

“The term alcoholic and alcoholism have been subjected to some controversy and have been used differently by various groups in the past”. There is a trend today to use more restrictive definition for example, the world health organization (WHO) no longer use the term alcoholism but prefer the term alcohol dependence syndrome. “A disorder characterized by the excessive consumption of and dependence on alcoholic beverages, leading to physical and psychological harm and impaired social and vocational functioning. Alcoholism is also known as alcohol abuse and alcohol dependence”. “The term alcoholic is often used to refer to a person with a serious drinking problem, who’s drinking is who’s drinking disturbs his whole life style including health, interpersonal relationship and his overall adjustment with life. Likewise, the term alcoholism refers a dependence on alcohol that seriously interferes with life adjustment”.

Historically, we have been very certain about fermenting alcohol from just about any fruit or vegetable in part because many foods contain sugar. “Alcoholic drinks have included made from honey, sake from rice, wine from palm mezcaland plaque from agaves and cactus liquor from maple syrup, liquor from South American jungle fruits, wine from grapes and beer from grains (Lazare, 1989) however defined, alcoholism is a major problem in the United States”. A large epidemiological study found the lifetime prevalence for alcoholism in the United States to be 13.4 percent .One in seven people meet the criteria for alcohol abuse (Grant, 1997). The potentially detrimental effects of excessive alcohol use for an individual, his or her loved ones, and society-legion. Heavy drinking is associated with vulnerability to injury (Shepherd & Brickley, 1996). “The life span of an average alcoholic is about 12 years shorter than that of the normal citizen, and moreover alcohol now ranks as the third major cause of the death in the united states, coronary heart disease and cancer”. It significantly lowers performance on cognitive ability tasks such as problem solving and the more complex task the more impairment, (Pickworth, Rohrer, & Frant, 1997). Organic impairment, including brain shrinking occurs in a high proportion of alcoholics (Errico, Parsons & King, 1991; Lishman, Jacobson, & Acker, 1987), especially among following periods of sobriety (Hunt, 1993).

The definitions of alcoholism

“The National Council on Alcoholism and Drug Dependence and The American Society of Addiction Medicine’s terminology vary significantly between the medical community, treatment programs, and the general public”.

Define alcoholism as "a primary, chronic disease characterized by impaired control over drinking, preoccupation with the drug alcohol, use of alcohol despite adverse consequences, and distortions in thinking." (Morse & Flavin, 1992). The DSM-IV (The Diagnostic and Statistical Manual of Mental Disorders) defines “alcohol abuse as repeated use despite recurrent adverse consequences. It further defines alcohol Dependence as Alcohol abuse combined with tolerance, withdrawal, and an uncontrollable drive to drink (Vandenbos & Gary, 2006). In the fields of psychology and psychiatry, alcoholism is the famous term for Alcohol Dependence” (Vandenbos & Gary, 2006).

“**Use** refers to intake of substance. An individual who drinks any beverage with alcohol is using alcohol. When alcohol intake leads to physical, social, or moral harm to the drinker that is known as Misuse, **problem use**, **abuse**, and **heavy use**”. (American Heritage Dictionary, Editors, 2006)

“**Moderate Use** is defined by The Dietary Guidelines for Americans as no more than two alcoholic beverages per day for men and no more than one alcoholic beverage per day for women” (Dietary Guidelines for Americans, 2005).

HISTORY OF ALCOHOL

ANCIENT PERIOD

However until, “now days nobody knows when beverage alcohol was first used, it was presumably the result of a fortuitous accident that occurred at almost tens of thousands of years ago. However, the discovery of late Stone Age beer jugs has established the fact that intentionally fermented beverages existed at least as early as the Neolithic period (cir. 10,000 B.C.) (Patrick, 1952) and it has been suggested that beer may have preceded bread as a staple (Braidwood et al., 1953; Katz and Voigt, 1987); the clear picture of wine was appeared in Egyptian photographs around 4,000 B.C”. (Lucia, 1963).

“The earliest alcohol may have been made from berries or honey” (Blum and others, 1969; French, 1890,) and “winemaking may have originated in the wild grape regions of the Middle East. Oral tradition recorded in the Old Testament (Genesis 9:20) asserts that Noah planted a vineyard on Mt. Ararat in what is now eastern Turkey. In Summer, beer and wine were used for medicinal purposes as early as 2,000 B.C.”(Babor, 1986).

From the beginning of civilization in ancient Egypt brewing dates was common tradition (Cherrington, 1925) and alcoholic beverages were very essential part of people’s life in that country. Though, “many gods were local or familial, Osiris, the god of wine, was worshiped throughout the entire country (Lucia, 1963). The Egyptians believed that this important god also invented beer (King, 1947), a beverage that was considered a necessity of life; it was brewed in the home on an everyday basis” (Marciniak, 1992).

CHRISTIAN PERIOD

“With the beginning of Christianity and its gradual displacement of the previously dominant religions, the drinking attitudes and behaviors of Europe began to be influenced by the New Testament” (Babor, 1986). “The earliest writings after the death of lord Jesus(cir. A.D. 30) contain few references to alcohol”. “This was reflected from the writings that drunkenness was largely an high-status vice with which Jesus had little contact” (Raymond, 1927). Austin (1985) “has pointed out that Jesus used wine

(Matthew 15:11; Luke 7:33-35) and approved of its moderate consumption” (Matthew 15:11). “On the other hand, he severely attacked drunkenness (Luke 21:34, 12:42; Matthew 24:45-51). The later writings of St. Paul deal with alcohol in detail and are important to Christian doctrine on the subject. He considered wine to be a creation of God and therefore inherently good (1 Timothy 4:4), recommended its use for medicinal purposes (1 Timothy 5:23), but consistently condemned drunkenness (Corinthians 3:16-17, 5:11, 6:10; Galatians 5:19-21; Romans 13:3) and recommended abstinence for those who could not control their drinking”.

THE MIDDLE PERIOD

“The Middle period was that period of approximately one thousand years between the fall of Rome and the beginning of the High Renaissance (cir. 1500), there was tremendous change in life in general and in drinking in particular. In the early Middle Ages, mead, rustic beers, and wild fruit wines became increasingly popular, especially among Celts, Anglo-Saxons, Germans, and Scandinavians. However, wines remained the beverage of preference in the Romance countries (what is now Italy, Spain and France)” (Babor, 1986).

“With the collapse of the Roman Empire and decline of urban life, religious institutions, particularly monasteries, became the repositories of the brewing and winemaking techniques that had been earlier developed” (Babor, 1986). “While rustic beers continued to be produced in homes, the art of brewing essentially became the province of monks, who carefully guarded their knowledge” (Cherrington, 1925). “Monks brewed virtually all beer of good quality until the twelfth century. Around the thirteenth century, hops (which both flavors and preserves) became a common ingredient in some beers, especially in northern Europe. Ale, often a thick and nutritious soupy beverage, soured quickly and was made for local consumption” (Austin, 1985).

BEGINNING OF MODERN PERIOD

Increasing prosperity and wealth were the main features of early modern period. “There was growing number of Towns and cities even foreign lands were discovered and

colonized, and trade expanded. There was whole new perspective or view towards world's growth and development .The medieval emphasis on other-worldliness - the belief that life in this world is only a preparation for heaven - slowly gave way, especially among the wealthy and well educated, to an interest in life in the here and now”.

However, “the Protestant leaders such as Luther, Calvin, the leaders of the Anglican Church and even the Puritans did not differ substantially from the teachings of the Catholic Church: alcohol was a gift of God and created to be used in moderation for pleasure, enjoyment and health; drunkenness was viewed as a sin” (Austin, 1985).

However, “consumption of alcohol was often high. In the sixteenth century, alcohol beverage consumption reached 100 liters per person per year in Valladolid, Spain, and Polish peasants consumed up to three liters of beer per day” (Braudel, 1974). “In Country, the average amount of beer and ale consumed was about 17 pints per person per week, compared to about three pints today” (Monckton, 1966); “nationwide, consumption was about one pint per day per capita. Swedish beer consumption may have been 40 times higher than in modern Sweden. English sailors received a ration of a gallon of beer per day, while soldiers received two-thirds of a gallon. In Denmark, the usual consumption of beer appears to have been a gallon per day for adult laborers and sailors” (Austin, 1985).

STATISTICS ON ABUSE AND DEPENDENCE

Alcoholism in the United States cuts across all age, education, occupational and socio economic boundaries. It is quit shocking to learn about this fact that alcoholism is effecting some very noble professionals like industry man military personal; and more unlikely candidates as priests, airlines pilots, politicians, surgeons, law enforcement officers and teenagers. For example, in a survey of over 70,000 pilots, those with prior DWI convictions were found to be at greater risk for a pilot error accident (MC Fadden, 1997).The once popular image of the alcoholic as an unkempt resident of skid row is clearly in accurate. Researchers estimate that almost 15 million adults are alcoholics (substance abuse and mental health services administration, 2003).

Outside the United States, rates of alcohol abuse and dependence vary widely. The prevalence of alcohol dependence in Peru is about 35%; in South Korea it is approximately 22% it is about 3.5 % in Taipei and as low as .45% in Shanghai (Helzer & Canino, 1990; Yamamoto, Silva, Sasao, Wang & Nguyen, 1993). “There is always a cultural differences among drinking habits, differences in terms of attitudes towards drinking, the availability of alcohol, physiological reactions and family norms and pattern”.

This was found out after the research that , “as almost 7% of individuals who are dependent on alcohol were suffering from dementia” (Oslin & Carey, 2003). DSM-IV-TR identifies drugs that can lead to symptoms of dementia, including alcohol, inhalants such as glue and gasoline (which some people inhale for the euphoric feelings they produce), and the ‘sedative, hypnotic, and anxiolytic’ drugs. “These drugs pose a threat because they create dependence, making it difficult for a user to stop ingesting them. The damage in the form of brain shrinkage can be permanent and can develop symptoms seen in dementia of Alzheimer’s type” (Parsons & Nixon, 1993). The DSM-IV-TR criteria’ “substance-induced persisting are essentially the same as for the other forms of dementia; they include memory impairment and at least one of the following cognitive disturbances: aphasia (language disturbance), apraxia (inability to carry out motor activities despite intact motor functions), agnosia (failure to recognize or identify objects despite intact sensory functions), or a disturbance in executive functioning (such as planning, organizing, sequencing, and abstracting”).

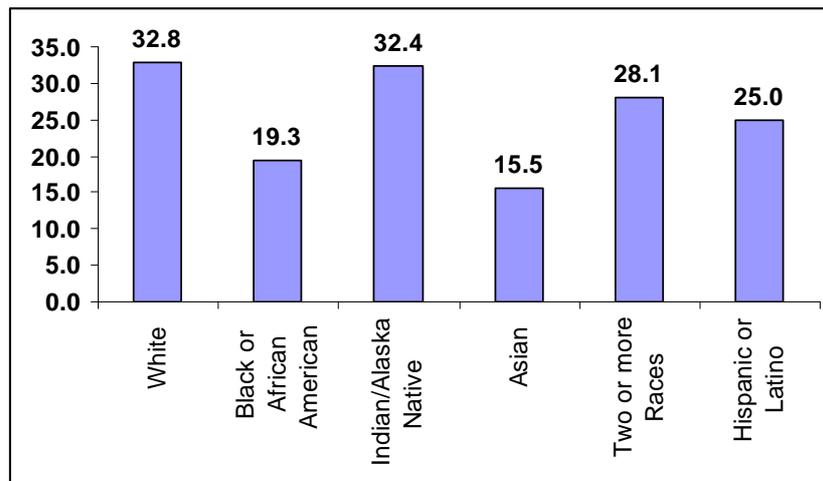


Figure 1.1 Shows the percentages of past month alcohol use among persons aged 12-20 by racial and ethnic groups (substance abuse and Mental Health Services Administration, 2003)

Above study clearly reveals that almost 37% alcohol abusers suffer from co existing mental disorder (Rovner, 1990). Among all the Depression ranks high among the mental disorders often co morbid with alcoholism, not surprisingly since alcohol is a depressant (Kranzler, Del Boca & Rounsaville , 1997). About 10% of alcoholics commit suicide (Miles ,1977), and over 18% are found to have a history of suicide attempts (Black et al.,1986).

Alcoholics not only create problems for themselves but they also pose serious problems for others as well. Every year almost over half of deaths and major injuries suffered in road accidents are due to alcohol abuse (Brewer, Morris et al., 1994) and with about 50% of all assaults, over 50% of all rapes, (Seto & Barbaree, 1995), and 30% of all suicides.

“Alcohol is a product that has provided a variety of functions for people throughout all history. From the earliest times to the present, alcohol has played an important role in religion and worship. Historically, alcoholic beverages have served as sources of needed nutrients and have been widely used for their medicinal, antiseptic, and analgesic properties. The role of such beverages as thirst quenchers is obvious and they play an important role in enhancing the enjoyment and quality of life. They can be a social lubricant, can facilitate relaxation, provide pharmacological pleasure and can increase the

pleasure of eating. Thus, while minorities of drinkers have always misused alcohol, it has proved to be beneficial to most”.

Risk factors

“The various studies clearly reveals almost 40 percent of those who start taking alcohol before age 14 develop alcohol dependence, whereas only 10 percent of those who did not begin drinking until 20 years or older developed an alcohol problem in later life” (Grant & Dawson, 1997). “it was found that early drinking that is in adolescence period leads to long-term changes in the brain which leaves them at increased risk of alcoholism in later years; heredity and genetic predisposition also influence the age of onset of alcohol abuse and risk of alcoholism” .

“Both the factors age onset and genetic factors are associated with an increased risk of the development of alcoholism. Individuals who have a pre-existing vulnerability to alcoholism are also more likely to begin drinking earlier than average”. The binge drinking is also the result of risk taking behavior associated with alcoholism. “The factors like Age and genetic influence the risk of developing alcohol related neurotoxicity” (Bowden. Crews. Bates. Stewart & Reich, 2000). “It was found out that the Genetic traits which influence the risk of the development of alcoholism are associated with a family history of alcoholism” (Bowden. Crews., Bates; Stewart & Reich, 2000). “One published article has found that alcohol use at an early age may itself directly influence the risk of developing alcoholism via influencing the expression of genes which increase the risk of alcohol dependence” (Agarwal et al., 2006).” It has been hypothesized that this increased risk may be due to the highly sensitive developing adolescent brain which leads to modulating of the genetic state of the brain which in turn primes the adolescent for increased risk of alcohol dependence. About 40 percent of alcoholics were drinking excessively by late adolescence. Most alcoholics develop alcoholism during adolescence or young adulthood. Severe childhood trauma is also associated with an increased risk of alcohol or other drug problems. There is evidence that a complex mixture of genetic factors as well as environmental factors, e.g. stressful childhood events, influence the risk of the development of alcoholism. Genes which influence the metabolism of alcohol also influence the risk of alcoholism. Good peer and

family support is associated with a reduced risk of alcoholism developing” (Enuch, 2006).

