can be sniffed through the nose and can be changed to a substance suitable for smoking.

**Pattern of Abuse**

Cocaine available in the streets by names such as "blow", "coke", "pearl", "crack", "snow", "white girl", "flake", "cola", "leaf", "happy
dust", "toot", "stardust" etc. has become one of the greatest problems of the youth. Experimental users become social users and later develop addiction. Certain studies indicate that some users remain as recreational users such as social and experimental users and a certain number become interified users who abuse cocaine daily, whereas still others become compulsive users, whose abuse become ever more frequently and heavy, resulting in disruption of liver.36

**Effects of Cocaine**

Cocaine has a stronger stimulating effect than amphetamine. If inhaled like snuff it gives plenty of energy, enthusiasm and ability to work. For 20 to 30 minutes this experience lasts. Whether you use cocaine in a single large dose or many times in small doses the final result will be depression, anxiety, giddiness etc. One who has become an addict to Cocaine will experience sleeplessness, loss of weight, restlessness, creeping skin etc. The functions of the heart and liver will be seriously affected.

**Short Term Effects**

Cocaine and Amphetamines have more or less the same impact but the mode of action is different. The following are the short-term effects. Heightened feeling of well-being, Euphoria, increased self-confidence, increased motor and speech activity, suppression of appetite and an increased sense of wakefulness, which cover up tiredness. Increased respiration, heartbeat, blood pressure, papillary dilation, dryness of

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mouth, reduced gastrointestinal activity, urinary retention etc. are also seen. With large dose headache, hypertension, profuse sweating, severe agitation tremors etc. are experienced.\textsuperscript{37}

**Long Term Effects**

Psychological problems like paranoid ideations, hallucinations, amphetamine psychosis, stereotyped behaviour, depression, flattened emotions and emotional numbness, namely the "the coke blues" etc. may occur.

Physiologically the addict may develop blood pressure, the increased pulse rate, feelings of Euphoria, impotency, and anxiety, loss of appetite and sleep problems etc. People with these kinds of problems pose a threat to society.

**2.2.3.3 Hallucinogens**

"Hallucinogens are drugs which dramatically affect perception, emotions and mental processes. As they distort the perception of objective reality and produce hallucinations, these are known as 'hallucinogens'. Hallucinogens are also referred to as 'Psychedelic' (mind altering) drugs."\textsuperscript{38} The misuse of Hallucinogens as the name implies, creates visions of things and the user hear sounds, which are not real. It can change the reality of time, experience and distance. The intensity of the effect depends on the quality of the drug and the quantity of the dose.

\textsuperscript{37} Drug Addiction and Its Management op. cit. p. 9-10.
\textsuperscript{38} Ibid. p.13
Hallucinogens are not available in India either as synthetic products or as natural substances. The following are the main hallucinogens available in different parts of the world.

1. LSD (Lysergic acid diethylamide)

LSD is the most powerful hallucinogen, which was accidentally synthesized in 1943 by a Swiss chemist Albert Hofmann while working for a pharmaceutical company called Sandoze. LSD is a product from lysergic acid derived from the ergot fungus, which grows on rye. It can be produced from lysergic acid amide, a chemical from morning glory seeds. After 4 years the company marketed the drug for two purposes.

1) To aid releasing "repressed material" in psychotherapy.

2) To induce model psychoses of short duration.

The American psychiatrists and the CIA were interested in this drug that made people crazy. In 1960's tests on guinea pigs showed that they liked this acid and people began to use it for recreational purposes. This white odourless crystalline material, soluble in water has no medical use but can be used as a research tool to study the mechanism of mental illness.

**Route of Administration**

Since it is easily absorbed it can be taken as tablets. Some may dissolve it in water and make it absorb in blotting papers and a piece of it is kept under tongue and sucked.

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Cfr. Saying No is not enough, op.cit. p.49
2. Mescaline

This is produced from the peyote cactus and is in the form of white or coloured powder. Synthetic production is also available. It is usually taken orally. Visual hallucination occurs if peyote cactus is eaten orally. It is a legal drug in U.S.A. because Indians of native American church use it for religious ceremony.

3. Psilocybin

'Psilocybe mexicana' mushroom called 'magic mushroom' is used for the production of psilocybin. Synthetic production can also be done. In Ooty and Kodaikanal the crude mushroom preparations with Psilocybin are sold as dried mushrooms. B.C. 1500 onwards the hallucinogenic mushrooms were began to be used in Mexico and central Africa for religious practices. These mushrooms can be eaten or can be powdered and smoked. This drug is available in powder or in liquid form. It causes nausea, coldness of the extremities and mydriasis. As a result of intoxication, the mental and physical depression, lassitude and distortion of one’s sense of time and space etc. occurs.

