

## **ALCOHOL : HISTORY, TYPES, ADDICTION AND CRAVING**

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### **1. Alcohol : Origin, Types and history**

Alcohol has been used since antiquity. Ancient Indians drank. Hydroxyl is in carbon-bound alcohol. Each saturated carbon center bonds three atoms. Since primitive times, alcohol has been used 'as a medium of enjoyment and recreation', 'a symbol associated with ethnic, racial sub-cultural practices', 'spiritual reasons', 'mode of gratification and toxic emotions (e.g. anxiety, worry and tension) buster', 'social gathering', and possibly thousands of other reasons. Adherent drinkers list Some lauded its nutritional, therapeutic, antibacterial, and analgesic effects. Drinks like these satisfy thirst and improve life. For relaxation, communication, medicinal pleasure, and eating, humans drink. Many families have broken apart because most people have always abused alcohol.

English first used alcohol in 1543, from Arabic "al-kuhul" meaning finely split. When alcohol production and use began is uncertain. Legend has said that Ancient Egypt made alcohol. Relics reveal ancient Egyptians fermented well. China learned to produce liquors 7000 years ago. In India between 3000 and 2000 B.C., rice-distilled 'Sura' was drunk. A wine goddess was worshiped in Babylon from 2700 B.C. One of Greece's earliest alcoholic drinks was mead. Greek literature opposes binge drinking. Many pre-Columbian Native American civilizations made alcohol. Andean fermented drinks, called "Chicha," were made from maize, grapes, or apples. Improved examples arrived from China and Transcaucasian Europe. Global sedentary civilizations started with cultivation about 8000 B.C. Jiahu, Northern China, pioneered crude fermentation-based alcohol production. Chemical examination of burial ceramics and containers showed brewing. The first clay pots held

fermented rice, honey, grape, and hawthorn berry drink. Transcaucasia, Georgia, 'Neolithic Settlements' grew grape pips. [2]

The most discussed alcohol is ethanol. The colorless, volatile liquid smells faint. In 1858, Scottish chemist Archibald Scott Couper published ethanol's chemical formula,  $C_2H_5OH$ , after Swiss scientist Nicolas-Theodore de Saussure discovered it in 1808. First sugar fermentations were honey and water for mead and grapes for wine. The Greeks dubbed Dionysus, the wine and pleasure God, a "honey-lord" and vine-cultivator. Although used as a "stimulant," it is the most powerful and extensively used central nervous system depressant in the west and the second most widely used chemical globally, behind coffee. [1]

Alcohol contains ethanol. Beers, wines, and spirits dominate alcoholic drinks. Thin, transparent ethanol burns and is volatile. People often drink 100% ethyl alcohol diluted. Talking utilizes undistilled and distilled alcohol.

### **Alcohol types in India:**

India produces and consumes hundreds of alcoholic drinks due to its unique geography, climate, flora, culture, and history. They fall into four categories:

#### 1. Foreign Alcohol Made in India

Western spirits like whiskey, rum, gin, vodka, and brandy make money. Government-approved Indian products contain 42.8% alcohol.

#### 2. Rural Alcohol

Distilled alcohol is created from inexpensive local components like sugarcane, rice, or coarse grains. Local licensee distilleries sell country liquor. Country spirits include arrack, desi sharab, and 40%-alcohol tari.

#### 3. Illegal Alcohol

Small unlicensed makers employ rural liquor raw ingredients and dodge quality regulations. Many of their items are tainted and alcoholic. Samples with 56% alcohol are prevalent.

#### 4. Beer

Spirits dominated Indian drinking before beer. Over 60 beer brands from India's main licensed brewers include 5%–9% alcohol.

