

Review of liquor consumers' malpractice concerning oral care

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Abstract

Alcohol being used on a daily basis is an established social norm globally. Heavy alcohol use, particularly when combined with smoking, is a significant oral cancer risk factor. Alcohol addiction is a common concern in all communities. Alcohol drinking can lead to a variety of problems, including oral health issues such as periodontal disease, plaque build-up, and caries in individuals of all ages and sexes. Alcoholics and drug abusers frequently overlook their oral health; in this circumstance, dental health care professionals play a vital role in promoting oral health and further providing prevention of other oral and systemic illnesses.

Keywords: Alcohol; Oral mucosa; Oral health; Tongue

1. Introduction

Alcohol is the second most popular drug consumed globally, behind coffee. ¹ Typically, ethanol is referred to as "alcohol" in health settings rather than other liquors. Alcoholic beverages include the active constituent ethanol. ² According to the World Health Organization there are almost two billion people worldwide who consume alcohol on a regular basis. It's a common abuse and almost 80 million are diagnosed with 'alcohol abuse disorders' (WHO 2002, 2004). Liquor isn't considered healthier, although it can be used in moderation as part of a healthy lifestyle. Its short- and long-term consequences on human health, including those on the brain, blood sugar, and liver, contribute to its unfavorable reputation. ³ Excessive alcohol consumption is related to more than 60 different medical conditions, as suicide, homicide and different forms of accidents. ² Some conditions are acute, while other conditions such as liver cirrhosis, chronic pancreatitis, haemorrhagic stroke, and various forms of cancer, are chronic consequences. ² In addition to the chronic diseases that may develop in those who drink a large quantity of alcohol over a number of years, alcohol use also results in the development of various dental diseases. ⁴ Alcohol might have a negative impact on salivary glands, which could lead to tooth decay. Alcohol can aggravate and cause inflammation of oral soft tissues, such as the tongue and gingival tissues. Regular drinking of alcohol is also related to non-carries teeth destruction including dental erosions. ⁴ Oral health of alcoholics and substance abusers are often neglected. Dental professionals should treat oral health problems and conditions appropriately and educate patients regarding alcohol addiction.

2. Alcohol Consumption

For years now, we have become familiar with health warnings about excessive alcohol consumption and its negative effects on the body. ⁵ The World Health Organization describes alcoholism as "a term of long use and variable meaning, generally taken to refer to chronic continual drinking or periodic consumption of alcohol which is distinguished by impaired control over drinking, frequent episodes of intoxication, and preoccupation with alcohol, as well as the intake of liquor in spite of negative consequences". ⁴ An alcoholic is an individual who is obsessed with alcohol and cannot have control over alcohol consumption. Alcoholism is at least twice as prevalent in men as it is in women, although more

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common in males. According to a national survey, the lifetime prevalence was 20% in men and 8% in women.⁶ An alcoholic consumes liquor for a lengthier duration of time, which develops dependency, which may enable behavioral concerns to develop and may be damaging to both psychological and physical wellbeing.⁴ Alcoholism adversely impacts not only the consumer but also their households, neighborhoods, and society at large.⁷

3. Effects of Alcohol Consumption on Overall Body Health

Although being a widely accepted drug by culture, liquor impacts coordination impairs judgment, and has the ability to make an individual unconscious. Alcohol affects the central nervous system after being incorporated into the bloodstream from the stomach.⁸ Prolonged use of alcohol affects the entire body. It can cause malnutrition, anemia, fatty liver, inflamed liver, stomach disease, ulcers, memory loss, enlarged heart, hypertension, suicide, foetal alcohol syndrome, and domestic violence. It also has numerous social complications.^{7,9} Alcohol addiction can have a serious impact on the health of an individual and may cause various physical effects include:⁴

- Gastrointestinal system: Nausea, vomiting, and esophagitis, can also cause gastritis, hepatitis, liver cirrhosis, and pancreatitis; impact on teeth, gingival tissue, and oral mucosa can also be seen.
- Central nervous system: Brain cell death, harm to peripheral nerves; problems with cognition and memory; injury to the optic nerve, neuropathies, etc.
- Cardiovascular system: Light-to-moderate drinking can be beneficial, but heavy alcohol drinkers suffer from Cardiovascular System damage such as cardiac muscle disorders, irregular heart rhythms, hypertension, and strokes.
- Skin: Bluish color of the face skin lesions like pellagra, psoriasis, discoid eczema, and superficial infections are more common in heavy drinkers.
- Respiratory system: Alcohol abuse causes significant derangements in the lung and predisposes individuals to the development of pneumonia and acute lung injury; increased risk of tuberculosis.
- Reproductive system: Impotence, infertility, and reduced male secondary sexual characteristics in males; the reduction in fertility, difficulties in pregnancy and during childbirth or spontaneous abortion.
- Mental disorders like depression, violence, psychosis, memory loss, and illusions.