4. DMT and DET

DMT (Dimethyltryptamine) is also known as ‘businessman’s trip” because a 70 milligram injected dose can cause hallucinatory effects. Originally DMT is produced from seeds of Piptadenia peregrina and piptadenia macrocarpa legumes found in South America and Caribbean islands.
Diethyltryptamine (DET) does not develop physical dependence but tolerance. Any cross-tolerance between DMT and LSD, Mescaline or Psilocybin is not reported.\textsuperscript{40}

5. PCP (Phencyclidine - HCL)

It is called ‘angel-dust’ and was first synthesized in 1920's; later in 60's it became famous as a non-narcotic anaesthetic agent with analgesic properties. This white crystalline powder, which dissolves in water, has many side effects on the human body. It can be used as an anaesthetic for animals. In the late 1960's people started using it for fun. It can be snorted, smoked and eaten. Very rarely it is taken intravenously.

It is reported that more than 7 million people used this drug in U.S.A. Chronic users are reported to have developed memory problems and speech difficulty. Mood disorders such as depression and anxiety may occur. In certain cases the PCP user may become paranoid and violent too. Death may occur due to convulsions or depression of the respiratory centers.

\textbf{Tolerance}

Tolerance develops quickly and disappears when the usage is discontinued. Rapid development of tolerance helps at the initial stage to quit it for a while to have the original sensitivity. Psychologically the user becomes a dependant on the drugs. Withdrawal symptoms are not particularly mentioned.\textsuperscript{41}

\begin{thebibliography}{1}
\bibitem{40} Drugs: A factual account, op. cit. p. 113
\bibitem{41} Drug Addiction and Its Management op. cit. p. 16
\end{thebibliography}
Short term Effects of Hallucinogens

Effects may vary from one drug to another.

1) Severely depressive or euphoric mood alteration may take place.

2) Intensification of the senses eg. Colour and texture items become more vivid and perception of the details is increased.

3) Distortion of the senses of direction, distance and time eg. One or two steps may seem like big ditches.

4) Mixing up of senses synesthesia may take place.(eg. Seeing music, hearing visual things, hear colours etc.)

5) 'Psuedo' hallucinations (eg. Seeing St George riding on a motor cycle)

6) Sense of the past, present and future may be jumbled. Concentration is lost and attention is changed.

7) Feelings of depersonalization, loss of body image and loss of sensual reality. (The addicts feel that body is shrinking, becoming weightless or having wings etc.)

8) He entertains philosophical issues and unclear ideas which are not understandable for those who are not under the influence of hallucinogens.

9) Capacity for judgment may be impaired and self-destruction may occur due to rash decisions.

10) Severe anxiety, acute sleeplessness and heavy restlessness may occur.
Long-term Effects

1) Flashbacks or spontaneous recurrences of an LSD experience can occur without warning for up to a year after the use. The user may have hallucinogenic effects even after abstinence for a few months.

2) A motivational syndrome - The user becomes very apathetic and passive without interest in life.

3) Psychosis - It may be like paranoid schizophrenia with visual and other hallucinations, delusional thinking and bizarre behaviour. The psychosis may prolong for many years.\textsuperscript{42}

2.2.3.4 Depressants

Depressants, at times called "downers", depress or slow down the functions of mind, body especially the central nervous system, the heart beat and respiration. People resort to chemicals to have relaxation, calmness, and proper sleep.

Two categories are there.

a) Sedative-hypnotics

These are depressants that calm down or sedate or induce sleep. These are abused in the form of tablets, including alcohol, creates impact twice because they combine with each other synergistically.

b) Barbiturates

Barbiturates are derived from barbituric acid ($C_4H_7N_2O_3$), a combination of urea and malonic acid. Depending on the dosage or

\textsuperscript{42} Ibid., p.34
formulation, barbiturates have a sedative (tranquillizing), hypnotic (sleep-inducing), anticonvulsant, or anaesthetic effect. Barbiturates depress brain function.

Very short-acting barbiturates are injected intravenously to induce rapid anaesthesia before surgery. The Phenobarbitone, first one of the barbiturate group, was known from 1913 onwards. It being a long-acting barbiturate, is prescribed with other medicines to prevent epileptic seizures. Other barbituric-acid derivatives were used as anti-anxiety medications until the development of the tranquillizer; they are only used for short-term treatment of severe insomnia, as they have a high risk of toxic effects, tolerance leading to addiction, and adverse effects on the liver.