## 2. The Meaning of Addiction

Addiction's causes and effects have been explored throughout history. Society was blamed for addiction in literature. Social disparity and “breakdown in moral standards” were often blamed for addiction. Addiction becomes caused by individuals instead of society. Personal decisions, learning, and experiences were analyzed. These ideas shifted accountability from society to individuals. Genetics and automatic biological reactions were blamed, not people. Biology, psychology, and sociology study produced many ideas. Drug sensitivity is linked to addiction, which is a continuum from social factors to individual traits. [6]

Tolerance, withdrawal, taking the substance in larger amounts or for a longer time than intended, a persistent desire or unsuccessful efforts to cut down or control substance use, and spending a lot of time seeking the substance are all criteria for being “dependent” on a psychoactive substance, according to the APA [7]. Physiological states like tolerance or withdrawal characterize dependency as “with physiological dependence” or “without physiological dependence”. APA states that dependence may be diagnosed without tolerance or withdrawal, although both traits help. The World Health Organization's ICD-10 "Classification of Mental and Behavioural Disorders-Diagnostic Criteria for Research" [8] defines drug dependence as three or more of the following happening concurrently for at least one month or frequently within a year

1) A strong desire or sense of compulsion to take the substance, 2) Impaired capacity to control substance-taking behavior in terms of onset, termination or level of use, as evidenced by: the substance being often taken in larger amounts or over a longer period than intended, or any unsuccessful effort or persistent desire to cut down or control substance use, 3) A physiological withdrawal state when substance use is reduced or ceased, as evidenced by the characteristic withdrawal syndrome for the substance, or use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms, 4) Evidence of

tolerance to the effects of the substance, such that there is a need for markedly increased amounts of the substance to achieve intoxication or desired effect, or that there is a markedly diminished effect with continued use of the same amount of the substance, 5) Preoccupation with substance use, as manifested by: important alternative pleasures or interests being given up or reduced because of substance use; or a great deal of time being spent in activities necessary to obtain the substance, take the substance, or recover from its effects, 6) Persisting with substance use despite clear evidence of harmful consequences, as evidenced by continued use when the person was actually aware of, or could be expected to have been aware of the nature and extent of harm.

## 2.1 Alcoholism

Alcohol was formerly tolerated like tobacco. Partygoers have liked it millennia. Advanced societies now see nicotine and alcohol dependence negatively, but alcohol treatment facilities and government-supported programs are lacking. Turkish culture includes alcohol. Always draws people to events. Alcohol side dishes include ordering and cooking instructions. Turks often drink alcoholic cocktails like “Raki” in groups, rather than alone. Alcohol is a status symbol in many nations because it meets social standards.

Constitution and biochemistry impact alcohol metabolism and reactions. Alcohol instantly impairs the blood-brain barrier. Many strategies reduce alcohol's effects. When full and drinking with high-protein meals, absorption slows. Mixing alcohol with coke or energy drinks aids absorption. Alcohol's effects depend on concentration. Faster stomach absorption of greater quantities. Spirits like vodka, whiskey, and gin are 40-50% alcoholic. Body mass and gender affect intoxication speed. Huge bodies intoxicate slowly. Women become intoxicated faster than males because they weigh less, have more fat, and have less water. Metabolic intoxication, reinforcement to use again, aggression (independent of alcohol intake), learning and memory degradation, brain damage, and tolerance leading to physical addiction are alcohol's neurobehavioral [10]

Intoxicating alcohol stimulates and inhibits. Alcohol removes social constraints and makes individuals chatty and energetic. It makes drinking fun. Second continuum impact stimulates and inhibits, causing slurred and confused speech despite the person's desire to continue. The

result is drowsy and intoxicating. The central nervous system is depressed by "ethanol," like barbiturates. Alcohol activates reward-related brain regions.

