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Understanding concept of Alcohol Addiction: Mechanism, Repercussion and Management

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ABSTRACT

Forensic medication and toxicology is branch which manages the investigation of toxin and its treating measure. Forensic medication is considered as *Agadtantra* and *Vidhivyadyak* in *Ayurveda*. Alcohol is treated as toxin (neurotoxic cerebral inebriant poison) when burn-through substantially more portion and as medication in restricted portion. In the present time liquor fixation is normal, the vast majority of youth and understudy dependent on liquor yet additionally the matured individual getting dependent on it because of the present pressure full way of life for example instructive pressure, family stress and occupation stress that is the reason they dependent on liquor for bogus unwinding or joy. Liquor utilization impacts on both the amount and nature of human existence, it has ramifications for wellbeing and prosperity. Roughly 90% of consumed alcohol is oxidized in the liver, hurt reason to liver which prompts cirrhosis of liver which is hopeless. Inordinate admission of liquor, individual is such a great amount under its impact that, he lets completely go over his intellectual capacities, he can't play out the obligations on which he is locked in at specific time, and he might be wellspring of risk to himself or the others. This survey article manages how the fixation happens control of the typical individual, how alcohol perniciously follows up on the body, what impact of liquor produce on each arrangement of the body, how much amount of liquor end up being lethal for an individual, what present moment and long haul impact of liquor enslavement, its complexities readdiction procedures and substantially more, this articles presume that the wellbeing dangerous impact of liquor habit and significant of its ideal administrations.

Key words: Alcohol, Addiction, Mechanism, Withdrawal, Disulfiram, liquor.

INTRODUCTION

Around two billion individuals overall devour mixed beverages, which can have prompt and long-haul outcomes on wellbeing and public activity, more than seventy-six million individuals are right now influenced by liquor use issue. Liquor case 1.8 million passing's consistently, which address 3.2 percent of all demise world-wide.^[1] Over the top utilization can make irreversible harm portions of the body like liver

and cerebrum. Liquor is the most normally utilized addictive substance in the US; 17.6 million individuals, or one in each 12 grown-ups, experience the ill effects of liquor misuse or reliance alongside a few million more who connect with whisky, hitting the bottle hard examples that could prompt liquor problem.^[2] In 2013, 139,000 passing's all around the world were coordinated because of liquor misuse and extra 384 to cirrhosis from abundance liquor utilization.^[3] There are various types of liquor, ethyl liquor, the lone liquor utilized in drinks is delivered by the aging of grains and natural products, aging is substance measure where-by yeast follows up on specific fixings in the food, making liquor. Aged grain, organic product squeeze and nectar have been utilized to make liquor (ethyl alcohol or ethanol) for millennia.

Historical Background

The term "Alcohol" is derived from the Arab word "*al-kuhul* or *al-kohl*"^[4] this means 'to redden the eyes'. Alcoholic beverages have been used since prehistoric

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period though it might be an accidental discovery. It became essential in the most valued personal and social ceremonies like births, marriages, crowning, worships, hospitality, war or peace making and funerals. The intoxicated behaviour of warriors of Sugreeva from drinking honey is described in Ramayana. "Ravana" the King of Lanka, was an expert in distillation and it is believed that he wrote "Arkaprakasha". Alcohol has many beneficial effects and hence was used as appetizer, tonic, tranquillizer and anaesthetic.

Alcohol addiction is simply defined as compulsive need for an intoxicating liquid. If a person experiences withdrawal symptom such as nausea sweating, tremors, or anxiety when alcohol consumption has ceased, is defined as chronic behavioural disease.

Alcoholism is a disease condition manifested by long term consumption of alcohol. It has been defined as a chronic behavioural disease characterized by drinking of alcohol to an extent that it interferes with the drinker's health, social relationship and economic stability. The term "Alcoholism" appeared first in the essay "Alcoholismus chornicus" by the Swedish physician Magnus Hurs⁵ in 1849. Alcoholism has the following characteristics

1. Chronicity and progressivity.
2. Tolerance
3. Physical dependence
4. Pathologic organ changes
5. Social, emotional and behavioural symptoms.