Barbiturates are common drugs of abuse. Taken orally or intravenously, they produce symptoms similar to drunkenness: loss of inhibition, boisterous or violent behaviour, muscle inco-ordination, depression, and sedation. Since they are physically addictive, symptoms from their withdrawal are severe. Barbiturates are even now used for medical purposes but overdoses may cause mortality.⁴³

a. Barbiturates are more than 2500 types.

<table>
<thead>
<tr>
<th>Scientific name</th>
<th>Trade name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenobarbital</td>
<td>Huminal, Cardinal</td>
</tr>
<tr>
<td>Secobarbital, Amylobarbital</td>
<td>Vesparax</td>
</tr>
<tr>
<td>Methaqualone</td>
<td>Mandrax</td>
</tr>
<tr>
<td>Thiopental</td>
<td>Sodium pentothal</td>
</tr>
<tr>
<td>Pentobarbital</td>
<td>Nembutal</td>
</tr>
</tbody>
</table>

b. Benzodiazepines are more than 2000 types

<table>
<thead>
<tr>
<th>Lorazepam</th>
<th>Ativan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diazepam</td>
<td>Valium, Campose</td>
</tr>
<tr>
<td>Flurazepam</td>
<td>Dalmate</td>
</tr>
<tr>
<td>Alprazolam</td>
<td>Alprax, Trika</td>
</tr>
<tr>
<td>Chlorodiazepoxide</td>
<td>Librium</td>
</tr>
</tbody>
</table>

All these sedative hypnotics are administered orally either in the form of capsules or tablets. Also subcutaneous, intravenous or intramuscular injections are available. Barbiturates and Tranquilizers are medically used as a relaxant before and during surgery, a relief giving substance from minor pains, tension and anxiety, a remedy for sleeplessness and effects of stimulants etc.

**General Effect**

1) Low dose:Slows down heart beating and breath taking, causes mild drowsiness. Reduces tension, anxiety, fears etc. and relaxes muscles.
2) High dose: Staggering, slurred speech disorientation and confusion etc. are resulted.

3) Over dose: Essential functions of the body such as heart beating and breath taking etc. can be slowed down drastically leading to death or coma.

2.2.3.5 Cannabis

Cannabis is the term, which refers to marijuana and other drugs, produced from Indian limp-plant, cannabis sativa. It has been cultivated for centuries in different parts of the world for its tough fibre of the stem, for the oil in its seed, and for its psychoactive properties.

The history of cannabis can be traced back to 3000 B.C. The Chinese people had been using it for fibre and medicinal properties. Later around 1000 B.C. it had been spread to India and later to Greece etc. By 1000 A.D. it was well known in Middle East especially eastern Mediterranean. Around 15th century the use of cannabis was reported in Western Europe. It was through the English people that it spread to North America and through the Spanish conquerors to South America. At first, the main use was only to make ropes. The use of Marijuana became popular in America during the time of prohibition, which began in the year 1920. As a result of prohibition the price of alcohol became very high and quality became very low. People seeking some kind of enjoyment through chemical use began to use Marijuana. By the new state laws this tendency was crushed and the situation continued till 60’s. Because of Vietnam War, failure in environment management, social
injustice, aggressive opposition against establishment etc. American youth began to use it on a large scale.44

From years ago it has been known with many names such as herb, grass, weed, Mary Jane, Pot, Aunt Mary, ganja, boom, gangster, kif, skunk, Texas tea, Maui Wowie, chronic, Columbian gold, Panama Red, Acapulco etc.

More than 60 cannabinoids can be prepared from cannabis plant. The important drugs under this category are listed below.

1. **Hashish/Charas**

   There are female and male cannabis plants. The sticky resin from the flowers of the female plant has high delta -a- tetrahydrocannabinol (THC) content. The secretion from the flowers and leaves of marijuana is dried and Hashish is made from this, which is smokable. The THC in hashish ranges from 3.6 - 8%. Its colours ranges from light brown to black. Normally hashish is smoked and sometimes it is eaten with food.

2. **Ganja/ Marihuana**

   Marijuana is the most frequently used illegal drug in USA. The plant can be seen in two varieties - tall thin one and another shorter type bushier. Sinsemilla, the Spanish word having the meaning seedless is marijuana. For seed formation it takes high concentration of THC. If it is blocked the producer gets highly THC concentrated leaves.

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44 Drugs: Issues for Today, p.255-256
Ganja is prepared from the dried leaves and flowers of the plant. The colour may range from green to greenish brown. Ganja and Marijuana are smoked in hand rolled cigarettes or pipes. At times it is mixed with tobacco, and smoked in various proportions.