Many studies demonstrate drinking impairs memory and learning. Working memory, implicit memory, attention, psychomotor speed, and learning-memory association are impaired by alcohol. Chronic alcohol use causes neurobehavioral tolerance. Thus, metabolism creates more liver enzymes and brain adaptation renders greater alcohol dosages equally effective. When alcohol use stops, tolerant metabolisms experience withdrawal. The first several hours may show alcohol withdrawal symptoms. Peak at 48 hours. Sweating, tremors, vomiting, migraines, and sleeplessness are autonomic withdrawal symptoms. Emotional agitation and anxiousness. Auditory, visual, tactile, attention, orientation, epileptic seizures, hypothermia, tachycardia, and arrhythmia are perceptual dysfunctions. Dependent on addiction intensity, detox and withdrawal take 5-10 days. Extreme reliance withdrawal might cause "delirium tremens". Extreme disorientation, agitation, hallucinations, delusions, sleep-wake cycle dysfunctions, memory loss, focus issues, and emotional overactivity are symptoms. It still kills, therefore it requires careful care. Choose an empty, well-lit, modest room with familiar furnishings for therapy. Central nervous system antidepressants, benzodiazepines, and vitamins (including thiamine to prevent Wernicke Encephalopathy) may diminish delirium tremens during detoxification [11], making withdrawal symptoms easier to manage.

Alcohol abuse is "A maladaptive pattern of substance use that occurs in physically hazardous situations, multiple legal problems, and recurrent social and interpersonal problems". Untreated alcoholism may harm health, says Brachtesende [16]. Diabetes, asthma, mental illness, and dementia are alcohol-related. Multiple studies have linked moderate alcohol intake to various problems. Alcohol-drug interactions may kill or damage the liver. College students are the most researched alcohol users due to addiction. Men expected alcohol to relieve stress and promote peer communication, research showed. [17]

Bio psychosocial theories gained favor as multimethod literature emerged. There are fewer than five addiction ideas by West [18]. The first category covers biological, social, psychological, and mixed addiction reasons. Till 1980, West [18] identified 43 publications on this topic. Second, experimental psychology and neuroscience changed how stimuli cause

addiction. Category 3 included addiction-prone traits. Fourth series covers environmental and social addiction risk. Five related to four addressed therapy and recurrence.

## **2.2. Psychodynamic Alcoholism and Addiction Theory**

Classical Freudian psychoanalysis called addiction “oral fixation”. These theories say oral trauma causes pathological fixation. Addiction is caused by the unconscious need to entertain and play out gay and perverted thoughts while avoiding commitments, according to Hooper [20]. Masturbation and gay ideas are avoided with drugs. Encapsulation, traumatophilia, masturbation as self-soothing, and social, cultural, and political factors may also cause addiction. Chafetz [21] labeled it “oral perversion”. Later prospective investigations revealed childhood oral overactivity preceded adult drinking. Mental illness connected to the mouth includes oral fixations. Smoking, drinking, and overeating may result from oral fixation. Rado [23] said adaptability is terrible. Aggression is addiction. In the 1970s, ego psychologists arose. Calling addiction an ego defect. Childhood conflicts or inability to parent may cause this vulnerability. Freud wrote on addiction's beginnings. He linked happiness, pleasure, reality, and religion in “From Civilization and Its Discontents” (1929). He thought addiction was fun and prevented misery. Freedom from the outside world provides delight immediately. Freud thought a person's ultimate pleasure separate from society and relationships wasted energy that might be better spent. Freud collected antiques, and Subkowski [25] said “collecting” was like addiction since it included enthusiastically discovering and swallowing something to feel entire. Interesting things should have depth or culture, like booze.

Abraham [26] says collecting and addiction are symbolic gratifications of suppressed needs caused by shifting libido to unlimited things. Psychoanalysis claims “sublimation” promotes addiction. Sublimation converts id desire into ego drink. [25] Gurol [27] said addiction is love acquisition and loss. Addiction results from poor object interactions. The addicted seek alcohol or drugs. He momentarily improves. Drug effectiveness declines after that. Reliants feel restless and conflicted after relief. This medication interaction is attributed to developmental trauma by psychoanalysts. The dependant may have encountered an unmanageable item as a youngster, such a bad caregiver. Little ones can't take motherly love.