SYMPTOMS

(1) Long term of alcohol misuse

“The most significant and common effect of alcohol dependence is to encourage the drinker to drink all the time and in amounts can damage to physical health. The secondary damage caused by an inability to control one's drinking habits in many ways. Alcoholism also has significant social problems to both the alcoholic and their family and friends” (Chris, 2004). There are many psychiatric disorders which can emerge due to Alcoholism (Dunn & Cook, 1999). Studies revealed that, “approximately 18 percent of alcoholics commit suicide” (Wilson & Kolander, 2003). “Research has found that over fifty percent of all suicides are associated with alcohol or drug dependence. In adolescents the figure is higher with alcohol or drug misuse playing a role in up to 70 percent of suicides” (Miller & Mahler, 1991).

Effects on Physical health

Studies revealed that The physical health effects like, “cirrhosis of the liver, pancreatitis, epilepsy, polyneuropathy, **alcoholic dementia**, heart disease, increased chance of cancer, nutritional deficiencies, sexual dysfunction, and death from many sources are associated with long alcohol intake”. “Latest studies found that severe cognitive problems are not uncommon in alcoholics. Alcohol is the 2nd leading cause of dementia approximately 10% of all dementia cases are alcohol related” (Bakalkin, 2008). Studies showed the relevant results which remarks that “risk of developing cardiovascular disease, mal absorption, alcoholic liver disease, and cancer are also associated with excessive alcohol consumption. Damage to the central nervous system and peripheral nervous system can occur from sustained alcohol consumption” (Muller et al., 1985)

Effects on mental health

“Excessive misuse of alcohol can cause a wide range of mental health effects”. Alcohol consumption can have toxic effects not only to the body in terms of brain damage but can

also effect the mental health. Studies shows that' "Psychiatric disorders are common in alcoholics, especially anxiety and depression disorders, with as many as 25% of alcoholics presenting with severe psychiatric disturbances. Especially these psychiatric symptoms caused by alcoholism initially acute during alcohol withdrawal but with abstinence these psychiatric symptoms gradually improve or disappear altogether" (Wetterling & Junghanns, 2000). "Psychosis, confusion and organic brain syndrome may be induced by chronic alcohol abuse which can lead to a misdiagnosis of major mental health disorders such as schizophrenia" (Schuckit, 1983). "Panic disorder can develop as a direct result of long term alcohol misuse. Panic disorder can also worsen or occur as a part of the alcohol withdrawal syndrome" (Cwley, 1992). "Chronic alcohol misuse can cause panic disorder to develop or worsen an underlying panic disorder via distortion of the neurochemical system in the brain" (Cosci et al, 2007)

Social effects

Studies time to time informs about, "the social problems arising from alcoholism can be massive and are caused in part due to the serious biological changes induced in the brain from prolonged alcohol misuse and partly because of the intoxicating effects of alcohol. Alcohol abuse is also associated with increased risks of committing criminal offences including child abuse, domestic violence, rapes, burglaries and assaults are also related to alcoholism"(Richard, 2004). "Loss of employment is very common among alcoholics" (Langadana, 2009) which can lead to financial problems including the loss of living quarters." Drinking at inappropriate times, and behavior caused by reduced judgment, can lead to legal consequences, such as criminal charges for drunk driving"(Gifford, 2009) or "public disorder, or civil penalties for tortious behavior. An alcoholic's behavior and mental impairment while drunk can profoundly impact those surrounding them and lead to isolation from family and friends, possibly leading to marital conflict and divorce, or contributing to domestic violence. This can contribute to a loss of self-esteem and even lead to jail. Alcoholism can also lead to child neglect, with subsequent lasting damage to the emotional development of the alcoholic's children, even after they reach adulthood" (Schade, 2006).

Psychological vulnerability

In recent years substantial research has focused on the link between alcohol abuse-disorders and other disorder such as anti social personality, depression and schizophrenia. About half of the persons with schizophrenia have either alcohol or drug abuse dependency as well (Kosten,1997).With respect to anti social personality and abuse ,the relationship is strong (Harford &Parker,1994;Kwapil,1996).The only characteristic that appears common to most problem drinkers is personal mal-adjustment, yet most mal-adjusted people do not become alcoholics. An alcoholic's personality may be as much a result as cause of his or her dependence upon alcohol for example, the excessive use of alcohol may lead to depression or a depressed person may turn to excessive use of alcohol, or both. But According to the behavioral perspective the depression is one of the major causes of the alcoholism and further reinforce person to use alcohol to reduce tension and stress in life.

The clinical picture of alcohol abuse and dependence

“Although alcohol is a depressant, its initial stage is an apparent stimulation. We generally experience the feeling of well being, our inhibitions are reduced, and we become more out going. This is because what is initially depressed or slowed down are the inhibitory centers in the brain, with continued drinking, however, alcohol depresses more areas of the brain, which impedes the ability to function properly. Motor coordination is impaired (Staggering, Slurred Speech) , reaction time is slower and we become confused ,our ability to make judgment is reduced, even vision and hearing can be negatively affected , all of which help to explain why driving while intoxicated is clearly very dangerous’.

1. **ALCOHOL'S EFFECT ON THE BRAIN:** “Alcohol has complex and seemingly contradictory effect on the brain cells and activates the brain's “pleasure areas”, which release opium like endogenous opioids that are stored in the body” (Braun,

1996; Van Ree, 1996). “At higher levels alcohol depresses brain functioning inhibiting one of the brain’s excitatory Neuro transmitter glutamate which in turn slows down activity in the various parts of brain. Inhibition of glutamate in the brain impairs the organism’s ability to learn and affects the higher brain centers, impairing judgment and other rational processes and lowering self control. As behavioral restraints decline, a drinker may indulge in the satisfaction of impulses ordinarily held in check. Some degree of motor coordination soon become apparent and the drinker experience a sense of warmth, expansiveness, and well-being. In such a mood, unpleasant realities are screened out and the drinker’s feeling of self esteem and adequacy rise. Casual acquaintances become the best and most understanding of friends and the drinker enters a generally pleasant world of unreality in which worries are temporarily left behind”.

2. **DEVELOPMENT OF ALCOHOL DEPENDENCE:** - “Excessive drinking can be viewed as progressing insidiously from early to middle to late stage alcoholism, although some alcoholics do not follow this progressively developing pattern”.
3. **PHYSICAL EFFECTS OF CHRONIC ALCOHOL USE:** For individual who drink to excess the clinical picture is highly unfavorable (Maher, 1997). For one, the alcohol that is taken in must be assimilated by the body, except for about 5 to 10 percent that is eliminated through breath, urine and perspiration. The work of assimilated is done by the liver may be seriously overworked and eventually suffer irreversible damage. Alcohol is also a high calorie drug. A print of whiskey enough to make about eight to ten ordinarily cocktails provides about 1200 calorie requirement for a day (Flier, Underhill & Lieber, 1995).
4. **PSCHOSOCIAL AFFECTS OF ALCOHOL ABUSE AND DEPENDENCE:** In addition to various physical problems, an excessive drinker usually suffers from chronic fatigue, over sensitivity and depression. Initially, alcohol may seen to provide a useful for dealing with the stresses of life, especially during periods of acute stress, by helping screen out intolerable realities and enhancing the drinker’s

feelings of adequacy and worth. “The excessive use of alcohol becomes counterproductive, however, resulting in lowered feelings of adequacy and worth, impaired reasoning and judgment and gradual behavior typically becomes coarse and inappropriate and the drinker assumes increasingly less responsibility, loses pride in personal appearance, neglects spouse and family, and becomes generally touchy, irritable, and unwilling to discuss the problem”.

5. **PSYCHOSIS ASSOCIATED WITH ALCOHOLISM:** “Several acute psychotic reactions fit the diagnostic classification of substance-induced disorders. These reactions may develop in people who have been drinking excessively over long period of time or who have reduced tolerance for alcohol for other reasons for example because of brain lesions”. Such acute reactions usually last only for a short time and generally consist of confusion, excitement and delirium. Some commonly recognized psychotic reactions will be briefly described.

Alcohol withdrawal

Alcohol withdrawal is very problematic as compare to the other drugs as alcohol can cause such conditions which can be fatal. For example heroin withdrawal to be fatal is an extremely rare. “When people die from heroin or cocaine withdrawal they typically have serious underlying health problems that are much more problematic than the withdrawal effects”. “But in the case of alcoholism an alcoholic, however, who has not suffering from serious health issues, has a significant risk of dying from the direct effects of withdrawal if it is not under the supervision of the mental health professionals”. “Sedative-hypnotic drugs such as barbiturates and benzodiazepines which have a similar mechanism of action to alcohol (which is also a sedative-hypnotic) also have a similar risk of causing death during withdrawal” (Galater & Herbert, 2008).

Alcohol's primary effect is the increase in stimulation of the GABA receptor, promoting central nervous system depression. With repeated heavy consumption of alcohol, these receptors are desensitized and reduced in number, resulting in tolerance and physical dependence. Thus when alcohol is stopped, especially abruptly, the person's nervous system suffers from uncontrolled synapse firing. This can result in symptoms that include

anxiety, life threatening seizures, delirium tremens and hallucinations, shakes and possible heart failure (Richard, 2003)

6. **ACUTE WITHDRAWAL SYMPTOMS** tend to disappear after one to three weeks. Less severe symptoms (e.g. insomnia and anxiety, anaerobia) may continue as part of a post withdrawal syndrome gradually improving with abstinence for a year or more (Martinotti et al., 2008) Withdrawal symptoms begin to subside as the body and central nervous system makes adaptations to reverse tolerance and restore GABA function towards normal (Saana et al., 2003) (Idemudia., Bhadra & Lal, 1989). Other neurotransmitter systems are involved, especially glutamate and NMDA (Chastain, 2006)

- **Alcohol withdrawal delirium-** Among those who drink excessively for a long time, a reaction known as alcohol withdrawal delirium may occur. This reaction usually happens following prolonged drinking when the person is in a state of withdrawal. The full blown symptoms include
 1. This orientation for time and place in which, for e.g. A person may mistake the hospital for a church or jail, no longer recognize friends, or identify hospital attendants as old acquaintances.
 2. Vivid hallucinations, particularly of small, fast moving animals like Snakes, Rats and cockroaches, which are clearly localized in space
 3. Acute fear, in which these animals may change in form, size, or color in terrifying ways
 4. Extreme suggestibility, in which a person can be made to see almost any animal if its presence is merely suggested.
 5. Acute shaking of the hands, tongue and lips.

- **Alcohol Amnestic disorder-** A second alcohol related psychosis is the disorder referred to as alcohol amnestic disorder (formerly known as Korsakoff's

syndrome). This condition was first described by the Russian psychiatrist Korsakoff in 1887 and is one of the most severe alcohol-related disorders (Oscar Berman, Shagrin, Epstein, 1997). The outstanding symptom is a memory defect (particularly with regard to recent events), “which is sometimes accompanied by false perception of the events (confabulation) persons with this disorder may not recognize pictures, faces, rooms and objects that they have just seen, although they may feel that these people or objects are familiar”.

- **Alcoholic dementia**- The alcoholic dementia’s essential feature is the progressive deterioration of brain functioning occurring after the completion of brain maturation (that is, after the about 15 years of age or adolescence). “In the early phase of the disease, an individual is alert and fairly well attuned to events in the environment. This fact was also revealed from the studies that Episodic (memory for events) but not necessarily semantic (language and concept), memory functioning is typically affected in the early stages especially memory for recent events. This is also very interesting to know that Patients with dementia also show increasingly marked deficits in abstract thinking, the acquisition of new knowledge of skills, visuo spatial comprehension, motor control, problem solving and judgment. Personality deterioration and loss of motivation accompany these other deficits. Normally dementia is also accompanied by impairment in emotional disturbance and in moral and ethical sensibilities; for e.g., the person may engage in crude solicitations for sex. Dementia may be progressive or static, more often the former; occasionally it is even reversible. Its course depends to a large extent on its underlying causes”.

“There are many and varied factors which can cause dementia factors causing dementia. These factors include degenerative processes that usually, but not always, affect older individuals. Some of the common causes of dementia are repeated cerebrovascular accidents (strokes); certain infectious diseases, such as syphilis meningitis and AIDS; intracranial tumors and abscesses; certain dietary deficiencies; severe or repeated head injury; anoxia (lack of oxygen) and the ingestion or inhalation of toxic substances. As table given below indicates, the

most common cause of dementia is degenerative brain disease, particularly Alzheimer's disease".

TABLE 1 Dementia in 417 patients fully evaluated for dementia-

DIAGNOSES	NUMBER	PERCENT
Alzheimer's disease	199	47.7
Alcoholic dementia	42	10.0
Multi-infarct dementia	39	9.4
Normal pressure hydrocephalus	25	6.0
Intracranial masses (tumors)	20	4.8
Huntington's disease	12	2.9
Drug toxicity	10	2.4
Post traumatic	7	1.7
Other identified dementing diseases	28	6.7
pseudo dementias	28	6.7
Dementia uncertain	7	1.7

Including epilepsy, subarachnoid hemorrhage, encephalitis, amyotrophic lateral sclerosis, Parkinson's disease, hyperthyroidism, syphilis, liver disease and cerebral anoxia episode, all less than 1 percent incidence.

Including depression (16), schizophrenia (5), mania (2), hysteria (1) and not demented (4)

Source: based on Wells (1979)

"Prolonged drug use especially in combination with poor diet, can damage the brain and in some circumstances can also lead to dementia". This impairment unfortunately lasts beyond the period of time involved in intoxication or withdrawal from these substances.

DIAGNOSIS

There are number of diagnostic tools which are available to diagnose the individual suffering from alcoholism. .The true Identification of alcoholism “involves an objective assessment regarding the damage that imbibing alcohol does to the drinker's life compared with the subjective benefits the drinker perceives from consuming alcohol”. Sometimes “there are many borderline cases which are hard to identify and on the other hand there are many cases where an alcoholic's life has been significantly and obviously damaged”.

Mental health specialists especially “Addiction Medicine specialists have extensive training with respect to diagnosing and treating patients with alcoholism”.

(i) Diagnose

There are many diagnostic tools which are available to detect a loss of control of alcohol use. The tools are standardized are always in the form of self reports in the form of questionnaire. Another common theme is a score or tally that sums up the general severity of alcohol use.

- “The CAGE questionnaire, named for its four questions, is one such example that may be used to screen patients quickly in a doctor's office”.

“Two "yes" responses indicate that the respondent should be investigated further. The questionnaire asks the following questions”:

1. “Have you ever felt you needed to **cut** down on your drinking”?
2. “Have people **annoyed** you by criticizing your drinking”?
3. “Have you ever felt **Guilty** about drinking”?
4. “Have you ever felt you needed a drink first thing in the morning (**Eye-opener**) to steady your nerves or to get rid of a hangover” (Ewing,1984)

“The CAGE questionnaire has demonstrated a high effectiveness in detecting alcohol related problems; however, it has limitations in people with less severe

- alcohol related problems, white women and college students” (Dhalla & Kopee, 2007).
- “The Alcohol Dependence Data Questionnaire is a more sensitive diagnostic test than the CAGE test. It helps distinguish a diagnosis of alcohol dependence from one of heavy alcohol use”.
 - “The Michigan Alcohol Screening Test (MAST) is a screening tool for alcoholism widely used by courts to determine the appropriate sentencing for people convicted of alcohol-related offenses, driving under the influence being the most common”.
 - “The Alcohol Use Disorders Identification Test (AUDIT) is a screening questionnaire developed by the World Health Organization. This test is unique in that it has been validated in six countries and is used internationally. Like the CAGE questionnaire, it uses a simple set of questions - a high score earning a deeper investigation”.
 - “The Paddington Alcohol Test (PAT) was designed to screen for alcohol related problems amongst those attending Accident and Emergency departments. It concords well with the AUDIT questionnaire but is administered in a fifth of the time” (Smith et al., 1996).