Marijuana addicts usually:

- Seem dizzy and have trouble in walking.
- Seem silly and giggly for no reason
- Have very red, bloodshot eyes
- Have difficulty in remembering things that just happened.45

**Facts about Marijuana**

The mood-altering ingredient in marijuana is THC. THC is retained in fatty tissues in the body for long periods of time. This increases the risk of progressive build up of toxicity in regular user.

- Low to moderate doses produce a sense of well being, a pleasant state of relaxation, altered perception of distance and time, impaired memory of recent events, and impaired physical coordination.

- Even an occasional use can be physically hazardous if the user attempts to drive, fly, or operate heavy machinery during the state of intoxication.

Apathy, lack of concern for the future, and loss of motivation can occur in heavy users.

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45 Marijuana: Facts parents Need to know (Revised) NIDA, U.S. Dept. of Health and Human Services, 1998, p.8
Adverse reactions can occur which include mild anxiety, panic and paranoia, detachment from reality, delusions, hallucinations, or illusions, and bizarre behaviour.

When marijuana is used in combination with other drugs like alcohol, barbiturates, and amphetamines, they are three or more times more deadly than when they are taken by themselves.

The effects of THC are faster and five to ten times greater when smoked rather than when eaten.

Marijuana...

... Causes lowered resistance to infection

... Causes an impairment of the ability to understand relationships and to express complex ideas.

... Impairs the ability to concentrate and impairs short-term memory.

... Can cause irregular sleeping patterns and insomnia

... Can produce unexpected changes in mood.

... Can cause impairment of the coordination of body movements.

... Can cause blurred vision and irregular visual perception.

Marijuana smoke has more cancer causing chemicals than tobacco smoke. For instance, smoking 3 to 5 marijuana joints is equivalent to smoking 16 cigarettes a day.

It is dangerous for those with heart conditions to smoke marijuana because heart beat and blood pressure are elevated.
When adolescent males use marijuana, it may cause the development of larger breasts.

Marijuana may cause an inability to function sexually.

When used by adolescent males, it may cause deficiency in male sex hormone, causing infertility in males resulting from absence of sperms.

When adolescent females use marijuana, the male hormone levels are increased in females, which may cause male characteristics to develop such as hair on the face.

Marijuana use can cause irregular menstrual cycles and decreased ability to become pregnant.

When used by pregnant women, marijuana can increase the mortality rates of their babies.

The effects of Marijuana on each person depends on certain things such as: Type of cannabis used and THC content, the way the drug is taken (smoking or eating) experience of the user, setting where the drug is used etc.

3. Hashish oil

A tar-like liquid distilled from cannabis plant by a process of repeated extraction of the resin. It will have a high concentration of THC ranging from 20% to 60%. It is a dark visions liquid. Cigarettes etc. are dipped into it and smoked.
4. **Bhang**

The best quality marijuana in Asia is referred as Ganja while the poor quality of Marijuana is called Bhang. It is made up of the lower leaves, stems and seeds. The THC concentration depends on the growing conditions of the plant, the amount of sunshine and the temperature. Bhang, the leafy material is drunk usually braided with tea or milk.

**Distribution**

It takes 10-30 minutes to reach peak concentration of THC in the blood. Because of its high liquid solubility about 50% THC is absorbed and enters the blood stream. Immediate effect is seen and lasts for about 2-4 hours. It takes 30 minutes to finish the absorption after the cessation of smoking. THC is rapidly distributed across the blood-brain barrier to brain as well to the placenta of the foetus. The THC of foetus will be equal to that of the mother. The THC, which remains in the blood stream, has a life of about 19 hours. If it is taken orally the effect is felt after 1 hour and reaches the peak after 5-6 hours and the effect lasts for nearly 10 hours. Since the effect is three times greater when it is smoked, the users prefer to have smoking.

**Excretion**

It is reported that there are more than 80 compounds that emerge from the biotransformation of THC. The important one, 11-hydroxy-delta-9, THC has a half-life of about 50 hours. Because of this long life up to 50% of the original dose can be detected in the body for up to a week. As a matter of fact, the complete elimination takes at least 6 weeks.
Majority of the THC is eliminated through feces (about 2/3) and the Urine (about 1/3). When THC enters into fat tissues from the bloodstream it goes back again to the blood and reaches the liver and get metabolized there into water soluble compounds and is excreted. Some of the metabolites are psychoactive too. These kinds of metabolites are detected from the breast milk of the lactating mothers.

Fatty tissues of different organs can readily absorb THC from Marijuana and Ganja. In the case of THC it can be detected weeks after having stopped the usage.

**Tolerance and Dependence**

Those who use frequently and take high dose of the substance develop tolerance. To have the previous effect they have to increase the quality. Several days of abstinence may help to restore the original stage of sensitivity. Both physical and psychological dependence may develop by regular use. The user may have a craving for the substance and will be satisfied only with its use.