A baby externalizes his mother's affection, called "externalization of idealized object." Kid thinks someone loves them yet is absent. The youngster seeks his mother's affection since she sometimes cares for him. He can't since mother's care is temporary. The youngster loves the mother but not this. Lost and found love is like drug dependence. Moms with kids are compassionate or apathetic. For a sympathetic lady, Winnicott [28] terms it "good enough mother". Mother addresses baby's needs with empathy although he can't communicate. Too much pity stops children from satisfying their needs. Uncaring moms may traumatize kids repeatedly. Addicts who didn't learn self-care as youngsters need outside help. Ramos [22] that the mother's inability to satisfy the newborn causes adult narcissistic satisfaction issues. Investigators said alcoholic treatment patients and their mothers face comparable hurdles to other patient groups. Most addiction studies felt alcoholics' lack of a father figure harmed their egos. Many psychodynamic theories overlap. This is about ego and satisfaction.

### **Behavioural Perspective**

Observation and measurement underpin behavior psychology. Behavioral psychology pioneer Skinner saw addiction as society's defect since it can't teach good behavior and people need incentives to learn productive activities. Two conditioning approaches teach. Respondent/Pavlovian conditioning comes first. This training modifies reflexive response by matching unconditional and conditional stimuli. Environment may affect alcohol's introversion-inhibiting effects. Dependants believe they can only mingle and be happy drinking. Someone forgets how to interact without alcohol or when no one drinks. So, social skills decline. Another is Skinner's operant conditioning. Reflexive operant conditioning is not chosen. After reinforcement or punishment, behavior is taught. Post-conduct reinforcements accelerate it. Punishment slows behavior, unlike reward. Alcohol increases self-esteem and socializing. dreadful reinforcements may promote conduct by removing "relief" from dreadful situations. People experience withdrawal when they quit drinking. Withdrawal produces anxiety, tremors, and alcohol cravings. Drinking again once withdrawal symptoms subside is negative reinforcement. Months without alcohol cleanse. The body cannot digest as much alcohol after drinking again. Alcohol intoxicates. Intoxication, stomachache, and buddy bullying prevent drinking. Relapse may result from operant

conditioning. Eliminating incentive diminishes behavior. Ending behavior causes extinction. Relapse—drinking after treatment—may indicate problem behavior.

### **Cognitive Perspective**

Cognitive models relate emotions to “expectancies”, “beliefs”, “schemas”, “automatic thoughts” and “thinking errors”. Bandura's [30] "social learning theory" (also known as "social cognitive theory," "self-efficacy theory," or "alcohol-expectancy theory") is a notable cognitive theory. Cognitively, Goldman, Brown, and Christiansen [31] characterized addiction. Psychoanalysts believed infancy shapes personality, therefore individuals cannot regulate urges. In social cognitive theory, this changed. After childhood, the unconscious controls needs, making change hard. Behaviorists believed environmental signals and interaction caused learning. Instead, social cognitive theorists showed vicarious learning—observing behavior. Vicarious learning believes individuals learn from others' successes. Bandura discovered three vicarious learning (or “modeling”) strategies [30]. It may be "observational learning effects" on non-rehearsed activities. Two, “inhibitory-disinhibitory effects” may cause the person to raise or decrease the rate. Third, witnessing others do it may inspire previously unused actions. [29]