4. Effects of Alcohol Consumption on Oral Cavity

Alcohol consumption and oral health share a cause-and-effect relationship, with alcohol serving as the catalyst for the development of many diseases that affect oral health.⁵ Chronic alcoholics may neglect themselves as they are preoccupied with their addiction and often, they may have poor dental hygiene.² Alcohol addiction not only affects the health of the entire body but also the oral health of an individual. Alcoholics are at high risk of developing dental caries, and gingival diseases and may suffer from oropharyngeal cancers.⁴ Alcohol consumption in small or large amounts can have diverse effects on the oral health of an individual due to negligence and may cause numerous oral conditions:

- Teeth structure: Consuming multiple alcoholic beverages within a short period of time, damages the enamel of teeth and leads to tooth decay.⁵ People who have alcohol use disorder tend to have higher plaque levels on their teeth and are three times as likely to experience permanent tooth loss.³ Alcoholics generally have a high incidence of decayed teeth which leads to either extraction of teeth or restoration of teeth. Alcoholics may suffer from more missing teeth, active carious lesions, and more endodontically treated teeth as compared to non-alcoholics. These alcoholics had a permanent tooth loss three times higher than the non-alcoholics of corresponding ages.^{2,4}

Tooth erosion is a common disease and it occurs as a result of constant vomiting and food refluxing into the mouth,⁹ the pH of most alcoholic beverages is acidic, with values around pH 4,0 and the concentration of organic and inorganic acids is high which further leads to tooth decay.^{2,4} Regular and prolonged consumption of acidic drinks such as wine makes the oral cavity, as well as the teeth, surface acidic in nature. This acidification dissolves surface enamel and makes teeth surface more vulnerable to mechanical damage due to toothbrushing, teeth clenching, etc. The most commonly affected tooth surfaces due to erosion are palatal surfaces of upper teeth followed by occlusal surfaces of posterior teeth. The lower teeth and buccal surfaces of the upper teeth are the least affected by erosion.^{2,4} Alcohol consumption also causes staining of teeth in long term. Chromogens attach to tooth enamel that's been compromised by the acid in alcohol, and staining of teeth may be visible.³

- Salivary glands: The salivary glands, mainly parotid glands, may become swollen in long-term alcohol consumers, and it is known as sialadenosis which is associated with ethanol-induced peripheral neuropathy.

This condition results in disturbances in the metabolism and excretion of the salivary glands. Reduced salivary secretion along with diminished buffering capacity and less attention to oral hygiene may lead to an increased risk of dental caries and gingival disease. 4