Absence of drugs leads him to withdrawal such as loss of appetite, nervousness, anxiety, reduced sleep, excessive sweating, stomach problems etc. Due to withdrawal Delirium tremens may occur and depression or psychotic problems develop.

**Short-term effects**

After inhaling the smoke, the user feels a drug mouth, rapid heart beat, loss of co-ordination, poor sense of balance and slower reaction time. Since the blood vessels in the eye expand, the user's eyes look red.
Marijuana makes blood pressure high. After the immediate effects of 2 or 3 hours, the user may feel sleepy.

**Long-term effects**

Regular use of Marijuana and THC may cause cancer, respiratory problems, dysfunction of reproductive system and develop hazards in immune systems. Children born of Marijuana users are usually shorter, weighed less and smaller in head sizes etc. Marijuana smoking affects the brain and leads to impaired short-term memory, perception, judgment and motor skills. It can cause some kind of mental illness such as Schizophrenia. Some will have chronic anxiety, personality disturbances, depression etc.

Scientists have seen lung tissues injured or destroyed by marijuana smoke. Marijuana smokers may develop lung infections such as pneumonia, chest cold etc. Dr. Samuel Deadwyler of Bowman Gray School of Medicine at Wake Forest University, has proved that the neurons in the first step of the information processing system of the hippocampus are depressed by THC: He, by using rats, also proved that learned behaviours depending on the hippocampus also deteriorate. Rats that received THC take longer time to respond to a sound that they have previously learned to recognize and often fail to recognize it altogether.

Dr. Philip Landfield of Bowman Gray School of medicine and Dr. Andrew Scallet of national centre for toxological research, have given

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46 Ibid., p. 16-22
47 Dr. David Friedman "Toxic Effects of Marijuana", Alcoholism and Addiction-July-August, 1987 p.47
ample evidence that chronic THC exposure damages nerve cells and causes other pathological changes in the hippocampus. Loss of cells found out by Dr. Landfield is similar to the loss seen by normal aging.\(^{48}\)

The study conducted by Dr. Ron hammer, University of Hawai, has shown that a single dose of THC increases the metabolism in one region of the Hippocampus that receives sensory inputs. Long-term use shows damage because the repeated over-activation of the inputs to this region becomes harmful.\(^{49}\)

2.2.3.6 Volatile solvents

Volatile hydrocarbons and petroleum derivatives like petrol, paints, nail polish remover, etherglue, benzene, varnish thinner and lighter fluid are considered as volatile solvents. Usually teenagers under 18 abuse these kinds of things. Though this abuse is rare in India, it has been reported among street children. Inhalation by sniffing is the usual route of administration.

Short-term Effects

Those who start with volatile substance abuse, end up in alcohol or other drug abuse. Euphoria, clouded thinking, slurred speech and staggering gait etc. can be observed. Nearly half of them will suffer from hallucinations.

\(^{48}\) Ibid., p. 47
\(^{49}\) Ibid., p. 47
Long-term Effects

Permanent brain damage and psychosis are reported. Tachycardia with possible ventricular fibrillation may occur. Liver damage, problems with kidney and heart are possible.\(^{50}\)

2.2.3.7 Other drugs of abuse

The following are some more: Muscle relaxants like carisoprodol, which resemble alcohol and other sedative hypnotics in effects. It is available in the form of tablets and is abused for its depressant effects. CNS analgesics such as dextropropoxyphene (Proxynon) and dextropropoxyphene in combination with dicyclomine. Spasmoproyxvon is the best example. For pain relieving effects tablets and ampules are taken orally and intravenously. Usually these drugs are given to the accident trauma patients for relieving pain. Overdose may cause the development of addiction.

Chlorpheneramine maleate (eg. Avil) and Anti-emetic like Promethazine (eg. Phenergan) are abused with narcotic drugs such as Heroin or Buprenorphine to have greater effects. Anti-depressant drugs like Aminetine (survector) is being abused for its sedative effect. In case of the development of tolerance doctors have to resort to other category of anti-depressants, which do not produce sedation.\(^{51}\)

\(^{50}\) Drug Addiction and Its Management, op cit. p.20
\(^{51}\) ibid. p.20-21
2.2.4 Various Causes of Drug Abuse

According to Mark S. Gold, M.D. parental alcohol or drug problems, divorce, money problems, other sources of family stress, perceived use of drugs by siblings or friends, poor parent-child communication, access to illicit drugs, pre-existing psychological or behavioural problems, extensive peer involvement with drugs etc. are the predisposing factors of drug abuse. There are various factors that influence the use, abuse and misuse of drugs.