(ii) Testing of genetic predisposition

“Psychiatric geneticists John I. Nurnberger, Jr., and Laura Jean Bierut suggest that alcoholism does not have a single cause—including genetic—but that genes do play an important role” "by affecting processes in the body and brain that interact with one another and with an individual's life experiences to produce protection or susceptibility." “They also report that fewer than a dozen alcoholism-related genes have been identified, but that more likely await discovery” (Numberger et al., 2007).

(iii) DSM diagnosis

“The DSM-IV diagnosis of alcohol dependence represents one approach to the definition of alcoholism. In part this is to assist in the development of research protocols in which findings can be compared with one another. According to the DSM-IV, an alcohol dependence diagnosis is” (APA, 1994).

“Excessive alcohol use with clinically significant impairment as manifested by at least three of the following within any one-year period: tolerance; withdrawal; taken in greater amounts or over longer time course than intended; desire or unsuccessful attempts to cut down or control use; great deal of time spent obtaining, using, or recovering from use; social, occupational, or recreational activities given up or reduced; continued use despite knowledge of physical or psychological dependence”.

(iv)Urine and blood tests

“The blood alcohol test is a very significant test among various tests available which clearly reveals the blood alcohol content”.(Jones, 2006). “These tests do not differentiate alcoholics from non-alcoholics; however, long-term heavy drinking does have a few recognizable effects on the body, including” (Das et al., 2008).

- Macrocytosis (enlarged MCV)
- Elevated GGT
- Moderate elevation of AST and ALT and an AST: ALT ratio of 2:1.
- High carbohydrate deficient transferrin (CDT)

However, none of these blood tests for biological markers are as sensitive as screening questionnaires.

Prevention

Prevention plays a very significant role in controlling and creating awareness among society that is why “World Health Organization, the European Union and other regional bodies, national governments and parliaments have formed alcohol policies in order to reduce the negative effects of alcoholism” (WHO,2005)(WHO,2010).

“Alcoholism causing many problems ranging from the health, social and educational underachievement which results targeting adolescents and young adults to combat with these deadly problem is regarded as an important step to reduce the harm of alcohol abuse. The proper age at which licit drugs of abuse such as alcohol can be purchased as well as banning or restricting advertising of alcohol has been recommended. To educate the mass or give knowledge about the consequences of alcohol and other drug abuse has also been recommended. Guidelines for parents on alcohol and drug use during adolescence and targeting young people with mental health problems has also been suggested to prevent the harm of alcohol and other drug abuse” (Crews et al.,2007).

Treatment

“Due to the multiple perspectives for the alcoholism Treatments for alcoholism (antidipsotropic) are quite varied. There is different medication and management approach for the alcoholics those who approach alcoholism as a medical condition or disease recommend differing treatments than, for instance, those who approach the condition as one of social choice”.

Alcohol management programmes always consist of multiple treatment approaches along with total rehabilitation of the patients. Because of the multiple “Factors which stimulate the individual to continue drinking, they must all be addressed in order to successfully prevent a relapse. An example of this kind of management is detoxification followed by a combination of supportive therapy, group therapy especially alcoholic anonymous and ongoing development of coping mechanisms. The treatment community for alcoholism typically supports an abstinence-based zero tolerance approach; however, there are some who promote a harm-reduction approach as well” (Gabbard, 2001).

(i) Effectiveness

Effectiveness of the treatment plan is very crucial because without the relapse rate would be very high. “It is also important to consider not just the rate of those reaching treatment goals but the rate of those relapsing. Results should also be compared to the roughly 5% rate at which people will quit on their own (Smart, 1976). A year after completing a rehabilitation program, about a third of alcoholics are sober, an additional 40 percent are substantially improved but still drink heavily on occasion, and a quarter have completely relapsed” (Dawson et al., 2005).

(ii) Detoxification

Detoxification can immediately reduce the symptoms which can cause multiple health problems. “Detoxification reduces the physical effects of prolonged use of alcohol, but does not actually treat alcoholism”. Continuity of treatment is very much required as after detox is complete, relapse is likely. The rehabilitation programs are very beneficial for the sufferers. These rehabilitations (or 'rehab') may be possible with an inpatient or outpatient setting.

(iii) Group therapy and psychotherapy

“After detoxification is completed various forms of group therapy or psychotherapy can be used to deal with underlying psychological causes that are related to alcohol addiction, as well as provide relapse prevention skills”. There are many mental health treatments in form of individual counseling and group counseling available to provide overall change in the alcoholic's lifestyle. “Many organizations have been formed to provide this service. Alcoholics Anonymous was the first group, and has more members than all other programs combined. Some of the others include Life Ring Secular Recovery, Rational Recovery, SMART Recovery, and Women for Sobriety”.

(v) Medications

“Due to the endless efforts of the health professionals there is a huge variety of medicines may be prescribed as part of treatment for alcoholism”.

(a) Medications currently in use

- “Antabuse (disulfiram) prevents the elimination of acetaldehyde, a chemical the body produces when breaking down ethanol. Acetaldehyde itself is the cause of many hangover symptoms from alcohol use. The overall effect is severe discomfort when alcohol is ingested: an extremely fast-acting and long-lasting uncomfortable hangover. This discourages an alcoholic from drinking in significant amounts while they take the medicine. A recent 9-year study found that incorporation of supervised disulfiram and a related compound carbamide into a comprehensive treatment program resulted in an abstinence rate of over 50%” (Krample, Stawicki &Wagner,2006)
- “Temposil (calcium carbimide) works in the same way as Antabuse, but is weaker and safer”
- “Naltrexone is a competitive antagonist for opioid receptors, effectively blocking our ability to use endorphins and opiates. Alcohol causes the body to release endorphins, hence when naltrexone is in the body drinkers no longer get any pleasure from consuming alcohol. Naltrexone is used in two very different forms of treatment. The first treatment uses naltrexone to decrease cravings for alcohol and encourage abstinence. The other treatment, called pharmacological extinction, combines naltrexone with normal drinking habits in order to reverse the endorphin conditioning that causes alcohol addiction. This result in a reduced desire to drink that persists after naltrexone use is discontinued, as long as the patient always takes naltrexone before drinking. Naltrexone comes in two forms. Oral naltrexone (originally but no longer available as the brand ReVia) is a pill that must be taken one hour before drinking to be effective. Vivitrol is a time-release formulation that is injected in the buttocks once a month”.

- “Acamprosate (also known as Campral) is thought to stabilize the chemical balance of the brain that would otherwise be disrupted by alcoholism. The Food and Drug Administration (FDA) approved this drug in 2004, saying "While its mechanism of action is not fully understood, Campral is thought to act on the brain pathways related to alcohol abuse. Campral proved superior to placebo in maintaining abstinence for a short period of time. The Combine study was unable to demonstrate efficacy for Acamprosate”.

ALCOHOLIC DEMENTIA

The alcoholic dementia’s essential feature is the progressive deterioration of brain functioning occurring after the completion of brain maturation (that is, after the about 15 years of age or adolescence). “In the early phase of the disease, an individual is alert and fairly well attuned to events in the environment. This fact was also revealed from the studies that Episodic (memory for events) but not necessarily semantic (language and concept), memory functioning is typically affected in the early stages especially memory for recent events. This also very interesting to know that Patients with dementia also show increasingly marked deficits in abstract thinking, the acquisition of new knowledge of skills, visuo spatial comprehension, motor control, problem solving and judgment. Personality deterioration and loss of motivation accompany these other deficits. Normally dementia is also accompanied by impairment in emotional disturbance and in moral and ethical sensibilities; for e.g., the person may engage in crude solicitations for sex”.

Studies done in Canada revealed the facts related to, “ It is estimated that Dementia affects over 300,000 Canadians age ranging from 65 or over (about 8.0% of seniors) and this is estimated and predicted by the researchers that Over 750,000 Canadians 65 and older will be affected by dementia by the year 2031. There are many different ways with which alcohol can be related to dementia”

- “Some people who have had a history of alcohol abuse may develop alcohol related dementia (Alcohol leading to dementia)”.

- “Some people who have Alzheimer disease or another dementia may also have an alcohol problem (Alcohol + dementia)”
- “Some people who are developing Alzheimer disease or other dementia, in the early stages may turn to alcohol as their way of dealing with what can be frightening changes in their memory. (Dementia may lead to increased alcohol use by some people to cope)”.

The studies held that dementia patients have more significant alcohol related as compare to the normal people. “This menace of alcoholism is affecting thousands of people in Canada of all classes and stations in life. In another study conducted in September 1, 2001, the National Post carried an article on the famous Canadian opera singer Maureen Forrester, who has both conditions and is now living in a nursing home. Does Alcohol Abuse Cause Dementia? Alcohol abuse can lead to several forms of dementia, but it does not seem to cause Alzheimer disease. Recent research suggests that people who drink moderately (which are one drink a day for women or two drinks a day for men) have less risk of developing Alzheimer disease than people who are heavy drinkers, or people who have never been drinkers. The potential protective effect, which is small to start with, may be related to the anti-oxidants contained in some alcohol beverages such as red wine”.

In another research researchers suggest that “people who take alcohol moderately (which WHO suggested after research in the field of alcohol consumption is one drink a day for women and two drinks a day for men) have less risk of developing Alzheimer’s disease than those who are heavy drinkers and never been drinkers”. The another related to alcohol consumption and cognitive problems related to it reveals that People who drink heavily or harmful level of alcohol perform poor in digit backward; the symbol digit modalities test (SDMT), immediate recall and reaction time test. As compared to light to moderate drinkers (B.Rodger, T.D Winsor, K.J.Anstey, K.B.G.Dear, A.F.Jorm &H.Christenson, 2005) “the potential protective effect, which is small to start with, may be related to antioxidants contained in some alcohol beverages such as red wine”.

“However, there are still many significant questions which triggers the many other possible questions in the way the existing research information is gathered (who is included, who drop out, how is dementia identified) that leave the issue unclear”.

Another study conducted to determine neurons role in Psychological performance in apparently cognitively, mentally, physically healthy abstinent alcohol dependent subjects compared with controlled subjects who were recruited for a number of different neuro imaging studies. “Hence we can say that there is a strong relationship between alcohol and dementia”.

“This is what we currently know about alcoholic dementia in general:

- Alcohol has a serious negative effect on the central nervous system.
- Alcohol can affect the brain directly as a neurotoxin.
- Alcohol can affect the brain indirectly
- either when the higher alcohol use leads to malnutrition and vitamin deficiencies (especially Vitamin B) if the person is not eating properly or when the alcohol use causes liver damage. Both of vitamin deficiency and liver damage can lead to brain shrinkage and brain damage. We know that general alcohol dementia is characterized by damage throughout the brain. Other kinds of alcohol abuse problems (e.g. Wernicke's encephalopathy and Korsakoff's syndrome) cause damage specifically to the frontal lobes. Alcohol dementia is not easily classified into "cortical" or "subcortical" It seems to have some features of both, We also know that 15 to 25 percent of dementia cases are tied to alcohol abuse. Alcohol related dementia tends to show up at a younger average age than Alzheimer disease (about 10 years younger). Alcohol related dementia tends to lead to an earlier death than Alzheimer disease”.

“The most relieving fact for alcoholics is that people who have alcohol related dementia seem to have a milder form of impairment as compare to the patients suffering from Alzheimer disease and are less affected in their daily activities”.

This is also very interesting to know that alcohol related dementia is a reverse form of Alzheimer disease.. In other words, “if the person is able to stop from drinking or significantly reduce the amount he or she is consuming; the memory impairment is reduced and may go away. Sometimes the damage could be permanent and causes various cognitive disorders”.

“On the other hand, giving care when the person has alcohol related dementia can sometimes be more challenging for family. Research suggests there are a higher frequency of anger, agitation, and personality changes in people who have dementia and a history of alcohol abuse”.

This very common that “people suffering from dementia whether it is alcohol related or other usually are at great risk of abuse and exploitation by others due to cognitive disfunctioning. People those who suffer mainly from alcohol-related dementia can have good verbal intelligence and their language skills are also preserved. So that means if you just talking with the person casually, you may not notice anything unusual. However they can have impaired abstraction (e.g. being able to plan to do something and carry it out) and especially have poor short-term memory”.

For example, “if the adult paid a delivery person for alcohol and the delivery person came back later in the day and said "You haven't paid me yet", the adult with alcohol dementia likely would not remember whether or not he or she had paid. This kind of memory impairment leaves the adult extremely vulnerable to financial exploitation. Reputable delivery service operators do not take advantage of this. However, treatment services for seniors who have alcohol problems find that some delivery services (or specific members of their staff) are not reputable in this regard”.

ALCOHOL AND OLDER PEOPLE

Studies around the world showed us time to time that, “Alcohol consumption is quite common among older adults. Almost 10 to 20 percent report daily usage of alcohol. In a survey of residents of a retirement community, almost half reported some alcohol consumption, and 15 percent reported consumption of one to six drinks each week. Among 5,065 adults age 60 years and older screened in primary care practices in Wisconsin, 10.5 percent of the men and 3.9 percent of the women reported problem alcohol use” .

However, “there is very less proportion of older persons who meet criteria for alcohol abuse or dependence. In the another study related to alcohol dementia in older people, for example, the one-month prevalence of alcohol abuse or dependence was 1.93 percent for men and .4 percent for women age 65 years and older . Grant and colleagues reported

similar figures from the National Health Interview Survey—2.77 percent for men and .37 percent for women age 65 years and older. Incidence rates for alcohol abuse or dependence appear to show an upturn with age, but only among men”.

Cognitive impairment among the heavy drinkers is a very common and sometimes very acute .In one of the studies related to alcoholic dementia among adults or middle age showed very significant results that, “patients of age group 40 to 50 years who reported use of alcohol for five years or more were more impaired on several measures of cognitive functioning, but this study was cross-sectional in design. Men with a history of heavy drinking, in contrast to men without such a history, recalled fewer words at a follow-up interview three years later, but appeared to lack insight into any impairment. Deficits associated with alcohol consumption were found to generalize to multiple domains such as verbal and nonverbal ability, memory, and perceptual motor skill. Chronic alcohol exposure was associated with memory loss even among older alcoholics who do not have Korsakoff's syndrome”:

“In a meta-analysis of case-control studies, findings on the relationship between amount of alcohol consumption and dementia were significantly negative. But somehow if, if case-control studies fails to show alcohol consumption as an environmental risk factor for Alzheimer's disease, it may be because the population under study is heterogeneous in genetic susceptibility”.

Research shows that alcohol consumption or excessive consumption may adversely affect the brain. When mental health professionals deals and investigates the “patients who are having cognitive difficulties, such as impaired memory or reasoning ability, alcohol use may be the cause of the disorder. While treating patients who have abused alcohol, it may be of great importance to attempt to identify the level of any impairment and to modify the treatment plan accordingly”.

Some researchers have investigated “whether or not there is measurable alcohol-related cognitive impairment among nonalcoholic social drinkers. Their findings suggest a dose-response relationship between alcohol consumption and diminished scores on certain neuropsychological tests (Parker & Noble, 1977; Parker et al., 1983). Statistically significant decreases in test performance have been found for

people whose self-reported alcohol consumption was in the range of what was considered social drinking”.