The human miseries are suffering from the excessive use of alcoholic drinks are unfathomable in terms of illness, disability and death, decreased productivity, accidents, crime, family disorientation, economic and psychological hardships in all classes of the society. The hardcore alcoholics invoke sufficient troubles for themselves, their families, their employers, their occupational and social associates and their communities.

What is Addiction

It is an ailment described by habitual commitment in remunerating boosts, regardless of unfavourable

outcomes. Exemplary signs of fixation incorporate weakened command over substance or conduct, distraction with substance or conduct and proceeded with utilization of regardless of consequences. Propensities and examples related with dependence are regularly described by prompt satisfaction (present moment reward) coupled with postponed pernicious impact.^[7]

Alcohols

Alcohols possess one or more hydroxyl groups and exist naturally in either the free state or combined as esters. Alcohols are actually (hydroxy) derivatives of (Aliphatic) hydrocarbons. Like phenols they generally have common names ending in 'ol' (e.g., ethanol, glycerol and mannitol). They can be classed according to the number of hydroxyl groups present.

Types of Alcohol

1. Monohydroxy alcohols - They have only one hydroxyl (OH) group e.g., ethanol, methanol, Isopropanol.
2. Dihydroxy alcohols - They possess two hydroxyl groups and are referred to as glycols. e.g., ethylene glycol, propylene glycol etc.
3. Trihydroxy alcohols - They are not really alcohols but only derivatives. e.g., propane derivative glycerol or glycerine.
4. Polyhydroxy alcohols - They have either four or six hydroxyl groups. E.g., Sorbitol, Mannitol, Dulcitol. Furthermore, each hydroxyl group may be classed as,
 - a) Primary - CH₂OH (e.g., ethanol),
 - b) Secondary - CHOH (e.g., isopropanol),
 - c) Tertiary - COH (e.g., t-butanol).

The remainder of the molecule may be saturated or unsaturated, aliphatic or aromatic.^[8]

Mode of action of Alcohol

Ethanol pushes down the CNS by dissolving in the cells lipid layer and causing dis-association of the lipid lattice (film fluidisation). Ethanol acts by upgrading gama-aminobutyric corrosive (GABA)- nergic work

through cooperation's with GABA receptor and related chloride particle channel. Digestion of formic corrosive oxidation by means of the catalase – peroxidase framework or digestion by the tetrahydrofolic corrosive dependant one-carbon pool which is catalysed by 10formyl-tetrahydrofolate synthetase.^[9]

Impact of Alcohol

The impact of liquor can be present moment or long haul. First feeling of prosperity, fearlessness and thrill in momentary impact. In long haul impact escapes from stresses and strains of life, experience the ill effects of numerous natural disease. Ethanol is CNS depressant yet delivers some clearly animating impact at first in light of misery of inhibitory control components in the cerebrum, in moderate portion, ethanol produces tachycardia and vasodilation of cutaneous vessels with resultant warm and flushed skin, ethanol ordinarily invigorates salivary and gastric emission, yet in the event that the focus is excessively high (>40%) they are repressed and the GI mucosa gets blocked and aroused prompting erosive gastritis.^[10]

Acute Ethanol Poisoning (Intoxication/Inebriation)

Serious acute alcohol poisoning is usually a consequence of deliberate heavy drinking, either small dose at short intervals or large dose at a time. Noticeable intoxication is observed in most subjects at blood concentration over 150mg% and increasingly so above this. Medicolegally the effect of alcohol on Central Nervous System is of utmost importance to us and is recognized as the Three phases of intoxication.

1. Stage of excitement / Flippant stage

- This stage is seen when the blood-alcohol level is between 80 - 120 mg/100ml.
- Feeling of wellbeing and excitation. Visual acuity is reduced.
- Recall memory is disturbed. Emotions are affected.
- Increased desire of sex but impairment of performance.

2. Stage of Inco-ordination / Stage of confusion

- This is seen when the alcohol content of the blood attains a level of 150 - 250 mg/100ml.
- Sense perceptions and skilled movements are affected.
- Alteration in the conduct of the individual due to increased loss of the inhibitory action of the higher centres.
- May become morose, gay, irritable, excitable, quarrelsome, sleepy.
- Certain clumsiness and incoordination in the fine and more skilled movement e.g., slight alteration in speech and in the fine finger movements.
- Nausea, Vomiting and breath smells of alcohol.
- Face is flushed and pulse is accelerated.
- Sense of touch, taste, smell and hearing are diminished.
- Temperature becomes subnormal.
- The pupils are dilated and their reaction to light is a hopeful sign.