2.2.4.1 Individual Factors

Each person is unique in both physical and mental abilities. The personality and way of thinking are formed in different backgrounds and the personal attitudes belief system, personality traits, interpersonal skills, the areas to be developed etc. will be different from that of others.

1) Personality characteristics

From the very sight of a person some personality traits are noticed. His behaviour, way of talking etc. promulgate the characteristics of rebelliousness anti-social attitude, compulsiveness, depression, poor impulse control, impulsiveness, low tolerance, fluctuation, aggressiveness, rejection of established authority, impulse to question everything, judgment etc.

2) Attitudes and beliefs

A certain kind of attitude towards some persons, things and way of living and some beliefs and connections concerning certain things etc.

influence the misuse and abuse of alcohol. Eg. Certain drugs are harmless. If you take them in a controlled way some drinks are harmless provided you can limit them to a fixed measure.

My father drinks in moderate quantities more than for the last 30 years. He does not have any problem at all.

I won’t become an addict.
It won’t happen to me.
It is just for fun.
I can control myself.
It is not that bad.
It is only a beer.
I know what am I doing.

Users of alcohol & drugs possess these kind attitudes in order to justify their habits. They do believe in it.

3) Inter personal skills

A person’s ability to interact with people and face any problem poised against him without being perplexed and the skill to get along with any adverse situation etc. can also influence the misuse and abuse of Drug. Addicts will have poor life skills. They may have defensive, actions, little tolerance, low sympathy, difficulty in asking for help, irritate nature.

4) Genetic predisposition

Children of alcoholics are prone to alcoholism than children of non-alcoholics. The physiological factors are very important. There is a physiological difference between persons.
5) **Problems in the stage of growth**

The process of becoming an adult involves many developmental tasks. The developments of living skills are necessary for a happy and productive life. Each and every stage of development is to be carefully considered.

6) **Curiosity**

Many teenagers are eager to know the taste and to experience the effects. They want to have the first hand knowledge and wish to explain everything in detail to others.

7) **Alienation**

No man is an island. Each person wishes to be related to others. Everybody needs to be honoured and accepted. Those who feel themselves isolated and neglected make friendship and find consolation in substance abuse etc.

8) **Ignorance**

Without knowing the dangers, many people begin to use it and become victims of addiction.

9) **To show maturity**

Being felt identity crisis, some may choose drugs to identify oneself as a mature person. During the adolescent period, to identify with the group some may start taking drugs.
2.2.4.2 Social Factors

1) Family

Home atmosphere makes the first school for the children. If the family members are of opinion that drinking and drugging a little is not a problem, the child is likely to develop the same idea. He may have the belief that a little bit won’t harm the body. Because of its addictive nature slowly he will become an addict. Parents who quarrel each other or busy in their own activities cannot give love and enough time to children. These children are prone to drugs.

2) Peer Group

Peer group pressure is very influential concerning drug use. Users of drugs persuade the non-users and make them users. This is very true concerning marijuana and cocaine users. The fear of losing friends makes them obey the demands of the group. Later they may become hardcore drug addicts.

3) Role model

Youngsters are fond of heroes of cinema, athletics, games, politics etc. When they get some example from the heroes, they try to imitate them.

4) Urbanization and unemployment

The new way of life and the city culture attracts the attention of many. Due to unemployment and changing life style many are lead to drug abuse.

Youngsters at their gatherings search for new vitality and thrill. Those who use drugs show smartness and courage. Without knowing its dangerous effects many begin to be under its influence.
5) Easy availability

Production and supply of drugs on a large scale cause the easy availability. Formerly the numbers of drug addicts were very few in the country because the usage of drugs and availability were very rare. Now-a-days drugs are easily available in different forms.

2.3 TOBACCO RELATED PROBLEMS

Mark Twain once commented that giving up smoking was easy -- so easy that he had done it a hundred times. At the end of 16th century tobacco was introduced in Europe for medicinal purposes. Until 1940’s little was known about its effects. Medical text books either ignored or referred briefly to tobacco amblyopia—a form of blindness associated with heavy pipe smoking and poor nutritional status—to tobacco angina, to cancers of lip, lungs, mouth, tongue, pharynx and larynx, nasopharynx, oesophagus etc. and are self administered. Nicotine is one of the major causes of death and diseases today. Tobacco smoking causes cancer, pulmonary obstructive disease and cardiovascular disease etc. A variety of psychological, behavioural and psychological disturbances may occur due to the discontinuance of smoking. A craving for tobacco, restlessness, dullness, sleep disturbance, gastrointestinal disorder, drowsiness, amnesia, headache, anxiety, impairment of concentration, judgment and psychomotor performance etc. are some of the effects.