This is not correct to title these people as clinically impaired, “only on the basis of certain performance deficits that correlated with alcohol consumption. It is also very significant to know that similar correlations from other studies have not been found to be consistently significant. ‘For example, the results of one general population study (Bergman et al., 1983) showed no correlation between self-reported alcohol consumption and neuropsychological test scores; other findings” (Emmerson et al., 1985) failed to show a simple dose-response relationship’.

In a recent review of such studies, Parsons (1986) concluded that, “data on the relationship of cognitive impairment to amount of alcohol consumed by social drinkers are inconclusive”.

Brains of Alcoholics

During treatment” the alcoholics present different picture as compare to real life situations. ‘Although most alcoholics entering treatment do not have decreased overall intelligence scores, approximately 45 to 70 percent of these patients have specific deficits in problem solving, abstract thinking, concept shifting, psychomotor performance, and difficult memory tasks’ (Parsons & Leber 1981; Eckardt & Martin 1986; Tabakoff & Petersen, 1988). Without neuropsychological testing such deficits in the brain cannot be revealed”.

“Structural changes in the brains of alcoholics have been reported in various studies time time” (Ron, 1979; Wilkinson, 1987), “as well as reduced cerebral blood flow and altered electrical activity”(Porjesz & Begleiter, 1981), “but there is not yet any clear evidence which correlation between impairment and cognitive disorders”.

About 10 percent of patients suffering from severe alcoholism are having serious organic cerebral impairment. “The diverse signs of severe brain dysfunction that persist after cessation of alcohol consumption have been conceptualized in terms of two organic mental disorders: alcohol amnesic disorder (memory disorder) and dementia associated with alcoholism” (APA,1987).

“Recently however, it has been recognized that these two disorders are not mutually exclusive and that some features of each often coexist in the same patient. Alcohol amnesic disorder, commonly called Korsakoff's psychosis or Wernicke-Korsakoff syndrome, is characterized by short-term memory, impairments and behavioral changes that occur without clouding of consciousness or general loss of intellectual abilities. Dementia associated with alcoholism consists of global loss of intellectual abilities with impairment in memory function, together with disturbance(s) of abstract thinking, judgment, other higher cortical functions, or personality change without a clouding of consciousness”.

Alcohol and toxic effect

It has been noted, “that sub cortical lesions due to nutritional (thiamine) deficiency are characteristic of Korsakoff's syndrome, whereas alcoholic dementia is more associated with cortical changes (Victor & Laurenco 1978). ‘There is some evidence that a genetic abnormality may predispose some people to Korsakoff's in the presence of excessive alcohol use and malnutrition’ (Blass & Gibson ,1977; Mukherjee et al. 1987).

Tarter and Edwards (1986) detailed evidence suggesting that, “neuropsychological impairment in alcoholics may occur for a number of reasons. The toxic effects of alcohol on the brain may cause impairment directly. In addition, some alcoholics may exhibit impairment as an indirect result of alcohol abuse, e.g., they may have experienced a cranial cerebral trauma, they may be eating poorly and suffering nutritional deficits (such as thiamine or niacin deficiencies), or they may have cognitive impairments associated with liver disease”.

Sometimes it's quite common that the people suffering from alcoholism “may have been cognitively impaired before they began drinking alcohol. There is some evidence that persons in groups considered to be at risk for alcoholism (e.g., children of alcoholics) are less adapt at certain learning tests and visual-spatial integration than are persons in groups not deemed at risk for alcoholism; this area of research is still under active investigation”.

Tarter & Edwards, 1986 held that the, “cognitive deficits in some alcoholics resemble those seen in normal elderly persons, leading to speculation that alcohol's effect on

cognition may be explained as premature aging”. Although, “it is more likely that such disorders are independent of any deficits associated with natural aging” (Grant and others 1984; Cutting, 1988).

Cognitive Deficits

“laying aside issues of causal factors and, evidence indicates that some cognitive deficit in alcoholics is reversible”. Researchers Albert et al., 1982; Grant et al., 1984; Goldman 1986, 1987 report apparently that, “spontaneous recovery of cognitive function (recovery seen after the passage of time with no active intervention) among abstinent alcoholics, a result that may be due solely to the absence of alcohol but that also may be due in part to other changes, such as better nutrition and opportunities for social interaction provided in an alcohol treatment setting”. “There is some evidence that cognitive training and practice experience (remedial mental exercises) can facilitate recovery from impairment” (Godfrey et al., 1985; Goldman 1986, 1987).

This is revealed after detail investigation that even after prolonged abstinence of alcohol “many alcoholic patients with chronic organic mental disorders may exhibit only modest clinical improvement in brain functioning, there is a need for pharmacological interventions to complement behavioral methods. Recent findings that pharmacological intervention may be useful in restoring some cognitive ability are encouraging”.

“ There is need for a very special approach when there is Cognitive disability Generally in elderly people, treatment programs should focus a lot on cognitive-behavioral changes and overall change in form of rehabilitation of the patient helping the person to develop other ways of dealing with problems and more positive ways of thinking about problems in their lives. This can be helpful for caretakers and close relatives also. This may also do wonders for people in the very early stages of dementia”.

THIAMINE DEFICIENCY DUE TO ALCOHOLISM

“A thiamine (an essential nutrient of body providing lots energy) deficiency due to chronic alcohol consumption is one factor underlying alcohol-induced brain damage. Thiamine is a helper molecule (i.e., a cofactor) which is required by three enzymes involved in two pathways of carbohydrate metabolism. As intermediate products of these pathways are needed for the generation of other essential molecules in the cells (e.g., building blocks of proteins and DNA as well as brain chemicals), an acute reduction in thiamine can interfere with number of cellular functions, leading to serious brain damages, including Wernicke–Korsakoff syndrome, which is found predominantly in people suffering from alcoholism. Prolong alcohol consumption can result in thiamine deficiency by causing inappropriate nutritional thiamine intake, decreased absorption of thiamine from the gastrointestinal tract, and create disturbance thiamine utilization in the cells”.

“People differ in their susceptibility to thiamine deficiency, however, and different brain regions also may be more or less sensitive to this condition. Keywords: thiamine deficiency; alcoholic brain syndrome; chronic AODE (alcohol and other drug effects); Wernicke’s encephalopathy; Wernicke–Korsakoff psychosis; alcoholic cerebellar degeneration; AODR (alcohol and other drug related) structural brain damage; malnutrition; disease susceptibility; survey of research”.

“Alcoholism can cause numerous damages to the brain through numerous mechanisms, many of which are discussed in this study in this issue of ‘Alcohol Research & Health’. One of these functions involves the reduced availability of an essential nutrient, thiamine, to the brain as a consequence of chronic alcohol dependence. This detailed study on the relationship between alcohol consumption and thiamine deficiency describes the normal role of thiamine in brain functioning as well as the biological consequences that result from thiamine deficiency”.

“ Specific actions of thiamine on a cellular level then are reviewed, followed by a discussion of how alcohol affects the body’s processing and availability of thiamine as well as thiamine utilization by the cells. Finally, the article explores the hypothesis that people may differ in their sensitivity to thiamine deficiency and that different brain regions may be more or less sensitive to a deficiency in this important nutrient. Thiamine deficiency is particularly important because it can exacerbate many of

the other processes by which alcohol induces brain injury, as described in other articles in this issue of Alcohol Research & Health.

Wernicke's encephalopathy and Korsakoff's psychosis

WKS typically consists of two essential elements, a short-lived and acute condition called Wernicke's encephalopathy (WE) and on the other hand a long-lasting and debilitating condition known as Korsakoff's psychosis. Wernicke's encephalopathy is an acute life-threatening neurologic disorder caused by thiamine deficiency. In developed and full of resources countries, where people normally receive adequate thiamine from their diets, thiamine deficiency is definitely due to the excessive consumption of alcohol" (Singleton and Martin, 2001); "accordingly, in these countries Wernicke encephalopathy is usually found in alcoholics" (Ragan et al., 1999). "The WE has significant characteristics like mental confusion, paralysis of the nerves that move the eyes that is the patients have restricted eye movement (i.e., oculomotor disturbances), and an impaired ability to coordinate movements, particularly of the lower extremities (i.e., ataxia). For example, patients with WE may be too confused to find their way out of a room or may not even be able to walk. Many WE patients, however, do not exhibit all three of these signs and symptoms, and clinicians working with alcoholics must be aware that WE may be present even if the patient presents with only one or two of them. In fact, neuropathological studies after death indicate that many cases of thiamine deficiency related encephalopathy may not be diagnosed in life because not all the "classic" signs and symptoms are present or recognized".

This was estimated after the detailed research in the field of this severe psychosis that "almost 80 to 90 percent of alcoholics with WE develop Korsakoff's psychosis another alcohol related cognitive disorder, a chronic neuropsychiatry syndrome characterized by behavioral abnormalities and memory impairments" (Victor et al., 1989). "However patients suffering from the psychosis have problems remembering previous information (i.e., retrograde amnesia), it is the disturbance in acquisition or storage of new information (i.e., anterograde amnesia) that

is most shocking”. For example, “these patients can engage in a detailed discussion of events in their lives but cannot remember ever having had that conversation an hour later. Because of these characteristic memory deficits, Korsakoff’s psychosis also is called alcohol amnestic disorder. It is still somewhat controversial, however, whether Korsakoff’s psychosis always is preceded by WE or whether it develops in fits and starts, without an overt episode of WE”.

According to Singleton and Martin (2001), “The role of thiamine in the development of WKS is supported by findings that giving this nutrient to patients with WKS reverses many of the acute symptoms of the disease, although in some people certain chronic neuropsychiatry consequences of previous thiamine deficiency may persist even with appropriate treatment.” It has been noticed that in the “acute or severe cases, these prolonged symptoms meet the criteria of fully fledged Korsakoff’s psychosis”.

“Other people may exhibit more subtle neurological signs and symptoms, such as abnormalities in a brain region called the cerebellum and an inflammation or degeneration of peripheral nerves (i.e., neuropathy) as well as changes in behavior and problems with learning, memory, and decision-making”.

In developed countries such as the United States,” where of malnutrition are very uncommon and never heard of, thiamine deficiency and the resulting WKS occur most commonly among people who drink excessively”. “In autopsy studies, brain abnormalities characteristic of WKS were present in approximately 13 percent of alcoholics” (Harper et al., 1988).

“These abnormalities include lesions in brain areas called the mamillary bodies, thalamus, hypothalamus, brain stem, and cerebellum. Other studies have found that only about 20 percent of alcoholics in whom the presence of WKS was confirmed at autopsy had been diagnosed with the disorder before death (Harper, 1998). Thus, the

clinical presentation is not always easily recognized by physicians; often examination of the brain at autopsy is required for definitive diagnosis”.

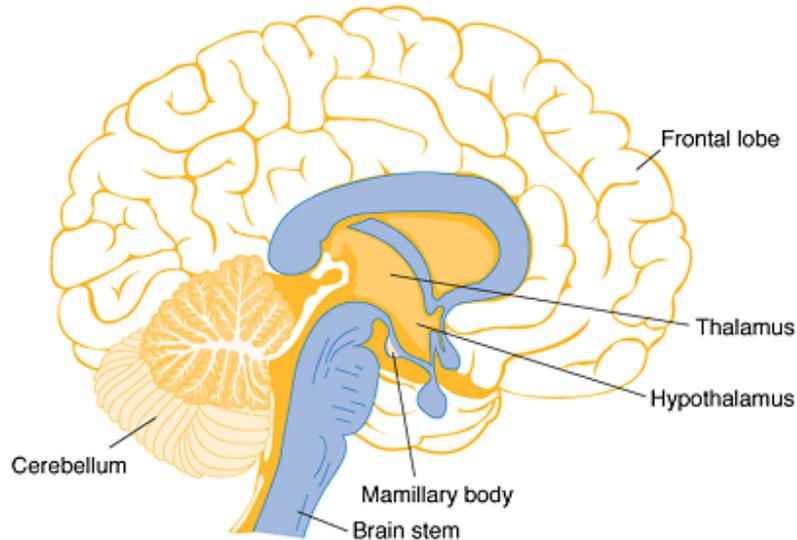


Figure 1.2 Brain regions affected by thiamine deficiency include the cerebellum, mamillary bodies, thalamus, hypothalamus, and brain stem.

“Although WKS in developed countries occur most commonly among alcoholics, other groups of patients are also at risk of developing the disease. For example, all people who are malnourished (e.g., because they are HIV infected or are undergoing cancer chemotherapy) or who have a metabolic disease leading to impaired thiamine absorption (i.e., uptake) or utilization can develop thiamine deficiency. Patients with severe kidney disease who are undergoing regular dialysis are also prone to encephalopathy, and a substantial portion of them have been found to suffer from thiamine deficiency (Hung et al., 2001). Finally, patients who receive intravenous infusions of carbohydrates (e.g., the sugar dextrose) may experience episodes of thiamine deficiency, particularly if they are already at risk of receiving inadequate levels of this nutrient because they are alcoholics, as thiamine is used in the metabolism of those carbohydrates” (Ferguson et al., 1997).

ALCOHOL'S EFFECTS ON THIAMINE UPTAKE AND FUNCTION

As we have discussed earlier that “the thiamine deficiency apart from alcoholism is very uncommon in developed countries due excessive food availability” (Morgan, 1982). However, “only a subset of these alcoholics develops organic disorders such as WKS. Although it was seen after investigations in the field genetics and heredity that, identical twins (who share all of their genetic predispositions) show greater similarity with respect to alcohol-induced organic disorder than do fraternal twins” (who share on average 50 percent of their genetic predisposition).

“ These two investigations have led to the conclusion that a genetic predisposition to thiamine deficiency and its effects may exist, as will be discussed in more detail in the particular part of discussion Differential Sensitivity to Thiamine Deficiency”.

“Research over the past 30 years has identified several mechanisms through which alcoholism may contribute to thiamine deficiency. The most important of these mechanisms include”:

- “Inadequate nutritional intake”
- “Decreased absorption of thiamine from the gastrointestinal tract and reduced uptake into cells”
- “Impaired utilization of thiamine in the cells”.

Deficiency of nutrition

Various studies in the area of food and nutrition revealed the fact that mostly “people require a minimum of 0.33 mg thiamine for each 1,000 kcal of energy they consume, alcoholics tend to consume less than 0.29 mg/1,000 kcal” (Wood hill and Noble, 1972). In fact, “in an early study of 3,000 alcoholics admitted to hospitals because of alcohol

withdrawal symptoms or other alcohol-related illnesses, 40 percent exhibited periodic thiamine deficiency during drinking binges, 25 percent exhibited prolonged thiamine deficiency with some periods of normal intake, and 35 percent exhibited continuous thiamine deficiency” (Leevy and Baker, 1968). A later study in this field concluded that, “alcoholic patients had significantly lower average levels of a thiamine compound containing one phosphate group (i.e., thiamine monophosphate), but the average levels of free thiamine and ThDP were similar in alcoholics and control subjects” (Tallaksen et al., 1992).

“ However, some of the alcoholics in that study had extremely high levels of free thiamine, suggesting that they may have had a problem in the steps that lead to the conversion of thiamine into its active, phosphate containing form”.