Bandura [30] defined self-efficacy as “the conviction that one can successfully execute the behavior required to produce the outcomes”. Problems were either challenge or pleasure-hinderers depending on self-efficacy. High self-efficacy helps individuals overcome obstacles and grow. Successful alcoholic, drug, and eating disorder quitters were more self-confident. After bodily need is met, addiction demands self-efficacy. Longing is mental without physical reliance. Cognitive and behavioral self-regulatory techniques only work if the individual can handle relapse-causing psychological motives. Without relapse, 40m stop smoking. It implies self-confidence and life management, not joy. Four sources of everyday self-efficacy were discovered by Bandura [30]. Self-efficacy increases with mastery. Success and failure boost or lower self-efficacy. Self-efficacy is best influenced by treatment participant modeling. Vicarious experiences affect self-efficacy via watching others' behaviors and outcomes. Therapy modeling works. Third, because suggestion is the most popular and accessible way, verbal persuasion boosts self-efficacy until the individual acts



and sees performance. Fourth, emotional arousal influences anxiety-provoking effectiveness evaluations; certain problem-solving approaches reduce it. Bandura examined snake phobia sufferers' self-efficacy [30]. Treatment start and durability were examined in three situations. Modeling, participant modeling, and control were conditions. Modeling participants observed the therapist make fearful snake motions and copied him. The therapist mimicked snake behavior in the modeling condition. Controls received no therapy until treatment ceased. In phobia therapy, self-efficacy predicted task completion. Three scenarios demonstrated that participant modeling participants had the greatest self-efficacy expectations and best treatment outcomes. In social cognitive theory, "vicarious experience" explained phobic approach behavior and participant modeling. In addiction study, Prochaska and Norcross [34] related self-efficacy to transformation phases.

Socially concerned college students with poor self-efficacy drank more, a research found. Self-efficacy improved excessive drinking, sadness, impulsivity, avoidance coping, social support, and AA meeting attendance after one year of treatment. [35]

Another research found that high-self-efficacy alcohol addicts avoided drinking for six months regardless of danger. Sonmez [37] observed that Turkish university smoking-cessation program participants' self-efficacy rose. The control group that did not attend the program had significantly lower self-efficacy in the second assessment, which was consistent with literature since they may have failed to stop smoking between assessments.

### **The Trans-theoretical Model of Change (TTM)**

Prochaska and Norcross [34] suggest that most psychotherapy ideas are reasonable but unproven and that researchers' attention always creates a placebo effect. Theories may focus on problem behaviors or personalities, not transformation. Eclecticism lacks empiricism because psychologists choose what they believe is beneficial without a model from other treatment paradigms. [34]

Prochaska and Norcross [34] developed a psychotherapy and behavior change model that went beyond "the relativism of eclecticism through a commitment to creating a higher order theory of psychotherapy that, in Werner's terms, appreciates the unity and complexity of the

enterprise” (trans-theoretical model of change). This theory covers transformations, phases, and levels.

Psychological theories link drinking problems. Studies on this issue are difficult because years of abusive drinking may induce psychological differences between alcoholics and controls.

The following hypotheses are particular.

**a. Tension reduction Hypothesis.**

The soothing effects of alcohol have been extensively studied. Alcohol may affect tension and baseline anxiety in alcoholics. [38]

Stress leads alcoholics to drink. Although no stressor causes alcoholism, drinking helps individuals unwind after a long day. Tension reduction theory explains alcoholism differently. [40]

**b. Reinforcement theories.**

Reinforcement theories imply individuals drink, overdrink, or stay alcoholic because it's beneficial. Reward may be psychological transformation, pain relief, or pleasure [41]. Kids copy adults, therefore alcohol use may be taught. Positive reinforcers include peer praise, social engagement, fewer stress, and autonomy or strength. [38]

**c. Transactional theories.**

According to transactional theories, inappropriate communication may have caused alcoholism and self-perpetuate when alcohol intake escalates. Steiner believed drunkenness may become a game and self-reinforcing. It claims that alcoholics and their families justify their actions with intoxication and powerlessness. After the alcoholic quits, the family may implode, requiring new rules. [44]

**d. Psychodynamic theories**

Alcohol may diminish narcissism [41] or satisfy punishment needs, engaging with behavioral theories. Classical analysis says the alcoholic is oral or passive [41]. Alcoholics are born last and learn to avoid conflict and depend. [45]