Tobacco related cancers are seen in lung, urinary bladder, renal pelvis, oral cavity, pharynx, larynx, oesophagus, pancreas, kidney, and liver.

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Tobacco is carcinogenic not only when it is burned and smoked but also when it is chewed. Smokers of cigarettes that yield high levels of tar and nicotine have a greater risk of developing lung cancer than smokers of cigarettes that yield less tar. Pyrolysis of tobacco is the cause of tar. Both tar and smoke of tobacco are carcinogenic.

Passive exposure to other people's tobacco smoke must be presumed to cause some risk of developing lung cancer. In case of Coronary heart disease in developed countries one third of deaths of middle-aged people may be attributed to cigarette smoking. Smoking is also the cause of chronic obstructive lung disease. All the scientific studies on cigarette smoking show that risk of getting cancer (smokers of 20 or more cigarettes) is ten to forty fold greater for lifelong nonsmokers.52

Involuntary or passive smoking either by taking smoke from the ambient atmosphere or by absorbing the toxic elements into the circulation, in pregnant women, may cross the placenta and affect the foetus. Direct smoking is different from indirect smoking only in quantity and not in quality.

The chewing of betel quid is of ancient origin in Indian subcontinent, South-East Asia and some parts of Oceania. The use of tobacco with betel quid started in the 19th century. When tobacco is added the risk of oral, oropharyngeal, hypopharyngeal and oesophageal cancer is considerably increased.

Relative risk and attributable risk % due to betel-quid chewing, with or without tobacco, in smokers and nonsmokers.

<table>
<thead>
<tr>
<th>Habit</th>
<th>Relative risk</th>
<th>Attributable risk %</th>
</tr>
</thead>
<tbody>
<tr>
<td>No habit</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Smoking only (s)</td>
<td>4</td>
<td>67</td>
</tr>
<tr>
<td>Betel-quid chewing only (B)</td>
<td>3</td>
<td>22</td>
</tr>
<tr>
<td>B + S</td>
<td>4</td>
<td>50</td>
</tr>
<tr>
<td>Betel quid chewed with Tobacco (T)</td>
<td>15</td>
<td>89</td>
</tr>
<tr>
<td>B + T + S</td>
<td>22</td>
<td>92</td>
</tr>
</tbody>
</table>

Source: Data is from Hirayama.

This table clearly shows that combined habit of smoking and chewing with tobacco increases the risk.

Tobacco is used in many mixtures. People use it for fun.

1. **Mishri**

   It is prepared by heating sun-dried Indian tobacco on a heated metal plate until it becomes black. The powder from this tobacco is used as a paste to clean the teeth. Some keep it for long time a day in the mouth.

2. **Khaini**

   It is powder from the sun dried Indian tobacco and lime. It is placed between cheek and gum so that it may dissolve away. Some people chew it too.

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3. Zarda/Kiwan

For zarda preparation tobacco leaf is cut into pieces and then boiled in water with lime and spices. The residue is dried and colour added using vegetable dyes. Tobacco leaf is boiled in rose water and spices. From this mixture pills or granules are prepared.

**Estimates of constituents in tobacco smoke (3900 known compounds)**

<table>
<thead>
<tr>
<th>Major classes of compounds</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amides, imides, lactones</td>
<td>240</td>
</tr>
<tr>
<td>Carboxylic. acids, anhydrides</td>
<td>240</td>
</tr>
<tr>
<td>Lactones</td>
<td>150</td>
</tr>
<tr>
<td>Esters</td>
<td>475</td>
</tr>
<tr>
<td>Aldehydes</td>
<td>110</td>
</tr>
<tr>
<td>Ketones</td>
<td>520</td>
</tr>
<tr>
<td>Alcohols</td>
<td>380</td>
</tr>
<tr>
<td>Phenols</td>
<td>285</td>
</tr>
<tr>
<td>Amines</td>
<td>200</td>
</tr>
<tr>
<td>N-Nitrosamines</td>
<td>22</td>
</tr>
<tr>
<td>N- Heterocyclics</td>
<td>920</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>755</td>
</tr>
<tr>
<td>Nitrites</td>
<td>105</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>45</td>
</tr>
<tr>
<td>Ethers</td>
<td>310</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4865</td>
</tr>
</tbody>
</table>

*Ibid., 146*
Burning tobacco product leads to the formation of mainstream smoke (MS) and side stream smoke (SS). Mainstream smoke is produced in the burning cone and hot zones of cigarettes and cigars. It passes through the tobacco column end cut of the mouthpiece. Side stream is produced in the ambient air with the puffing. The total MS of a cigarette is 400-500 mg. More than 92% is made up of gaseous components namely nitrogen (58%) oxygen (12%) carbon dioxide (13%) and carbon monoxide (3.5%). The rest contains other vapour phase components and compounds constituting the particulate phase.\textsuperscript{57} This is clear from the following diagram.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{fig1.png}
\caption{Fig. No. 1}
\end{figure}

\textsuperscript{57} Cfr. D. Hoffmann & E.L. Wynder, Chemical constituents and Bioactivity of Tobacco Smoke, in: "Tobacco ...." Zaridze and Peto, p.145-165
4. Gudakhu

This paste is prepared from sun-dried tobacco, molasses and other ingredients used for cleaning teeth in Orissa and South Bihar.