Conclusion

After the detail analysis of the facts it is revealed that the thiamine deficiency is the most crucial and most effect factor in causing various kinds of organic disorders. It is very common among alcoholics that they eat less and drink excessively. The most surprisingly some alcoholics show the clear signs of poor appetite. Alcohol intake causes excessive deficiency thiamine and less intake food leads to the acute stage of deficiency which leads to deadly organic diseases.

Many studies related organic disorders suggested the loss related to these disorders we usually ignore such kind of disorder as they are considered less harmful which is not true at all. The cognitive disorders make a man a vegetable which has no memory and cognitive powers. This is quit shocking to know that these disorders cause such conditions which are fatal and leads to life threatening situations. But still disorders like stress, anxiety and depression are considered more problematic than organic diseases.

In the modern society alcohol intake is the important part of socialization and no parties and get together are without alcohol consumption. Even in India the ratio of alcohol intake by male and female growing very fast and almost running

parallel. The modern society has broken barriers of age, male female differences and family values in case of alcohol consumption.

STUDIES WHICH ARE AGAINST ALCOHOLIC DEMENTIA

The various studies shows that “the excessive use of use of alcohol and several other drugs can affect mental state and cognitive function. The prolonged excessive use of some drugs may also increase the risk of organic impairment and perhaps dementia in later life. The study basically focuses on the long-term cognitive consequences of using alcohol, benzodiazepines, tobacco and cannabis. **Currently available evidence indicates that mild to moderate alcohol consumption is not associated with increased risk of cognitive decline and may in fact have a protective effect against dementia, although heavy, long-term consumption is likely to have a negative impact on cognitive function**”.

Apart from alcohol there are many other licit and illicit drugs which can lead to dementia as long-term smoking can lead to “the risk of cognitive impairment and possibly dementia. Moreover long-term use of benzodiazepines has been associated with increased risk of cognitive impairment but authentic and complete information relating to dementia remains inconclusive. The excessive use of cannabis may impair intellectual abilities but data on this topic remain jumbled and difficult to interpret”.

In conclusion, “there is evidence that some drugs contribute to the causal pathway that leads to the development of cognitive impairment but currently available data do not support the introduction of a separate diagnostic category of drug-induced dementia (such as alcohol-related dementia). Health promotion programs designed to decrease tobacco smoking and “harmful” alcohol use (and possibly other drug use) may decrease the burden of cognitive impairment and later perhaps dementia in life”.

All above given studies leads to one common conclusion that moderate alcohol consumption protects against many the development of dementia and excessive and

chronic alcohol intake leads to organic disorders. But surprisingly, “these are observational studies, and it is not a proof of a causal association. In fact, “a specific selection of the sample may explain such results”.

Many studies related to mortality rate or premature deaths associated with alcoholism now days are more focusing on the relationship between dementia and alcoholism. But actually, in the samples of these studies and “for the age groups considered, death rate was lower among drinkers”. That is why there is not even single study which can clearly differentiate the factors contributing to mortality among alcoholics and non alcoholics. However there must be some other relevant factors which can contribute (age, sex, education, marital status, income, etc.) to the disorders related to dementia.

Again, “the association was not modified by these adjustments, but other factors not considered in the analyses may explain these results. Indeed, moderate drinkers may be moderate for many others risk factors that may lead to a decreased risk of developing dementia, independently from alcohol consumption. Are these subjects exposed to specific risk factors, specific diets, or have a better social network? These questions remain without answer. However, in a domain where behavior is so profoundly influenced by cultural and social environments, it seems very unwise to consider alcohol as the only factor”.

“Which mechanism could be involved in the risk reduction of developing a dementia or Alzheimer's disease? Several hypotheses have been given, but none has been confirmed. A first hypothesis is the reduction of the cardiovascular risk factors, either by inhibiting platelet aggregation, or by the modification of the lipid profile. Actually, the differential effect of alcohol in ApoE4 carriers could be explained by an increase of HDL cholesterol in these subjects who have a low level of HDL cholesterol and a high level of LDL cholesterol. Another possibility is the fact that alcohol might have a direct effect on cognition through release of acetylcholine in the hippocampus. Acetylcholine is involved in learning and memory mechanisms that are impaired in Alzheimer's disease”.

There is a endless controversy related to the question that among alcohol and wine, which one is more beneficial? Finally, “between alcohol and wine,

which one protects the most? The flavonoid element and antioxidant activity giving wine a better position than alcohol and helpful in maintaining the health". Commenges and others(2000) have shown that , "a diet rich in flavonoids was associated with a lower risk of dementia. In addition, the association with wine consumption disappeared after controlling for diet and may indicate that wine is a marker of a healthier diet". "Indeed, a Danish study showed that wine drinkers had a healthier diet than beer or spirit drinkers"(Tjonneland et al., 1998). "They ate more fruits and vegetables, more fish and used more often olive oil for cooking. This confirms the importance of considering other factors before drawing conclusions".

By summing-up, can we really advice someone to take alcohol to avoid various kinds of diseases? But on the other hand the "Epidemiological studies have shown that, possible beneficial effects of alcohol consumption on health were apparent only after age 40 in men and age 50 in women". However before that age, there are many negative consequences which are associated with alcoholism for example, "road accidents, diseases directly linked to alcohol (cirrhosis, liver, mouth, larynx cancers, etc.) and the risk of alcohol dependence".

"The premature mortality attributable to alcohol (excluding accidents and injuries) is estimated to 15 %. After age 50, and particularly in elderly whose occupational activity has stopped, moderate alcohol consumption should not be prohibited. However, it seems premature to advice people who do not drink to start drinking, since the risk of addiction is far from being negligible (it is estimated to be 13 % in mature adults). Alcohol consumption should remain a pleasure and should not be considered as a medication".

FACTORS CONTRIBUTING TO ALCOHOLIC DEMENTIA

Depression

Depression is associated with the mental state where an individual is feeling extreme sadness, despair and worthlessness. The clinical picture of the depression is quite different as compare to depression in the younger age. The old age is associated with number of losses in terms of money due to loss of job, loss of spouse, loss of friends and decreasing bodily energies leads to extreme dependency. "Depression has the tendency to

be longer lasting and does not go away by itself. Moreover the depression causes a severe disturbances in the older person's overall functioning that is both significant and enduring. The older with depression always complains about the condition as feeling very different than his or her former self".

The simplest answer is "We are not certain, because no one factor seems to be the 'cause'". "There are various factors that help in developing a greater chance of developing depression in their lifetime". For instance, depression is more common among

- "Women than men (Sonnenberg et al., 2000)
- People who have few social supports,
- People who are experiencing stressful life events". (Scheider & Amerman, 1995)

"Depression in late life is also more common where there has been

- Previous depression,
- a family history of depression,
- a personal history of alcohol or other substance abuse problems,
- Serious medical illness or chronic pain,
- Prior suicide attempts".

"There is bio-chemical basis for depression. Three major neurotransmitters in the brain (serotonin, dopamine and norepinephrine) need to be in the correct balance for people to have a positive, stable self image and optimistic mood. If these chemicals are not in balance, the person can become depressed".

"According to the National Advisory Council on Aging":

"Although most seniors enjoy good mental health, as many as 20% of people age 65+ suffer mild to severe depression, ranging from perhaps 5 to 10% of seniors in the community to as many as 30 to 40% of those in institutions."

"Depression is fairly common (12-20%) among people in who are in acute care or chronic care settings. (Blazer, 1999) Depression is also very common where a person is developing dementia, but isn't showing the clinical signs of it yet". (Visser, 2000)

The clinical picture of depression in old age

The depression among old people is totally different from the younger adults as there is rapid change in their lifestyle. Some older adults consider depression as chronic illness (one that comes and goes, but is a long term problem) throughout most of their lives. “However some older adults treat depression as temporary or situational reaction to specific situational stress (e.g. death of a spouse, or significant change in the person’s own health or functional ability). Depression has many sources like retirement, or loss of a job or volunteer position that has been important to the person. Even the minor losses and changes like losing a loved pet; losing their driving license; losing their home or moving to a care home can cause severe depression in older adults”.

“Women experience depression about twice as frequently as men. Women are also at greater risk for inadequate pain management, which is a very important factor associated with depression and with a person’s desire to die. Bereaved mothers who have lost a middle aged child tend to have significantly higher levels of depression than widows”. (Leahy, 1992-3)

“The older person who is depressed can easily be

- A healthy 85 year old man who has lost his spouse of 65 years,
- A 65 year old man with many health problems.
- A women just over 55 who feel life has no meaning because nothing is happening in her life and she feels “stuck”;
- An 83 year old woman who suffered traumas fifty years ago that have never been adequately addressed (post traumatic stress);
- A 78 year old woman whose 52 year old daughter has recently died;
- A veteran whose memories of losing his buddies in violent circumstances during the war are beginning to surface, for the first time in his life”

“Depression can also occur in the context of care giving. An older adult can become overwhelmed in giving care to aging spouse or family member. Couples in long

relationships may feel they have not only lost their life and personal freedom, but also the spouse they once had, even though the spouse is still physically present. Women tend to experience more care giving demands than do men and as a result women caregivers may be more likely to be depressed”.

“Research shows depression is more common

- If the person giving care is in poor health, receives little help from family and friends, or feels overwhelmed in giving the care. (Pruchno, & Resch, 1989; Clyburn et al., 2000).
- as the frequency of disturbing behaviors by the person receiving care increases”.

“Older people who are depressed are three to four times more likely to have alcohol related problems than are older people who are not depressed. (Devanand, 2002) Between 15 and 30 % of persons with major late life depression has alcohol problems”. (Devanand, 2002).

There are basically two main kinds of depression among older adults that are strongly associated with depression leads to alcohol dependency.

1) **Transient depression:** by transient we mean which changes with time and “in older adults who have been drinking excessively may be depressed on short term basis either from being intoxicated or as they withdraw from the alcohol. This particular form of depression will pass as the drinking side effects or as the acute and post acute phases of alcohol withdrawal occur”.

2) **Underlying depression:** “the condition in which the depression and the symptoms stays for longer period unchanged for weeks or longer after the relevant gap of drinking, then it is considered to be a co-morbid disorder”. (Atkinson, 2002)

Identifying the Problem

There is very common observation that “even family and health care providers ignore the symptoms of depression among older adults”. For example, “a recent study showed that one half of depressed older persons were not being identified as such by home care nurses” (Brown et al., 2003).

“A common sign is flat affect (emotion) which sometimes expressed by people as “I don’t know [how I feel], I don’t care. Leave me alone” and with the person shutting down”.

Depression in older adults remains unnoticed.

(a) Difference in signs:

- “There is considerable variation in the kinds of signs and symptoms for depression in older adults”.
- “Frequently depression does not manifest itself in older adults in the same way as younger adults. For example in contrast to inactivity often seen in depressed younger adults, older adults can experience anxiety and agitation during depression”.
- “Depression will have different clinical signs and these vary with different older adults (not all older adults show the same signs)”.
- “Older adults who are depressed are less likely to say they feel depressed, feel guilt, have low self esteem or have suicidal ideas. Instead the depression may show up more as somatic complaints (constipation, abdominal cramps, weight loss), or feelings of anxiety”.
- “Older depressed persons often show signs of carrying out actions more slowly, responding more slowly, slower mental processing, an inability to make decisions, and inappropriate social responses. So, not surprisingly, depression can easily be confused with dementia”.

- “Some older depressed persons may have somatic delusions (“I can’t eat properly anymore. I must have cancer in my stomach”) or may express feeling persecuted by family or friends. A depressed older person may have attempted suicide yet not expressed suicidal thoughts to others”. (King and Markus, 2000)

(b)Age factor: the health care providers sometimes ignores or discount relevant symptoms and changes in older adults' overall functioning because they view depression as a normal and inevitable aspect of growing older. Sometimes the health care providers erroneously consider depression as a normal response to a medical illness. (e.g., "Oh course he's depressed, who wouldn't be after having a stroke and losing the ability to walk.") “Depression is not inevitable and although it may occur with a medical illness, it should not simply be ignored”.

“Many medical conditions whose symptoms can mimic depression (e.g., multiple sclerosis, Parkinson’s disease, chronic obstructive pulmonary disease)”. (King & Markus, 2000) “Depression is also common among older adults who are experiencing self-neglect”. (Dyer et al., 2000). “This may reflect a person's deteriorating ability to take care of her or himself because of an illness or disability. Self neglect can also be a manifestation of the depression giving up on and neglecting self, losing all the energy/will to eat, cleaned or go out. If the person is showing signs of dementia or is not very communicative, obtaining a history from family members or other informants can be helpful. If a drinker has never experienced alcohol problems, he or she will tend to not to have symptoms of depression. Research indicates that people who experienced alcohol problems both before and after age 60 have the highest rates of depression. It has also been suggested that the existence of earlier alcohol problems (around ages 20 and 40) predicts depression in later life”. (Reifman & Welte, 2001)

Older Adults' Health and effects of depression

The various studies indicate “the three is a strong and complicated relationship between depression and older adults’ overall health, particularly heart disease and chronic pain. Sometimes if the depression left untreated it can lead to serious heart disease. National Institute of Mental Health (NIMH)” notes:

"Depression and anxiety disorders may affect heart rhythms, increase blood pressure, and alter blood clotting. They can also lead to elevated insulin and cholesterol levels. These risk factors, with obesity, form a group of signs and symptoms that often serve as both a predictor of and a response to heart disease."

CONTRIBUTION OF DEPRESSION IN ALCOHOLIC DEMENTIA

"This is a common belief that alcohol is a "depressant" and may usually think that alcohol causes depression (makes a person become emotionally depressed). This is a true misconception related to the nature of depression". "For people who have been alcohol dependent for a long time, alcohol can have a toxic effect on their serotonin neurotransmitters, but that does not necessarily lead to depression or anxiety. In other words, not all heavy or long time drinkers will become depressed". (Berrgren, 2002)

Although it is more appropriate to say that excessive alcohol consumption can lead to the development of depression. This process takes place in many ways:

1. Effect on Cortisol: "alcohol is also considered as relaxant as it slows down and relaxes ("depresses") the central nervous system (for example brain function, breathing, pulse rate). That is why the more the alcohol content in blood leads to relaxation of nerves, until they are less efficient". For example, "heavier drinking can lead to sedation and drowsiness. Alcohol increases the amount of circulating cortisol. That, in turn, reduces serotonin levels as well as other important neurotransmitters norepinephrine and dopamine that are integral to thwarting off depression. In general, when serotonin levels drop, depression can quickly settle in".

2. Exaggeration of Feelings: Another most significant change occurs due to alcohol intake is the exaggeration of the feelings. Alcohol affects the brain system and

strongly influences the center responsible for coordinating the sensations, perception, speech and judgment. 'It produces slurring of speech and errors in the thinking processes. Otherwise "alcohol slows down the bodily functions, it often stimulates inhibitions. The main reason of exaggerated emotions is that basically part of the brain which enables us to control our behavior is depressed or relaxed during alcohol consumption. Moods of an alcoholic are always exaggerated by the use of alcohol. Alcohol also triggers the anxieties and sadness. Depressive drinking makes an alcoholic more depressed". "Taking other drugs can increase the effect of both the alcohol and the other drug, especially if the other drug is also a central nervous system depressant, such as a tranquilizer or antihistamine. Alcohol can act as a tranquillizer reducing stress for moderate drinkers. However, heavy drinking can increase stress when the drinker stops for a time or becomes tolerant to the effects"

3. **Coping Mechanism:** "People who have depression or anxiety may drink an attempt to relax them and relieve the anxiety or negative feelings" (Carpenter & Hasin, 1999) and "more the alcohol content in the blood there is a feeling of depression increases and in anticipation an alcoholic may drink more to try to escape it. Alcohol gradually becomes a kind of "self-medication".