**e. Personality theories**

Personality studies reveal that no one personality type drives drinking, and alcoholics have the same variety as others. [46]

**f. Excuse Theory**

If it causes misbehavior, alcohol is blamed. Alcohol use is often socially acceptable. [47]

**g. Socio-Cultural Theories**

Cultural factors affect alcoholism. Super/supra cultural alcoholism develops in civilizations with limited kid indulgence, harsh work, and adult dependence constraints, according to Becon et al. [48]. Some culture-specific and subcultural ideas link alcoholism to social decline before drinking. Not participating in community activities may induce depression and drinking. Culture may affect the most common issue drinking following alcoholism. Alcoholism goes with cultural stress [44]. [50]

**2.3. Aetiology of Alcoholism**

Epidemiological data has tested certain alcoholism causes. Mental illness, alcoholism, and criminality are related, creating the primary-versus-secondary dichotomy and personality theories. Genetic theory employs population twins and family history. Unknown etiology of alcoholism. Other variables like the time between drinking and being alcoholic contribute to this. Psychological, socio-cultural, and constitutional views are not mutually incompatible. [38]

**Family Factors:**

Blood, marriage, or adoption link families. Also shows family and warmth. Statistics show family violence and drinking are linked. It considers alcoholism a family illness with co-

dependence [51]. Families of psychoactive substance users typically explain their issues. Schael [52] says co-dependence, like alcoholic illness, contains external reference, caretaking, self-centeredness, control difficulties, dishonesty, frozen sentiments, perfectionism, and dread. Codependency allows psychoactive substance use.

### **3. Motivational Enhancement Therapy in Alcoholism**

Alcoholism treatment involves group psychotherapy. Chemical dependency centers utilize it extensively. Behavior, cognitive, or interpersonal therapy may be employed in groups. Those with disordered coping may get behavior therapy. Cognitive therapy may help addiction-related thinking. Frequent family and marital troubles may benefit from interpersonal therapy. Groups provide social support, criticism, and optimism while teaching about issues. Group therapy is advised by Perkinson [53]. Healthy, communicative members provide hope. It reduces loneliness, improves knowledge, acceptance, emotional expression, and listening. The purpose of organized addiction group therapy is rehabilitation. The research used movie therapy, like group therapy. Leaders create group treatment objectives. They assist the group attain these aims. Since group leaders seldom have time for pre-group interviews, the therapist shakes hands and introduces new members at the start of each session to build trust. Low attendance, out-of-group relationships (especially sexual), and secrecy concerns impact group dynamics, therefore group therapy must create standards. Multiple groups get addiction treatment. The therapist may use these group approaches when appropriate. Some groups are used daily or nightly, others as required. The “honesty group” exposes patients' lies. The “euphoric recall group” describes how drinking altered them. Reading an AA Big Book chapter, paragraph, or line initiates a “reading group”. Then they explain. Group therapy requires weekly “relapse prevention group” meetings. It detects pre-relapse triggers and high-risk circumstances. Experience sharing and coping skills improvement are employed. A weekly “spirituality group” gathers. Group-process-trained therapist and priest supervise. AA's “higher power” notion is similar. During the “childhood group,” patients understand why others love them. Patients learn from the childhood group that their loved ones adore them despite their flaws. The “men's and women's groups” handle gender-specific concerns, the “community group” discusses treatment issues with staff or friends, and the “inventory group” reports daily therapy successes and failures. [53]

#### **4. Concept of Craving**

Jellinek and colleagues discovered the strong inclination independent people had to drink. Insatiable alcohol thirst produces addiction. Biology, psychology, neuroadaptation, and environment impact appetite. Most psychology research on desire has focused on cognitive behavioral aspects, although personality qualities may also explain seeking disparities.