5. Shammah

A mixture of powered tobacco leaf, carbonate time and ash is used in parts of Saudi Arabia etc.

2.4.1. Ban of advertisements and legislation

Legislation is the cheapest way of implementing health programmes. If the effect of advertising ban is little why do the tobacco companies spend almost two billion dollars a year on advertisement all over the world.

Legislation will have a short term and long team effects. When the act is announced, as a result of effective discussion it will have wide publicity. This publicity and the enthusiasm of the implementing authority will help to reduce the use of tobacco considerably. As a result the short-term effect will be impressive.

The long term effect will be on young men and children who grow in an environment free of an advertising pressure which praise the smoking habit as the key to success, self-confidence adulthood etc.

Morals of the Government can be questioned. If you try to convince me that smoking is dangerous for my health, why don’t you stop advertising?
In rich countries there is a decline in the rate of consumption of tobacco. The tobacco companies want to make up that loss in developing countries by giving strong and effective publicity. People are affected years after the use. So the result is enthusiastic for the companies at the beginning stage.

In 1981, the Norwegian Medical Association passed the following resolution: “The Representative Body of the Norwegian Medical Association urges the Government to work towards making Norway a smoke free society by the year 2000....Phasing out the consumption of tobacco is an important step towards improving the health of the nation.”

This is not a utopian or unrealistic goal. Sir George Young, the UK Junior Minister of Health spoke at Stockholm in 1980; “... the solution to many of today’s medical problems will not be found in the research laboratories of our hospitals, but in our parliaments. For the prospective patient, the answer may not be cure by incision at the operating table, but prevention by decision at the cabinet table”.

Advertising has got much effect. They try to promote one particular brand over another. They also try to create a general acceptance for smoking.

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58 Quoted by K. Bjartveit Legislation and political Activity in Tobacco, ed. by Peto & Zzaridze. p. 294
59 “Legislation and Political Activity,” p.295
2.4.2. For successful legislative activities

It is important to impart adequate knowledge about the danger of smoking. The role of media is very crucial.

Anti-smoking legislation should have connection with health services. It is part of preventive health.

Establish a national agency to lead the anti-smoking activities. This agency can get official recognition, financial supports and cooperation of all the departments of voluntary organizations.

The dire warning of Richard Peto and Alan Lopez is noteworthy if no further change occurs in the proportion of young adults who become regular smokers, about 10 million of the world's population now living will eventually die each year from tobacco-related diseases beginning about the year 2025 (Peto & Lopez 1990). Advertising-

Multinational companies resort to publicity for selling products. In 1988 in Malaysia cigarette and cigarette-related advisers spent almost one-fifth of total advertising expenditure. In 1990 Chapman & Leng conducted a survey and found out that tobacco companies rank the first among the top ten advertisers in the world. In 1988 they spent almost $32 million for advertisement.\(^6\)

As a matter of fact, mild control measures had no measurable effect. But the strict control measures such as advertising bans, strong health warnings, tax increase etc. are effective in reducing consumption.

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In the third world a new smoke ring is being formed which is even stronger than the one in the world. It is made up of the same political and economic links-employment, revenue, trade, advertising and promotion but it is stronger because the government of many developing countries are even more dependent on tobacco’ says Taylor 1984.61

The guidelines presented by WHO is noteworthy regarding the prevention of tobacco smoking.

- Control of tobacco advertising and promotion.
- Health warnings and statement and control of tar and nicotine content.
- Restrictions on places of sale.
- Restrictions on smoking in public places.
- Restrictions on smoking in the workplace.
- Preventing young people from smoking.
- Health education on tobacco.
- Legislation establishing a national organization for policy development and coordination.62

SUMMING UP

Experience shows us that the industry will actively work against any move that reduces the selling and it is unwilling to agree to any code of conduct that may affect adversely the selling. Strict legislation is a signal from the part of the government. Conscientization is the work to be done by the social workers. Complete abstention is the decision to be taken by the individual.

61 Ibid., p. 152
62 Ibid., p. 181