4. **Increased Vulnerability:** the studies suggest and support the "evidence that overall ability to decreased serotonin activity is associated with early onset of alcoholism among men".

5. **Alcohol as an Intermediary:** alcohol has an adverse effect on blood sugar level and generally stresses blood sugar control and can cause hypoglycemia (low blood sugar) among alcoholics. Alcohol disrupts the sleep. Both of these factors contribute a lot the risk and the severity of depression.

The Brain Chemistry of Depression

As we all know now due to advancement in the field of physiological psychology that there are three important neurotransmitters in the brain (serotonin, dopamine and norepinephrine) which are responsible for moods and can create balance and constructive tension to affect and allow a positive, stable self image and positive mood.

However, “when these neurotransmitters are in an unbalanced state with one another, mood changes are inevitable. In general, when serotonin levels drop, depression can quickly settle in, and when serotonin levels can be made to rise, a contented mood generally results”.

According to Haslin & Grant, (2002), “It is important to understand that stopping drinking does not stop depression from happening. Former drinkers who have previously had an alcohol dependence problem are four times as likely to have major depression as former drinkers who never had an alcohol problem.”

STRESS

Stress refers to any environmental demand that creates a state of tension or threat and requires change or adaptation. “Many situations prompt us to change our behavior in some way: we stop when a traffic light turns red; we switch television channel to avoid a boring program; we go inside when it starts to rain. Under normal circumstances these situations are not stressful, because they are accompanied by tension or threat. Now imagine that when light turns red you are rushing to an important appointment or that the person watching the television with you does not want to switch the channel or that you are about to host a large outdoor party when it starts to rain. Now the same events can be quite stressful”. Stress is not limited to dangerous situations or even to unpleasant situations. Good things can also cause stress, because they “require change or adaptation if an individual is to meet his or her needs” (Morris, 1990). “A wedding is stressful as well as an exciting event ,a promotion at work is gratifying, but it demands that we relate to new people in new ways, learn to carry more responsibility, and perhaps work longer hours”.

VARIOUS SOURCES OF STRESS

1. **CHANGE:** Most people have a “strong perhaps for order, continuity and predictability in their lives. Therefore anything good or bad that requires change will be experienced as stressful”.
2. **HASSELS:** Some psychologist (Lazarus et al., 1985; Lazarus&De Longis, 1983; Reffin 1993; Witman & Kwon, 1993) have pointed out , “much stress is generated by chronic or repeated conditions of living boredom, continuing tension in a family relationship, lack of occupation progress isolation and loneliness, absence of meaning and commitment” (Lazarus,1981).
3. **PRESSURE:** “Pressure, another common source of stress, occurs when we feel forced to speed up, intensity, or shift direction in our behavior, or when we feel compelled to meet a higher standard of performance” (Morris, 1990).
4. **FRUSTRATION:** “Frustration also contributes to stress; it occurs when something or someone prevents us from reaching a goal. Morris (1990) identifies 5 common sources of frustration in American life
 1. Delay
 2. Lack of resources
 3. Losses
 4. Failure
 5. Discrimination”
5. **CONFLICT:** “conflict arises when we face two or more incompatible demands, opportunities need or goals”. We can never resolve conflict completely. In trying, we must give up some of our goals, modify others, delay our pursuit of some, or

resign ourselves to not attaining all of them. Whatever we do, we are bound to experience some frustration, which adds to the stressful of conflicts.

- 6. SELF IMPOSED STRESS:** “sometimes, however, people create problems for themselves quite apart from stressful events in the in environment. Some psychologist argue that many people carry around a set of irrational, self defeating belief that add unnecessarily to the normal stresses of living” (Ellis & Harper, 1975).

The stress is a feeling of pressure or tension due to some internal and external stressors. Whenever we feel stressed there are many observable changes which takes place due to stress. “As this Alcohol Alert explains, the stress response is a complex process; the association between drinking and stress is more complicated still. Because both drinking behavior and an individual's response to stress are determined by multiple genetic and environmental factors (Sadava&Pak, 1993., Volpcelli, 1987., Karant, 1990), studying the link between alcohol consumption and stress may further our understanding of drinking behavior”.

The Stress Response

“The most significant function both body and mind to maintain the body' balance of internal state, or homeostasis, this balance is essential for survival. The body's delicate balance of biochemical and physiological function is constantly challenged by a wide variety of stressors, including illness, injury, and exposure to extreme temperatures; by psychological factors, such as depression and fear; and by sexual activity and some forms of novelty-seeking. In response to stress, or even perceived stress, the body mobilizes an extensive array of physiological and behavioral changes in a process of continual adaptation, with the goal of maintaining homeostasis and coping with the stress” (Tasigos, 1995).

The central nervous system, the adrenal system, and the cardiovascular system are the important body systems which run the integrated network of the stress

response. “When homeostasis is threatened, the hypothalamus gland, at the base of the brain, initiates the stress response by secreting corticotrophin releasing factor (CRF). CRF coordinates the stress response by triggering an integrated series of physiological and behavioral reactions”.

“CRF is transported in blood within the brain and in seconds triggers the pituitary gland to release adrenocorticotropin hormone (ACTH), also referred to as corticotropin. ACTH then triggers secretion of glucocorticoid hormones (i.e., "steroids") by the adrenal glands, located at the top of the kidneys. Glucocorticoid hormones play a key role in the stress response and its termination”(Tasigos, 1995).

“ Activation of the stress response affects smooth muscle, fat, the gastrointestinal tract, the kidneys, and many other organs and the body functions that they control (Tasigos,1995).The stress response affects the body's regulation of temperature; appetite and satiety; arousal, vigilance, and attention; mood; and more (Tasigos,1995). Physical adaptation to stress allows the body to redirect oxygen and nutrients to the stressed body site, where they are needed most” (Tasigos, 1995).

There is an individual difference related to both the perception of what is stressful and the bodily response to stress. “These differences are based on genetic factors and environmental influences that can be traced back to infancy” (Meany and others, 1995).

“Generally people consider stress as harmful; but when the stress response is acute and transient, homeostasis is maintained and no harmful effects result. ‘Under chronic stress, however, when the body either fails to compensate or when it overcompensates, damage can occur” (Tasigos, 1995). “Such damage may include suppression of growth, immune system dysfunction, and cell damage resulting in impaired learning and memory”Tasigos, 1995., Eskay and others, 1993).

Does Stress related to excessive Drinking?

Stress and alcohol is a very popular topic of research among humans “to clarify the connection between alcohol and stress”. The major research “usually has been conducted using either large scale surveys based on self-reports or experimental studies sometimes

the government of the country do mass surveys to know the reasons behind excessive use of alcohol among the population”. There is evidence of subject’s response which clearly supports the fact that stress leads to alcoholism but this is not a very common response there are other valid factors which can lead to alcoholism. “Studies shows that excessive drinking is sometimes accompanied with economic stress, job stress and marital problems, often in the absence of social support, and this is also depends on the severity of the stressor” (Pohorecky, 1991). “However, whether an individual will drink in response to stress appears to depend on many factors, including possible genetic determinants of drinking in response to stress, an individual's usual drinking behavior, one's expectations regarding the effect of alcohol on stress, the intensity and type of stressor, the individual's sense of control over the stressor, the range of one's responses to cope with the perceived stress, and the availability of social support to buffer the effects of stress” (Sadava & Pak, 1993., Volpcelli, 1987., Pohorecky,1991.,Jenninson,1992).

Some investigations have proved that more the level of stress more the drinking in the absence of alternative resources and it also depends on the availability of alcohol as the individual will think that alcohol can reduce the stress.(Sadava & Pak, 1993., Jenninson, 1992). Various comparative studies of animal and humans revealed the facts that even in animals stress lead to excessive consumption of stress. (Hilakivi-Clarke & Lister, 1992)) . This is also very important to know that each individual reacts to stress in different manner. (Higley and others,1991). “Such differences may be related in part to an animal's experiencing chronic stress early in life: Prolonged stress in infancy may permanently alter the hormonal stress response and subsequent reactions to new stressors, including alcohol consumption” (Higley and others, 1991, Viau and others, 1993). For example, “monkeys who were reared by peers, a circumstance regarded as a stressor compared to mother-rearing, consumed twice as much alcohol as monkeys who were mother-reared” (Higley et al., 1991). According to Viau and colleagues (Viau et al., 1993), “adult rats handled for the first 3 weeks of life demonstrate markedly reduced hormonal responses to a variety of stressors compared with rats not handled during this time”(Viau et al., 1993). In humans, Cloninger reported “an association between certain types of alcoholism and adverse early childhood experiences” (Cloninger, 1987).

“There were very encouraging results which clearly states that animals showed high correlation between alcohol consumption and stress as the subjects perceived stress as unavoidable and start drinking to avoid stress”. (Volpcelli, 1987., Nash & Maickel, 1988).

For instance, “rats chronically exposed to unavoidable shock learn to be helpless or passive when faced with any new stressor including shock that is avoidable and to demonstrate increased alcohol preference compared with rats that received only avoidable shock” (Volpcelli, 1987). “The rats exposed to unavoidable shock exhibit the hormonal changes indicative of the stress response, including increased levels of corticosteroid hormones” (Volpcelli, 1987).

According to Pohorecky (1991) “Whether humans drink in response to uncontrollable stress is less clear”. “In a review investigating the connection between alcohol consumption and stress, Pohorecky notes several studies in which researchers sampled individuals from areas affected by natural disaster. One study found that alcohol consumption increased by 30 percent in the 2 years following a flood at Buffalo Creek, West Virginia. Similarly, there was evidence of increased drinking in the towns surrounding Mount St. Helens following eruption of the volcano (Pohorecky, 1991). Following the nuclear plant accident at Three Mile Island, however, alcohol consumption was infrequently used by those sampled as a means of coping with the resulting stress” (Kasl et al., 1981).

“In both humans and animals, drinking appears to follow stress”(Volpcelli, 1987., Karant, 1990., Pohorecky, 1991., Nash & Maickel, 1988). Few human investigations suggested that sometimes when stress is unavoidable it leads to excessive drinking. (Brown and others, 1995).

Does Drinking Reduce or Induce Stress?

Some investigations in the field of alcoholism and stress “reported that acute exposure to low doses of alcohol may reduce the response to a stressor in animals and

humans. For example, low doses of alcohol reduced the stress response in rats subjected to strenuous activity in a running wheel (Karant, 1990). In humans, “a low dose of alcohol improved performance of a complex mental problem-solving task under stressful conditions” (Karant, 1990). However, “in some individuals, at certain doses, alcohol may induce rather than reduce the body's stress response” (Waltman et al., 1993). “Much research demonstrates that alcohol actually induces the stress response by stimulating hormone release by the hypothalamus, pituitary, and adrenal glands” (Tasigos, 1995., Eskay et al., 1993., Wand & Dobs, 1991., Krishnan et al., 1991). “This finding has been demonstrated in animal studies. In one study with rats, the administration of alcohol initiated the physiological stress response, measured by increased levels of corticosterone (Spencer & Mc Even, 1990). In addition to stimulating the hormonal stress response, chronic exposure to alcohol also results in an increase in adrenaline” (Rivier et al., 1990).

Stress, Alcoholism, and Relapse

“Stress may be linked to social drinking, and the physiological response to stress is different in actively drinking alcoholics compared with non alcoholics” (Wand & Dobs, 1991). “Researchers have found that animals preferring alcohol over water have a different physiological response to stress than animals that do not prefer alcohol” (Ehlers, 1995). “Although there is no direct and clear finding which can support the relationship between stress, drinking behavior, and the development of alcoholism in humans has yet to be established”.

The studies reported that the already established alcoholics are more prone to stress and in the period of withdrawal if they again encounter” the personally threatening, severe, and chronic life stressors may lead to alcohol relapse (Brown and others, 1995., Brown and others, 1990). Brown and colleagues (Brown et al., 1995) “studied a group of men who completed inpatient alcoholism treatment and later experienced severe and prolonged psychosocial stress prior to and independent of any alcohol use. The researchers found that subjects who relapsed experienced twice as much severe and prolonged stress before their return to drinking as those who remained

abstinent. In this study, severe psychosocial stress was related to relapse in alcoholic males who expected alcohol to reduce their stress. Those most vulnerable to stress-related relapse scored low on measures of coping skills, self-efficacy, and social support. Stress-related relapse was greatest among those who had less confidence in their ability to resist drinking and among those who relied on drinkers for social support. Although many factors can influence a return to drinking, Brown and colleagues note that stress may exert its greatest influence on the initial consumption of alcohol after a period of abstinence” (Brown et al., 1995).

Studies have shown that during alcohol consumption the body reacts in same way as it reacts in the time stress. But still people drink to release the stress.the question is still unanswered that, “Why people should engage in an activity that produces effects similar to those they are trying to relieve is a paradox that we do not yet understand”. “One hypothesis is that stress responses are not exclusively unpleasant; the arousal associated with stress itself may be rewarding. This might explain, for example, compulsive gambling or repeated participation in thrill-seeking activities. Current studies may illuminate genetic variations in the physiological response to stress that are important in drinking or other activities with the potential to become addictive”.

Many health psychologists suggested special trainings for the mental health institute staff members to deal effectively with patients suffering from stress. For the prevention of relapse the mental health practitioners should teach the coping skills to deal with these stressors without drinking.

CONTRIBUTION OF STRESS IN ALCOHOLIC DEMENTIA

“If a person is experiencing impaired concentration and memory, poor quality sleep or mood, your brain may be suffering from the detrimental effects of stress. Relatively minor symptoms such as mild anxiety or irritability may not catch your attention or cause you concern. However, without proper intervention stress can produce a progressive deterioration of brain function culmination in serious condition such as dementia and depression. How does stress cause such damage? By stimulating body to

produce excessive levels of cortisol. According to behavioral perspective in the process of trying to reduce our discomfort like anxiety, self doubt, depression, guilt, annoyance, some of us will take a drink. Alcohol as we have seen can definitely do the job, dulling whatever mental distress we are experiencing”.

Psychoneuroimmunological is the specialized field which studies the effect of stress on immune system of the individual and explores the relationships among stress, emotional and behavioral reactions and the body's immune system (Ader, 2001). “The psychological-physiological connection works in both directions. Not only is there an effect of psychological variables on the immune system, but the activation of immune system alters neural activity and thus affects behavior, mood and cognitive functioning” (Maier & Watkins, 2000).