3. Stage of Coma / Stage of Narcosis

- Mc Ewan Sign is seen where the pupils are contracted, but the stimulation of the subject, e.g., by pinching or slapping causes those to dilate with slow return.
- Patient usually recovers in 8 to 10 hours and wakes up with acute depression, nausea and severe headache.
- If coma continues for more than 5 hours, the prognosis is likely to worsen.
- Death may occur from asphyxia due to respiratory paralysis.^[11]

Chronic Ethanol Poisoning

Chronic Alcoholism is a condition in an individual who consumes large amounts of alcohol over a long period of time. It is characterised by:

1. A pathologic desire for alcohol intake
2. Blackouts during intoxication

3. Withdrawal symptoms on ceasing alcohol intake

Alcohol addicts are people who cannot stop drinking for long or who experience withdrawal symptoms. It results in impaired social or occupational functioning. Chronic alcoholics are those who have reached a stage of more or less irreversible somatic or brain changes caused by alcohol.^[12]

Inconvenience of Alcohol Addiction

Excessive drinking over a significant stretch of times makes clinical, mental and social issues. The sum and the recurrence of the drinking and in general wellbeing influence how much inconvenience create in liquor use problem. Ongoing liquor misuse and reliance can harm all organ framework ; incorporating bringing about weakness, simple wounding, causing strange heartbeat, cardiovascular breakdown, hypertension, driving the esophageal varices, irritation or malignancy of the throat, gastritis, liver harm, liver disease, hepatitis, pancreatitis or pancreatic malignant growth, disarray, loss of coordination, gloom, nerve harm, psychosis, transient memory issue, Wernicke-korsakoff syndrome. In a few groups the underlying response might be incitement, yet as u keep on drinking, you become quieted, too much liquor influences your discourse, muscle coordination, and indispensable focuses of your cerebrum, a weighty drinking gorge may even reason a dangerous unconsciousness or demise, this is specific concern when you are taking sure drug that additionally push down the mind work.^[13]

Table 1: Showing percent of absolute alcohol in various beverages.

SN	Types of alcohol	%
1.	Absolute Alcohol	99.95%
2.	Rectified spirit	90%
3.	Methylated spirit	95%
4.	Strong liquors- Rum, Gin	51 to 59 %
5.	Whisky, Brandy, Arracks	40 to 50%
6.	Port, Sherry, Madeira	18 to 22 %
7.	Hocks, Claret, Champagne	8 to 13 %

8.	Cider, Ale, Porter	3 to 13%
9.	Beer	2 to 6 %
10.	Ginger beer, Koumiss	1 to 3 %

The amount of alcohol consumed can be expressed in terms c (30ml) contains approximately 8 to 10gm of alcohol.

A standard drink of an alcoholic beverage is usually defined roughly the equivalent of 45ml of distilled spirit (15.1 gm alcohol) wine (10.8 gm alcohol), or 350 ml of beer (13.2 gm alcohol).^[14]

Fatal Dose and Fatal Period of Alcohol

Fatal Dose

One pint (approximately 550 ml.) or quart (two pints or approximately 1100 ml) of strong distilled spirit such as whisky taken in a short span of time can be lethal.

The usual fatal ethanol dose corresponds to approximately,

6 gm /kg (Adult)

3 gm /kg (child)

In terms of blood alcohol level an excess than 400 to 500 mg/100 ml is usually considered to be lethal.^[15]

Fatal Period

The usual fatal period is 12 to 24 hrs. though death may occur in few minutes or be delayed for 5 to 6 days.^[16]

Detection of Alcohol in Body

1. Breath analyser equipment gives an approximate amount of consumption of alcohol
2. The most reliable method for the determination of blood alcohol concentration is gas liquid chromatography.
3. To accurately assess the amount of alcohol consumed, 2 techniques viz. Cavett's technique or the Kozelka and Hines technique is used, but the best method for amount of alcohol consumed is calculated by Widmark's formula, as follows:

$a = \text{prc}$

$a = \text{weight of alcohol in gram in body}$

$p = \text{body wt. of the person in kg}$

$c = \text{concentration of alcohol in blood mgm/kg. body weight}$

$r = \text{standard factor : 0.6 for male, 0.5 for female.}^{[17]}$

Treatment of Acute Alcohol Poisoning

1. Gastric lavage - Stomach wash is recommended within 3 hours of the last intake or even after 3 hours if the stomach is distended with ill digested food and alcohol. Plain warm water or sodabcarb may be used.
2. 30-60 ml. of liquid paraffin is left in the stomach to act as a demulcent.
3. Respiration is safeguarded by cleaning the air passage and giving oxygen inhalation.
4. If the above treatment does not seem to improve the condition of the patient then analeptics like nikethamide is given.
5. If analeptic does not work then 50 ml of 50% dextrose is given by slow IV injection along with 5 unit's insulin subcutaneously.
6. In gross intoxication, antibiotic cover should be given.
7. Any other symptomatic treatment is given, if required.
8. In case of acute intoxication of chronic alcoholics vitamin B- complex therapy with B₁ and B₆ 100 mg in 1000ml of I.V. fluids is given and normal intake of balanced diet is gradually restored.^[18]

Treatment of Chronic Alcoholism

1. Gradual withdrawal of alcoholic drinks - The main aim in the treatment of alcoholism is to gradually wean away the patient from the clutches of ethanol, once the acute manifestations of withdrawal have been taken care of. This process referred to quite loosely as de-addiction or detoxification, should be undertaken only after admission to a hospital over a period of several

days, under close medical supervision. Many methods have been tried in this connection, and one of the more successful ways is to administer a drug called 'Disulfiram'.

2. Supportive Psychotherapy - More than individualized psychotherapy, it is a group therapy which is effective in the long-term management of abstinence Groups provide an opportunity for resocialisation and a sense of mutual commitment. Self- support organizations such as Alcoholics Anonymous (AA) play an important role.
3. The conditioned reflex treatment - It consists of giving alcoholic beverages to the patient in surroundings that affect his visual and olfactory senses. The patient is given various types of liquor, together with drugs that will induce prompt and acute nausea and vomiting. After 5 to 8 daily treatments, symptoms are brought on merely by the sight of bottle and the patient begins mentally to associate his painful sickness with the alcohol.^[19]

CONCLUSION

As we have seen that liquor is unsafe dependent substance and injurious impact on essential body part. It is poisonous by oral inward breath, subcutaneous, intra-venous, intra-blood vessel, intra-dermal courses, for the most part 80% percent liquor ingested in small digestive tract and substantially more utilized in liver that is the reason it shows its harmful impact on liver and harm it. At times significantly more admission and long-haul drinking of liquor prompts harmful phase of different organs. Guardians' kids' relationship is additionally significant reason most off the kids impacts under liquor abuse, parent give disguising, instruction and backing to surrender the habit of liquor. Most off the women burn-through liquor, at pregnancy stage it causes damage to infant, birth imperfection and inabilities in child. It might prompt dilatation of little vessels of body that can prompt erectile brokenness which is primary driver of barrenness. In India or anyplace on the planet most off the mishaps occurred because of when people

groups were such a huge amount affected by liquor, it causes visual obscuring and engine in coordination, presently a day the arrangements we guarantee, additionally has numerous provisions which expresses that if any demise happened affected by liquor each lead to suspended the competitor from benefit of strategy, such medico legitimate cases seen because of liquor compulsion in court continue. Liquor addictions lead to mental just as actual unsettling influence of person. Liquor influence prosperity or individual as well as influences families, socio-affordable foundation, lead to neediness, remorselessness and now and again criminal cases. In readdiction phage when patient goes through withdrawal phage, he can be rough, remorseless and may killed have cut any individual who is without wanting to accordingly while de-compelling a patient this thing ought to be remembered about the patient and extremely sensitive case ought to be taken of patient. For the recuperation of liquor withdrawal patient right off the bat advising is vital, keep up the general inspiration, training is about liquor and its perilous impact on body should be known to everybody and acquainting family or companions with prevent shielding the individual from the issues brought about by the alcohol. Help the patient to straighten out to existence without liquor and improve their way of life.

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