- Dry mouth: Chronic alcoholics may suffer from dryness of the mouth or less saliva due to the acidic nature of alcohol. The sublingual gland showed a proportional increase in adiposity and reduction in fibrovascular tissues. Reduction in parotid salivary flow rate may be associated with chronic consumption of alcohol which may in turn increase the risk of caries in alcohol and substance abusers.2,3
- Periodontal condition: Inflammation of periodontal tissues or gum disease, results from bacterial growth in the mouth. Sugars in alcohol help these bacteria to grow and irritate gingival tissue– leading to bleeding, swelling, and bad breath among other symptoms. As periodontitis progresses, it can lead to the loosened gum tissue and tooth loss.5 Prolonged alcohol drinking is associated with multiple systemic effects which can worsen oral health. Age, low income, low education level, smoking, and alcohol abuse are high-risk markers for periodontal destruction.2 Alcohol abuse can lead to periodontal disease for a number of reasons including irritation to gingival tissue; poor oral hygiene habits among chronic alcohol drinkers; poor eating habits resulting in nutritional deficiencies leading to poor immunity; poor immune response to penetrating harmful chemicals; dehydration from alcohol consumption causes bacteria and plaque build-up as they are not washed away by saliva; ignorance of early symptoms of gingival diseases resulting in progression of diseases to more serious condition leading to periodontal diseases. Chronic generalised periodontitis, that involves gingival inflammation, blunting of the interdental papillae, and deep pockets with concomitant bone loss, is highly likely to occur in alcoholics. Compared to women, alcoholic men experience higher horizontal bone resorption and calculus.2,4
- Tongue: Alcohol dries the mouth and can even dehydrate the entire body. The drying effects of alcohol can result in white tongue and black hairy tongue.5 Alcoholics may suffer from changed taste sensations, most commonly a metallic taste. Besides direct harmful effects on oral health, alcoholics suffer from a number of indirect effects which manifest as a result of lack of adequate nutrition. The most common effects are tongue inflammation (glossitis), and inflammation of the corner of the mouth (angular cheilitis). Early stages of glossitis show painful and smooth tongue but sometimes show swollen fungiform papillae. While in later stages, the tongue suffers from a burning sensation and becomes intensely red followed by atrophy of filiform and fungiform papillae.4
- Oral cancer: There is a large body of evidence that alcohol is a major risk factor for oral cancer. It has been estimated that 3.6% of all cancers worldwide, and over 30% of all cases of oropharyngeal cancer, are attributable to alcohol consumption.1,8 Alcohol when it is consumed along with tobacco increases the risk because of synergistic interaction. However, certain mechanisms have been proposed which explain the carcinogenic effects of alcohol in the pathogenesis of oral cancer, which are:4
 - Dehydration effect of alcohol on cell walls enhances mucosal permeability to other toxins and carcinogens.
 - Change in mucosal morphology with a reduction in epithelial thickness. → Metabolism of ethanol produces acetaldehyde which causes damage of DNA of oral epithelial cells and oncogene expression of oral keratinocytes.
 - Ethanol disrupts salivary gland function by reducing secretion of epidermal growth factor which protects oral mucosa from injuries caused due to acids which result in an increase in the risk of oral mucosal ulcerations. → Nutritional deficiencies associated with heavy drinking can lower the body's natural ability to use antioxidants to prevent the formation of cancers.
- Other harmful effects: Tooth damage related to alcohol is increased if you chew the ice in your drinks, which can break your teeth.3 Temporomandibular joint disorders, which display indicative pain in the ears and problems chewing, usually result from night-time teeth grinding, as a result of alcohol's effect on the part of the brain that helps with sleep.9,10 Alcohol consumption increases the risk of dental and maxillofacial trauma, almost 55% of injuries by assault were associated with alcohol consumption, 11% for falls and 15% for people injured in road traffic accidents.1,9,10 Alcoholism results in a deficiency of folate and other B complex vitamins (niacin, pyridoxine, riboflavin, and thiamine), they may affect the mouth drastically. Alcohol consumers may develop a sore mouth, recurrent ulcers, swollen tongue, altered taste, smooth tongue; tingling in and around the mouth, and angular stomatitis. In addition, the salivary glands that are found immediately in front of the ears, on both sides of the face, commonly become swollen because of fat deposits and can be a distinguishing facial feature of those persons who drink heavily.9 Heavy alcohol drinking, in particular, may influence the oral microbiome composition, which can also cause various diseases in the oral cavity.

5. Conclusion

The mouth is not an exception; no part of the human body is untouched. Oral health is significantly impacted by heavy alcohol consumption. Oral health may be indirectly impacted by some disorders associated with systemic alcohol use. One of the negative impacts of binge drinking is the increased risk of oral mucosal cancer, which is more prevalent in alcoholics. The use of mouthwashes and mouth rinses that contain alcohol may enhance the hazards. The habit of retaining alcohol in the mouth and the high concentration of organic and inorganic acids can lead to persistent soft tissue inflammations, which can worsen the side effects of metal crowns, bridges, orthodontic appliances, and other metal restorations. When managing an alcoholic patient, the dental specialist will ensure sure the patient receives the finest care possible based on the patient's health. Before initiating any procedures, the dentist must have a comprehensive understanding of the alcoholic's health situation. Therefore, the dental practitioner is not intrusive when he inquiries about drinking patterns; rather, he is doing so to ensure that the patient receives the finest care possible. Alcohol-dependent people who receive education in a rehabilitation program may pay more attention to their dental health and be more likely to adopt better habits

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to disclosed.

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