“ It has been postulated that oxidative stress may play a key role in dementia. This is substantiated by the recent discovery of the protective effect of wine. In wine, the flavonoids – powerful antioxidant substances also contained in tea, fruits and vegetables – have been thought to offer such protection. We investigated whether flavonoid intake could be associated with a lower incidence of dementia in a cohort of 1367 subjects above 65 years of age (Paquid). A questionnaire was used to evaluate their intake of flavonoids and subjects were followed-up for 5 years between 1991 and 1996: 66 incident cases of dementia were observed. We estimated the relative risk (RR) of dementia according to tertiles of flavonoid intake using a Cox model. The age-adjusted RR of dementia was 0.55 for the two highest tertiles compared to the lowest (95% CI: 0.34–0.90; $p = 0.02$). After additional adjustment for gender, education, weight and vitamin C intake, the RR was 0.49 (95% CI: 0.26–0.92; $p = 0.04$). We conclude that the intake of antioxidant flavonoids is inversely related to the risk of incident dementia.

Regardless of level and source of stress, one can easily fight with the adverse effects of the stress with the help of bodily functions and coping mechanisms also helps to act in a more balanced manner”.

Less-stressed people may have lower dementia risk

The study conducted to find out the risk factor related to develop dementia among less stressed people and highly stressed people suggested that extroverted people have lower tendency to develop dementia. The extroverts are socially active and not easily get stressed. Moreover the introvert peoples those who high level of self satisfaction had the lowest risk of dementia. The study elaborated this fact that extroverts have positive attitude towards life, and "may be better equipped to cope with stressful events and therefore less prone to depression," said "Hui-Xin Wang of the Karolinska Institute in Stockholm, Sweden, and lead author of the study".

"The study looked at 506 older people from the Kungsholmen Project in Stockholm who did not have dementia at the first examination. These people then filled out questionnaires that determined their personality types and level of social activity. Those who said they were easily distressed were classified as having high neuroticism. Researchers followed these participants for six years, during which time 144 of them developed dementia".

"Although it is not easy to change someone's personality", "The good news of our finding is that an active lifestyle -- having a rich social network and participating in physical, mental and social activities -- may buffer the negative effect of high neuroticism on dementia risk," said, Wang.

"One in seven Americans age 71 and older, or about 3.4 million, have dementia, according to the National Institutes of Health. In this age-group, 2.4 million people have Alzheimer's disease, NIH research has shown. Alzheimer's disease is the most common cause of dementia, according to the Mayo Clinic".

"Previous research has documented that personality factors may play a role in how people cope with dementia. This study is unique in that it looks at a combination of different lifestyle and personality traits, said Dr. Yaakov Stern, professor of clinical neurology at Columbia University Medical Center, who was not involved with the study.

Stern and colleagues have found that people with higher educational or occupational attainment, or who engage in leisure activities, appear less demented. They call this concept "cognitive reserve," because these lifestyle factors seem to allow them to cope with the pathology of the disease better. That is, as the disease progresses in the brain, those who have a greater "reserve" do not show symptoms of Alzheimer's memory loss and impairment of day-to-day functions as quickly”.

In the famous study done by Swedish researchers suggested that, “lifestyle factors also directly influence brain changes. The study builds off the established idea in the area that stress actually harms the brain”.

“The pathology of dementia appears about 10 to 15 years before a person actually develops Alzheimer's disease”, said, Stern. “That means, just like a man with prostate cancer may not have any symptoms, a person's brain may have undergone changes that lead to Alzheimer's without visibly affecting a person's day-to-day life”.

“Doctors can look for indications of the disease using positron emission tomography (PET) scans. A chemical called Pittsburgh Compound B is used in the imaging of brain tissues to find signatures of Alzheimer's -- namely, beta-amyloid plaques and neurofibrillary tangles”.

"The working idea is that if we can detect it before it's clinically expressed and stop it then, we can prevent people from developing the disease," said, Stern.

The two principle stress response system in both humans and other animals are:-

(1) A part of the nervous system called the sympathetic nervous system.

(2) A hormone system called **the hypothalamic pituitary- adrenal (HPA)** axis. Both systems enable the brain to communicate with the rest of the body. Activation of the sympathetic nervous system produces several physiological responses within seconds, such as accelerated heart rate, increased respiration and blood flow redistribution from the skin to the skeletal muscles. These responses facilitate “the fight or flight” behavioral response”(Sapolsky, 1993).

AGE

Like the problems of children and adolescent these of elderly persons received little attention until recent years. Gero psychology the field concerned with the mental health of elderly people has developed almost entirely with the last twenty years, mainly to explore whether or not methods of assessment and treatment of the mental health problems of later life should be similar to the methods applied to younger and middle-aged persons or whether this age group requires different approaches. It studies the influence of socioeconomic status ethnic affiliation and history (both personal and generation) on the psychological functioning of people as they age and the impact of the special challenge that often accompany old age, such as dwindling income and failing health.

“Old age is arbitrarily defined in our society as referring to the years past age 65 Clinicians further distinguished between the young old, people between the ages of 65 and 74; The old- old those between 75 and 84 and oldest-old, individuals 85 and above. In 1989, 31 million people in the United States were over 65; they accounted for 13% of total U.S population or about one in every eight Americans”.

Older people tend to have more health problems than younger people. About 29 percent assess their health as failing or poor (only 7 percent of people under the age of 65 do so) and older adults report one or more chronic health conditions such as arthritis, hearing loss, or heart disease. Older persons account for a third of all hospitals stays. Altogether, people over 65 accounts for 36 percent of total personal expenditures for health care.

The population of older adults is actually quite heterogeneous. We need to be mindful of the fact that older adults are more unlike than similar to one another. Elders have very different life experience adopt to change in uniquely personal ways, and age at different rates. The field geropsychology distinguishes between chronological age and functional age. Chronological age or the number of years one has lived since birth is regarded as nothing more than a short hand variable” because it is not a true indicator of a person’s

functional capacities. Functional age is a reflection of twice interrelated aspects of aging biological, social and psychological (Birren and Cunningham, 1985).

- (1) **Biological Age:** - Biological age represents one's present position with respect to one's potential life span. Clinicians determine biological age by assessing the functioning of various vital organ systems, such as the cardiovascular system. With increasing age, the systems capacity for self- regulation diminishes resulting in an increased probability of death.
- (2) **Social age:** - Social age refers to a person's roles, habits and behavior in comparison with those of other members of his or her society. A person's manner of dress language and interpersonal style, for example, will reflect a particular social age.
- (3) **Psychological age:** - refers to a person's capacity to adapt his or her behavior to the changing environment. This as part of aging will be influenced by the person's cognitive functioning, motivation and self esteem.

To understand older persons it is necessary to consider all of these aspects of aging.

Older people are frequently stereotyped by younger ones (including younger clinicians),

What is aging and how it happens?

Aging as we all know the process of aging is very gradual with the passage of time. "During this whole process there is a weakening of the body and a loss of acuity of the senses with an increasing risk to the various diseases".

The aging is characterized by "accumulation of abdominal fat, 'muscle wasting, a thickening of the skin with deep wrinkles present, poor sleep, cognitive problems like increased short term memory loss, mood changes (particularly increased depression), weakened bones (especially in women suffering from osteoporosis), decreased sexual drive and performance, and impaired heart and kidney function (for instance partial incontinence).In addition, the hair thins and turns gray".

“We begin to have less energy and vigor, growing tired more easily. Brown spots on the skin sometimes called “liver spots” begin to appear. Vision and hearing become less acute and we become susceptible to any one of the diseases associated with aging including: Alzheimer’s, stroke, heart attack, cancer, osteoporosis, diabetes, Parkinson’s, arthritis, cataracts, glaucoma and deafness”.

Causes of Natural Aging

“During the period of mid-twenties human being reach the peak of their growth and development. After that period there is a gradual decline in both biological and psychological changes. The complex and cumulative interplay of genetics, environment, and lifestyle determines the speed and degree to which an individual will age”.

“There are two dominant theories as to why we age. One is the pre-programmed theory which suggests we all have a biological clock that simply runs down over a lifetime according to a predetermined genetic timetable. Environmental theories believe that the effects of aging are the results of environmental influence to the human system that cause cumulative and progressive damage”.

Causes of Premature Aging

The heart, brain, joints, digestive organs, circulatory system, and immune system are the biggest contributors or factors which are responsible for signs of premature aging. “Life style problems and working or environmental conditions like allergies, exposure to toxic chemicals or heavy metals, excessive exposure to the sun, the abuse of alcohol or tobacco, poor nutrition, stress, and inactivity also determines the Injuries that do not heal thoroughly, can all be contributors. The most significant signs and symptom of premature aging is pain from joints, inflammation, poor circulation, or pressure within various organs”.

“Werner’s syndrome a rare genetic disorder, characterized by chronic fatigue syndrome make patients feel “old” and leads to premature ageing. Whenever an individual feels lowering of stamina and abilities, one should consult your

health care professional. To change or reverse the signs of premature ageing one should improve his lifestyle". "For instance, there is a clear link between over-consumption of alcohol and premature aging. Stopping drinking is an obvious measure to reverse the damage".

CONTRIBUTION OF AGE IN ALCOHOLIC DEMENTIA

There is an individual differences related to alcohol sensitivity and ageing as "various factors may contribute to age-related difference in a person's sensitivity to the effects of alcohol". For example, "A grew alcohol dose-even a single drink can produce higher BACs (blood alcohol concentration) in older people than in younger people, the main factor accounting for these higher BACs appears to be the increase in body fat relative to muscle that generality occurs with increasing age. Thus compared with 25 years old, the percent of total body weight consisting of fat increase an average off 50 percent in 60 year-old women and an average of 100 percent in 60-year-old men because alcohol dissolves only in water, of which muscle has a high content /but not in fat the same alcohol dose results in a higher BAC in a person who has proportionately more fatty tissue and less body water. In addition some evidence suggests that even with equivalent BAC's, a given alcohol level has a greater or impact on older person's physiological system than that of a younger person" (Atkinson, 1990).

The human brain like "other physiological systems, experience an age-related increase in sensitivity to alcohol" .for example, "Aged rats show an increased sensitivity to both the sedative and hypothermic effects of alcohol than do young adults rats (Guthrie et al., 1987) Although till date no expensive studies on this issue have been conducted in humans, the older human brain also seems to be more securitize to alcohol impairment motor –coordination tasks" (Vogel-Sprott and Barrett , 1984).

"Researchers do not yet know if age-related changes in sensitivity to alcohol affect a person's susceptibility to developing alcohol abuse. People generally assume that alcohol abuse declines with age. However, several studies have noted that between 24 to 68 percent of alcohol abusing people developed the first signs of alcohol

abuse only after age 60” (Atkinson, 1990). These findings suggest that “at least for some people aging leads to an increased risk of alcohol abuse. Whether this increased risk results from age related psychosocial factors (e.g., loss of a spouse, retirement, or loneliness) or changes in the physiological response to alcohol (or a combination of the two) remain to be determined”.

PREMATURE OR EXAGGERATED AGING AND ALCOHOL ABUSE

The studies in the field of alcoholism suggested that excessive alcohol consumption brings a wide range of biological impairment in the bodily functions. “Alcohol exposure can lead to impairment of a wide range of physiological functions. Some of the significant effects of excessive alcohol consumption are damage of liver and pancreas functions”. Other serious health issues associated with prolonged alcohol use (“e.g. cardiovascular disease sleep disorders, gastrointestinal dysfunction and increased susceptibility to infections”), however seems to be less significant in nature (Colsher and Wallace, 1990; Brower et al., 1994).

“In fact these effects which vary from person to person may represent an accelerated or exaggerated aging process. Some researchers have noted that an important distinction may exist between alcohols related accelerated aging versus exaggerated aging (Noonberg et al., 1985; Evert and Oscar berman, 1995). Accelerated aging means that symptoms of old age appear earlier than normal, resulting in premature aging. Exaggerated aging implies that the symptoms of old age appear at the appropriate time put in more exaggerated form. Exaggerated aging may result from person’s increased vulnerability to the physiological changes that emerge during approximately the sixth decade of life, such as brittle bones (i.e., osteoporosis), adult onset diabetes cognitive decline and shrinkage (i.e. atrophy) of muscle tissue”.

Some evidence suggests that, “chronic alcohol exposure can lead to both accelerated and exaggerated aging. Nevertheless some alcohol resemble the consequences of normal aging and thus appear to indicate accelerated aging have revealed, on closer inspection some unique characteristics. For example careful comparisons demonstrated that the nature of the memory depicts found in younger (i.e.

mean age of 37.2 years) alcoholics differed from the deficits found in older (i.e. mean age of 64.7 years) non alcoholics” (Kramer et al., 1989).

“Consistent with the fact that chronic alcohol abuse can lead to reduction in cortical volume numerous studies have observed alcohol related deficits in cognitive functions. The most extreme cases of alcohol related dementia and severe memory loss (i.e. amnesia which constitutes a condition Wernicke–Korsakoff syndrome may be primarily a result of severe alcohol–related nutritional and / or vitamin deficiencies) (Nakanda and Knight 1984). In addition however, chronic alcohol abuse appears to produce more subtle but significant deficits in cognitive function these deficits are most evident or test of relatively complex cognitive function such as the ability to follow abstract concepts or to adapt quickly to changing conditions (Tivis et al., 1995, Evert and Oscar-Berman, 1995).on such tasks the performance of alcoholism is impaired compared with non alcoholics of the same age. Infact Chronic alcohol abuse appears to accelerate a person’s cognitive decline by approximately years, because the cognitive performance of alcoholics generally is comparable to that of non-alcoholics who are 10 years older. This age related discrepancy is apparent even in alcoholics in their thirties. (Noonberg et al., 1985). Although these observations support the notion that alcoholic experience accelerated brain aging, two studies conducted to date have not ruled out the possibility that the alcohol- related cognitive deficits reflect an initial cognitive impairment that leads to an increased risk of alcoholism”.

Attributes other than medical conditions can lead to ‘Psychosis’. “Age itself is an important factor; older adults are more susceptible to developing delirium as a result of mild infections or medications changes” (American Psychiatric Association, 2000 b). “Sleep deprivation, immobility and excessive stress can also cause delirium” (Sandburg, Franklin, Bucht and Gustafson, 2001).

“Dementia can occur at almost any age, although the incidence of this disorder is highest in older adults. In one large reprehensive study, researchers found a prevalence of a little over 1% in people between the ages of 65 and 74 ; this rate increased to almost 4% in those aged 75 to 84 and to more than 10% in people 85 and older (George, Landoman, Blazer and Anthony 1991) . Estimates of the increasing number of people with just one form of dementia of the Alzheimer’s type are alarming”.

Among the eldest of adult, one study of centenarians (people 100 years and older) found that almost 90% showed signs of dementia (Blansjaar, Thomassen and Van Schaick, 2000). “Dementia of the Alzheimer’s type rarely occurs in people under 45 years of age”. (American Psychiatric Association, 2000 c).

In the early period of alcohol related researches the Psychologist used to think that senility was a final stage for ageing that would occur in everyone who lived long enough but today we know the senile dementia is a degeneration of brain that could only affect a small minority of the old aged people almost 4% of people over 65 showed the definite signs of dementia (Mortimer et al., 1981). But in the case of alcoholics the symptoms of dementia would appear almost above middle age that is 65 of plus (Luch singer J.A, Tang M-X, Siddiqui, et al., 2004).

MEMORY

Our memory links our past, present and future. “The recollection of past experiences, although not always precisely accurate, helps us make sense of and react to present events and guides us in making decisions about the future. We recognize our friends and relatives, teachers and employers and respond to them in appropriate and consistent ways”. “Without a memory we would always be starting over with it life has progression and continuity”. The Spanish filmmaker Bunuel wrote “our memory is our coherence, our reason, our feelings, even our action without it we are nothing.