##### **4.1 Definition of Craving**

Craving is the desire for psychoactive drugs. Jellinek [119] defines it as a strong, invasive want that disrupts attention and performance and makes the person uncomfortable and sensitive to the urge. This intense drive changes the drug user's ideas, emotions, and behaviors. Afraid people want fear and terror. This cultural idea includes eating, sexuality, gambling, self-harm, and medical requirements. Want is an insatiable drug craving. [122]

##### **4.2. Alcohol cravings**

For 30 years, experts have examined hunger from several angles. In summary:

Ludwig [123], a pioneer in desire research, argued that patients defined a combination of internal and exterior dysphoric or discontented sensations as seeking, which the alcoholic used to begin drinking. So “craving” meant different things to different people.

Maisto and Schefft [124] examined alcoholism's sickness explanations: lack of control and excessive desire. They define yearning as a desire to utilize a substance and recollect past joys over a bad mood.

While desire existed, Kozlowski and Wilkinson [125] said that integrating layman's notion with technical or scientific definitions based on assumptions made describing it difficult. Physical reliance, withdrawal symptoms, or a subset of drug use cognitive processes have all been dubbed craving, but scientists have always linked it to interpretation. However, Kozlowski and Wilkinson [125] advised naming a strong urge to utilize the drug “craving”.

Childress et al. [126] suggested addressing internal and exterior conditioned signals to reduce desire and withdrawal during unpleasant moods. Treatment for extinction was offered. Cue-

exposure increased physiological arousal and desire, according to O'Brien and Childress [127]. Russian scientists like Nemtsov showed skin conductance alterations with phrases like 'Vodka' or 'Beer' while Shostakovich [128] showed P300 wave increases in all cortical areas. Marlatt [129] said want was psychological, not physiological, and part of anticipation. He promoted cue-exposure and reducing alcohol's positive connotations. In the 1980s and 1990s, researchers researched "Priming," a drug-consuming feed-forward mechanism.

Ludwig et al. [130] found minor alcohol "First Drink" effects increased desire [131]. Animal models of neuronal hyper sensitivity associate "kindling" with desire. Prolonged subclinical withdrawal might cause craving. [...] Modell [133] thinks desire is linked to obsessive drinking and OCD. There are good relationships between desire and compulsive drinking, but craving may cause it. Unlike non-alcoholics, most alcoholics feel or approve of desire despite difficulties.

## **5. Models of Alcohol Craving:**

### **1. Conditioning models**

Modelling uses classical conditioning. After frequent pairing with alcohol, alcohol-related signals such seeing a bar or beer bottle promote urges to experience the pleasurable impact or avoid the painful withdrawal. As with phobias, drinking's exterior and intrapsychic stimuli shape addicts' desire. [134]

#### **A. *Conditioned incentive and appetitive model***

The paradigm describes desire as feeling good after drinking. Alcohol increases reinforcement-seeking. Abstinent alcoholics drink to feel better [135]. [136]

#### **B. *Conditioned tolerance model***

Physiological changes in conditioned tolerance motivate wishing to avoid negative events.

#### **C. *Conditioned withdrawal model***

Wanting in this paradigm is avoiding conditioned withdrawal produced by prior withdrawal indicators. Alcohol's positive reward self-regulates early drug and alcohol usage. Once addicted, withdrawal's pain may encourage drug usage. Alcoholic stimuli condition the body.

If alcohol-associated signals are presented but not swallowed, conditioned compensatory reflexes maintain homeostatic balance and may promote withdrawal. [138]

**D. Auto shaping model**

This paradigm implies desire is the drinker's monitoring of alcohol-related internal and exterior cues.