“Memory also provides us with ideality, a sense of what we are – a unique person with particular preferences, abilities characteristics and needs others recognize our particularities and expect certain things of us”. Even more important with the help of memory we recognize ourselves and develop our own expectations, values, and goals. People sometimes experience a breakdown in this integration and self recognition; they experience a significant alteration in their memory or ideality. Through interruptions in learning new information or recalling old information, or by changes in the ability to think and process information, memory and identity, are disrupted sometimes the alterations in memory lack a clear physical cause, and are, by tradition called dissociative disorders. In other case the physical causes are quite clear, and the memory disorder is called organic.

“Amnesia and dementia are the two major classes of memory disorders seen in clinical populations. Amnesia refers to a specific, acquired difficulty in learning new information and/or remembering information from the past. The memory disturbance may be strikingly circumscribed and may occur in the absence of significant impairment of other cognitive or social skills. Dementia is a more broadly defined cognitive disorder, of which amnesia is the primary feature.” “The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM IV; APA 1994)” describes dementia as “the development of multiple cognitive deficits that include memory impairment and at least one of the following cognitive disturbances: aphasia, apraxia, agnosia, or a disturbance in executive functions”.

By definition, “the cognitive disturbance seen in dementia must reflect a decline from a higher premorbid level of functioning and be severe enough to interfere with social or occupational responsibilities. Prevalence estimates for dementia increase significantly with age, and approximately 6% of individuals over age 65 and 20% over age 80 suffer from a medically or socially disabling degree of dementia. Statistics such as these, coupled with increases in life expectancy and the resulting changes in population demographics, have led to an upsurge of scientific interest in the dementias over the last several decades.”

Difference between dementia and memory disorder

Instead of very close relationship between the disorders like dementia and amnesia we cannot call them homogeneous entities. “Consequently, a single pattern of preserved and impaired cognitive abilities does not apply to all cementing illnesses or amnesic syndromes. Moreover, although impaired memory is the cardinal feature of both dementia and amnesia, the specific aspects of memory that are preserved and impaired vary considerably among these disorders”.

After the continues research and investigations in the field of memory leads us to the complete understanding of the neurological and cognitive processes that comprise memory. “This review summarizes important theoretical divisions of memory that have arisen from the cognitive psychological literature, presents a critical overview

of traditional and experimental neuropsychological techniques used in the clinical assessment of memory functioning, and discusses the characteristic memory deficits associated with selected cementing illnesses and amnesic syndromes”.

CONCEPTUAL DIVISIONS OF MEMORY

One of the most significant contributions of ‘cognitive psychology’ to the study of the neuropsychology of memory which states that memory is a heterogeneous entity, comprised of several different yet interconnecting systems and subsystems. “Due to the lack of universally accepted terminology the validity of these distinctions and their interrelationships is a topic of ongoing debate that encourage different investigators to use the same terms to reflect different constructs, or different terms to reflect the same construct. Therefore, we begin with an overview of some of the more widely accepted conceptual divisions of memory”.

Short-Term vs. Long-Term Memory

William James (1890) proposed, “A distinction between two different types of memory, one that endured for a very brief time and one that lasted after the experience had been dropped from consciousness”. “The former is commonly referred to as short-term memory (STM) and the latter as long-term memory (LTM). STM is demonstrated by the recall of material immediately after it is presented or during uninterrupted rehearsal. It is of limited capacity, holding an average of seven "bits" of information at any one time. This information can be held for up to several minutes but will be lost or replaced by new information unless it is sustained by rehearsal. In contrast, LTM is demonstrated by the ability to recall information after an interval during which attention is focused away from the target information. Capacity for LTM is believed to be extraordinarily large, with the potential of holding information indefinitely without the need for continued rehearsal”.

CONTRIBUTION OF MEMORY IN ALCOHOLIC DEMENTIA

Alterations in memory and identity can also have clearly organic causes including brain injury medical conditions, and substance misuse. These organic disorders fall into two categories—amnesic Disorders, which primarily affect memory, and Dementias, which affect both memory and cognitive skills.

Much of what is known about the anatomical and chemical bases of memory and identity has emerged through studies of humans who have suffered injuries to specific locations in the brain. Important information about memory has also been gained through experiments in which lesions are produced in animal's brains and then their ability to learn new information is studied. Additionally careful study of actual nerve cells in the brain has begun to reveal the specific changes that occur as memories are formed.

Approximately 5% of people with chronic alcoholism develop the severe amnesic disorder known as Korsakoff's syndrome. Korsakoff's syndrome is a cognitive disorder caused due to acute brain damage resulting from a brain involving loss of specific brain functions due to thiamine deficiency. The onset is gradual and people between the age of 40 and 80 usually get affected by this disorder.

“Wernicke's disease involves damage to multiple nerves in both the central nervous system (brain and spinal cord) and the peripheral nervous system (the rest of the body). It may also include symptoms caused by alcohol withdrawal. The cause is generally attributed to malnutrition especially lack of vitamin B-1(thiamine) which commonly accompanies habitual alcohol use or alcoholism”.

“Korsakoff's syndrome or Korsakoff's psychosis, involves impairment of memory and intellect /cognitive skills such as problem solving or learning, along with multiple symptoms of nerve damage. The most distinguishing symptom is confabulation (fabrication) where the person makes up detailed, believable stories about experiences or situations to cover the gaps in the memory. Korsakoff psychosis involves damage to areas of the brain”.

“Patients in the early stages of Korsakoff's syndrome, called Wernicke's encephalopathy are extremely confused. Treated with large doses of thiamine the syndrome subsides”

(APA, 1994); unrelated it progresses to irreparable amnesia of a very specific type. Korsakoff's patients experience severe anterograde amnesia: they are very poor at learning and recalling new facts and information although their general knowledge and intelligence remains intact (Butters and Cermak, 1980). "Furthermore the learning deficit in Korsakoff's patients applies primarily to declarative knowledge, such as the way to solve a particular kind of puzzle and they also maintain their language skills" (Verfaellie et al., 1990).

This may explain why Korsakoff's patients often confabulate using their general intellectual skills and language skills they create elaborate stories and lies to compensate for the memories they keep losing. The effect on personality can also be profound. "Before the onset of Korsakoff's syndrome, chronic drinkers may be aggressive, boisterous people; after the disorder has progressed, they often become more passive and unimposing paragraph change in addition to profound anterograde Amnesia Korsakoff's patients experience. Some retrograde amnesia, they have particular difficulty remembering events from the years immediately preceding the onset of the syndrome, as opposed to events further back in the past" (Albert et al., 1979). This problem may in fact be due to their heavy drinking during those recent years (which would have caused encoding problems), and not to retrieval problems after most of the disorder.

COPING STRATEGIES

Understanding the nature and effects of stress is linked to the concept of coping. The availability and use of specific coping mechanism strongly influence our psychological and physiological responses to stressors. Coping can be how we think about events or how we behave in response to stressors. Both cognitive and behavioral coping strategies can be effecting in modifying the effects of stress (Lazarus, 1991). Coping is a common factor influencing both dementia and alcoholism. In the most common word, motivation is defined as "a sense of need, desire, fear etc., that prompts an individual to act", and an emotion is defined as "a strong feeling often accompanied by a physical reaction" (Webster's Dictionary, 1988). But in the field of psychology, "both motivation and emotion are hypothetical constructs, processes which cannot be directly observed or studied. Motivation is thought of as a process that both energizes and directs goal-

oriented behavior, as where emotions are subjective experiences, feelings that accompany motivational states” (Weber, 1991).

“We believe that stress is primarily a process of motivation since it requires some sort of adaptation (coping) to the demand or set of demands. On the other hand, the emotions that we experience due to stress can also be studied. This does relate stress to emotions, but stress in itself is not considered a particular emotion. For example, one could experience different kinds of emotions due to stress, such as that of anger, anticipation, and fear”.

Component Analysis of Coping

The consequences related to stress are directly related to coping. “The investigations in the field of coping has evolved to deal more effectively with the large variety of disciplines beginning with all areas of psychology such as, ‘health psychology, environmental psychology, neuro psychology and developmental psychology to areas of medicine spreading into the area of anthropology and sociology.’ For the better understanding of stress and coping mechanism it is essential to divide coping strategies into three broad components that is biological, physiological and cognitive”.

Biological/physiological component

To cope with the stress the human as well as animal body has its own way of coping with stress. “Whenever there is any threat or challenge faced by an individual, there is a mechanism which helps in perceiving the threat in the environment and automatically triggers a chain of neuroendocrine events”.

“Personality types as so called Type A Personality have been defined to have such characteristics as competitive, impatient and hostile. Hostility has been linked to coronary heart disease which is thought be caused by stress” (Rosenman, 1978). Eysenck (1988) “has coined the term Type C Personality for those who are known to be repressors and are prone to cancer. Hardiness also is a personality that seems to have much to do with how an individual handles stress. Hardiness is defined as having a sense of control, commitment, and challenge towards life in general”. Kobasa (1979) has studied “subjects who were laid off in large numbers by AT&T when the federal deregulation took place,

and found that the people who were categorized as having hardy personalities were mentally and emotionally better off than the others. Although it may be possible to modify one's personality, research has shown it to be heritable" (Rahe, Herrig, & Rosenman, 1978; Parker, & Barret, 1992).

Cognitive component

According to Cognitive approach coping is based on a mental process which is further determined by our individualistic appraisal towards the situation. "Where the level of appraisal determines the level of stress and the unique coping strategies that the individual partakes." (Lazarus & Folkman, 1984). "The primary and the secondary are two types of appraisals. A primary appraisal is when an individual consciously evaluate the situation and decides whether it is harm or a loss, a threat or a challenge. "

"There are other ways of to approach coping from a cognitive perspective such as that of constructive and destructive thinking as conceptualized by Epstien and Meier (1989) a similar concept to that of optimistic versus pessimistic (Taylor, 1991), the perceived level of self-efficacy and self-esteem and so on".

Learned component

According to the social learning theories all human behavior is a result of imitation starting from birth till death. The learned helplessness which is related to stress and depression is a result of this imitation process. "Some of the examples for the social learning theories would be the wide range of stress management techniques that have been found to help ease stress. Changing how you cognitively process a particular situation, so called cognitive restructuring, changing how you behave in a particular situation, so called behavior modification, biofeedback which uses operant conditioning to alter involuntary responses mediated by the autonomic nervous system, and the numerous relaxation techniques such as meditation, breathing, and exercise are all part of what is learned through experiential reinforcement. The learned helplessness phenomena has been linked to depression by such researchers as Coyne, Aldwin, and Lazarus (1981) when they studied subjects who tried to exert control when it was not possible to do so".

Perspectives

How these three components interplay is the basis to understand the process of stress and coping. For last many years the mental health professionals debating on the issue of the transactions between the "mind" (cognition, and learning) and the "brain" (biological/physiological), and the role each play with regards to stress.

“The reductionist model of stress comprises of a purely physiological perspective where the brain is the sole determinant of the presence of stress. In the interactionist model, both the brain and the mind affect stress, but it is still an uni-directional path from both the brain and the mind to stress. The transactionist model comprises of a bi-directional path, where stress in turn influences both the brain and the mind. Thus, by way of stress, the brain and the mind both mutually affect one another”.

Coping strategy and modern era

“Many investigators who have investigated the subjects at midterms or finals and have found that, coping is clearly a complex process, influenced by both personality characteristics (Bolger, 1990; Friedman and others, 1992), situational demands (Folkman & Lazarus, 1986; Heim and others, 1993), and even the social and physical characteristics of the setting” (Mechanic, 1978).

“As we have seen in the various theoretical paradigms of coping, every factor from physiological, psychological, social, to cultural, both affect and are affected by the coping strategies. Just as there is said to be an optimal level of stress for an individual to function most effectively, I propose that there is an optimal level of coping which minimizes cost and maximizes benefits on all levels of the various factors combined. A coping strategy that may work to improve a romantic relationship, may have it's negative social, cultural, or even psychological consequences. If you choose not to see your friends so that you have more time to spend with your romantic partner, or you choose to move in with that person when it is considered a cultural taboo, or you are so psychologically dominated by that person that you don't have a mind of your own. In such cases, the individual has the illusion that they are effectively coping with a particular stress, while what they are really doing is creating many others. Since each factor has the power to influence the others, the true form of the transaction theory can

only be captured when time is included as one of the variables. Longitudinal studies are crucial in order to truly reflect the long term effects and processes that take place within the whole coping mechanism”.

COTRIBUTION OF COPING IN ALCOHOLIC DEMENTIA

As we know that stress is a common factor among dementia and Alcoholism and on the other hand, dementia patients, due to their inability to perform effectively in their environment, use to experience stress. Due to excessive alcohol intake important changes occur both physically and psychologically. On the negative side, their bodies experience continued wear and tear and they become more prone to illness and injury than non-alcoholics.

Compass and his colleagues (1991) proposed that coping with stress is a process consisting of two levels. The first level involves emotion – focused coping-attempts to reduce the negative emotional response elicited by the threal and increase positive affect (Folkman and Mokowitz, 2000 a, 2000b,). At the second level is problem – focused coping, which involves an attempt to deal with the threat itself and to gain control of the situation.

- At the level 1: - how can decrease negative emotions and increase positive ones?
Some attempts to change one's affective state are temporarily effective, but essentially maladaptive for example drinking alcohol or taking drugs (Armeli et al., 2000).
- At level 2:- what can you do about the stress itself? Successful coping involves regulatory control the processes than an individual to guide his or her goal directed activities over across situations. In the light of above studies and factors which influence the relationship of alcoholism and dementia. We look forward to investigate the relationship between alcoholism and dementia.

“Laying aside issues of etiology, evidence indicates that some cognitive impairment in alcoholics is reversible. Researchers (Albert et al., 1982; Grant et

al., 1984; Goldman 1986, 1987) report apparent "spontaneous " recovery of cognitive function (recovery seen after the passage of time with no active intervention) among abstinent alcoholics, a result that may be due solely to the absence of alcohol but that also may be due in part to other changes such as better nutrition and opportunities for social interaction provided in an alcohol treatment setting. There is some evidence that cognitive training and practice experience (remedial mental exercises) can facilitate recovery from impairment" (Godfrey et al., 1985; Goldman 1986, 1987).

"There is a need for pharmacological interventions to complement behavioral methods due to the reason that after investigating the group of alcoholics those who were suffering with chronic organic mental disorders even after prolonged abstinence may exhibit only modest clinical improvement in brain functioning. Recent findings suggest that pharmacological intervention may be useful in improving some cognitive ability in chronic alcoholics" (McEntee and Mair, 1980) is quite motivating.

OBJECTIVE OF THE STUDY IS:-

Our main objective of this study is to find out the factors contributing to alcoholic dementia

SPECIFIC HYPOTHESES ARE-

- (1) Alcoholics with high depression would be at high risk of alcoholic dementia.
- (2) Alcoholics with stress would be at high risk of alcoholic dementia.
- (3) Coping strategies are positively related to alcoholic dementia.
- (4) Chronic alcohol exposure leads to exaggerated aging.
- (5) Alcoholics with high dementia would perform poorly in short term or working memory.