**E. Incentive sensitization model**

This paradigm says desire is a conscious sense that occurs when a person overthinks or finds alcohol appealing. Multiple alcohol exposures boost sensitivity. Positive emotions and neutral environmental inputs may become alcohol-associated reward seeking signals via associative learning. [131]

**2. Cognitive models**

Cognitive theories suggest that alcohol and alcohol-related cues trigger cognitive processes including expectations about alcohol's enjoyment and confidence in one's capacity to control drinking. [139]

**A. Cognitive-behavioral model**

Desire arises when drinkers lack faith in their capacity to avoid alcohol and expects drinking to remedy an unpleasant emotion. Subclinical cognitive aspects of alcohol withdrawal syndrome included wanting alcohol to summarize internal and external events and soothe the addict. desire and impulses are non-automatic cognitive processes that occur when drinking plans are delayed; desire does not cause drinking or relapse. [140]

**B. Neurocognitive model**

Craving stimulates emotion, memory, and cognition.

**3. Neuro-adaptive model of Craving**

Neuro-adaptation to drinking may last a lifetime. Chronic alcohol consumption alters brain areas that regulate addiction. On almost every level of information processing, from

neurotransmitters and receptors to intracellular signaling cascades and gene expression control to long-term structural changes that affect synaptic plasticity. Sensitization of the amygdala enhances alcohol dependence symptoms including tolerance, withdrawal, and reward memory. Chronic alcohol consumption neuro-adapts the mesolimbic dopamine pathway, especially the nucleus accumbens (NAc), which activates a common reinforcing substrate and creates dependency. Due to inheritance or intense stress, alcoholics have more severe and permanent neuro-adaptation. Neuroadaptation to alcohol craving:

**A. *Adaptations in nucleus accumbens neurotransmitter and receptors systems.***

Multiple alcohol exposures increase challenge dose psychomotor reflexes. Sensitization causes mesolimbic dopamine hypersensitivity to drugs, stress, and drug-related stimuli. Nucleus accumbens dopamine nerve terminal release rises with hypersensitivity. Chronic alcohol affects mesolimbic dopaminergic glutamatergic input.

**B. *Adaptations in dopamine receptor signaling.***

Drug dependency modulates cAMP intracellular second messenger responses via dopamine receptors. The D1 and D2 receptors activate cAMP differently. Gs and Golf activate adenylate cyclase to produce cAMP from D1 receptors. Gi and Go inhibitory G proteins at D2 receptors inhibit adenylate cyclase and cAMP production. Opposing D1 and D2 neuroadaptations may increase drug and alcohol reward tolerance and drive.

**C. *Adaptations in Gene Expression***

CREB gene activation may increase chronic alcohol tolerance and desire.

**4. *Neurobiological model of craving***

It links craving's neurochemical and neuroanatomical causes. The reward system's nucleus accumbens (NAc) and prefrontal cortex (PFC) receive dopaminergic neurons from the A9 and A10 VTA regions. Alcohol stimulates VTA dopamine neurons and desire, hence the mesolimbic system is important [120]. Frontal brain and amygdala are accumbens-related. The limbic amygdala regulates stress and mood. Amygdalas store drug-induced memories to condition unpleasant and appetitive stimuli. Descending amygdala neural projections monosynaptically and polysynaptically engage VTA dopamine neurons to enhance NAc



dopamine. The frontal cortex processes sights, sounds, and smells. Dorsolateral prefrontal cortex (DLPC) links to the amygdala and nucleus accumbens, which govern emotion and reward, and sustains alcohol use's positive reinforcement and salience. Desire neurochemistry explains conditioning models. Alcoholism may create conditioned withdrawal owing to glutamatergic and GABA neurotransmission imbalance. Acute alcohol consumption reduces glutamatergic excitement and increases GABAergic drowsiness. Chronic alcohol use lowers homeostasis-regulating GABAA receptors. The abrupt withdrawal of sedatives and increased glutamatergic excitatory neurotransmission during alcohol detoxification may produce anxiety, convulsions, and autonomic dysfunction. Previous alcohol consumption signals without use, stress, or negative mood states may cause conditioned withdrawal and alleviation seeking [143]. Alcohol may be reintroduced to minimize negative reinforcement. Investigation of serotonin. Drinking lowers serotonin, according to several research. Animals produce greater 5HT with alcohol. Low 5HT may be treated by desire. [146-147]

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