WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Drugs That Steal Smiles: The Periodontal Consequences of Narcotic Use

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ABSTRACT

Narcotic drug use significantly impacts periodontal health, leading to both direct physiological effects and indirect consequences from lifestyle choices and systemic health issues. This review explores how specific narcotics, including heroin, methamphetamine, and cocaine, contribute to periodontal deterioration. Heroin reduces salivary flow, causing dry mouth and promoting bacterial growth, tooth decay, and gum disease. Methamphetamine accelerates the destruction of teeth and gums due to its acidic nature and poor oral hygiene habits, while cocaine reduces blood flow to the gums, increasing the risk of tissue necrosis and periodontal disease. The immune suppression caused by these drugs further predisposes users to infections like gingivitis and periodontitis, which can result in tooth loss and bone degradation. In addition, drug users often neglect oral hygiene and experience nutritional deficiencies, further exacerbating periodontal disease. Studies highlight the higher prevalence of periodontitis among narcotic users, linking it to both microbial and behavioral factors. Effective management of addicted patients requires a multidisciplinary approach, including tailored dental care, addiction recovery support, and nutritional guidance to mitigate the impact of drugs on oral health.

Keywords: Narcotic Drugs, Periodontal Disease, Heroin, Methamphetamine, Cocaine, Oral Health, Addiction

Introduction

The effects of narcotic drugs on periodontal tissues are complex and significantly impact both oral health and the overall condition of the periodontium.[1] Research indicates that narcotic addiction can lead to substantial periodontal deterioration due to various factors, including lifestyle choices and systemic health issues. Certain narcotics may induce gingival hyperplasia, complicating the management of periodontal disease. Additionally, individuals with addiction often exhibit poor oral hygiene, which can result in increased cavities and severe periodontal disease. Nutritional deficiencies associated with drug addiction further exacerbate these periodontal health issues.[2] Over the long term, studies have shown that heroin users, in particular, display a marked increase in decayed and missing teeth, indicating a direct correlation between addiction and the decline of oral health. Moreover, the prevalence of periodontal diseases is notably higher among drug users, influenced by their overall health and lifestyle choices. However, it is essential to acknowledge that not all narcotic users experience the same level of deterioration, as individual health factors and adherence to treatment can vary widely.[3] Certain narcotics, such as heroin, cocaine, and methamphetamine, have been directly linked to periodontal deterioration. These drugs can affect the immune response and alter the oral environment, making it more susceptible to infection and inflammation. For instance, narcotics may reduce salivary flow (xerostomia), leading to dry mouth, which in turn promotes the growth of harmful bacteria, accelerates tooth decay, and increases the risk of gum disease.[4] This article reviews the effects of narcotic drugs on periodontal tissues.

Table: Specific Narcotic Drugs and Their Periodontal Effects[5-8]

Narcotic Drug	Key Oral/Periodontal Effects	Mechanism / Contributing Factors
Heroin	• Increased DMFT (Decayed, Missing, Filled Teeth • Higher risk of dental caries • Increased susceptibility to periodontal disease	• Reduces salivary flow → dry mouth • Decreased natural cleansing and acid buffering • Promotes plaque accumulation
Methamphetamine	• "Meth mouth" with extensive tooth decay • Rapid periodontal destruction • Severe gingival inflammation	• Highly acidic drug composition • Severe dry mouth (xerostomia) • Bruxism and poor oral hygiene habits

Narcotic Drug	Key Oral/Periodontal Effects	Mechanism / Contributing Factors
		• Long drug-use sessions with sugary drinks
Cocaine	• Periodontal tissue necrosis • Severe periodontal disease • Gingival recession and ulceration	• Vasoconstriction → reduced blood flow to gums • Direct application on gingiva causes chemical irritation • Impaired healing and tissue death

Narcotic drugs effect on periodontium

Narcotics such as heroin, cocaine, methamphetamine, and other substances have both direct and indirect impacts on periodontal health, significantly increasing the risk of gum disease and other oral health issues. Heroin reduces salivary flow, leading to dry mouth (xerostomia), which promotes bacterial growth, tooth decay, and gum disease.[9] Methamphetamine, accelerates the destruction of teeth and gums due to its acidic nature, dry mouth, and poor oral hygiene practices. Cocaine, when applied directly to the gums, causes vasoconstriction, reducing blood flow to periodontal tissues and increasing the risk of tissue necrosis and severe periodontal disease.[10] In addition, narcotic use weakens the immune system, making users more susceptible to oral infections like gingivitis and periodontitis, which can lead to tooth loss, bone degradation, and abscesses.[11] Opiates can also cause gingival hyperplasia, an overgrowth of gum tissue that complicates oral hygiene and periodontal disease management by creating areas for bacterial accumulation. Indirectly, narcotics contribute to poor oral health through lifestyle factors such as neglecting oral hygiene, which leads to plaque and tartar buildup, a key factor in gum inflammation and infection. Nutritional deficiencies, especially in calcium and vitamin C, further deteriorate the periodontal tissues. Addicts may also engage in harmful behaviors like smoking, consuming alcohol, and eating sugary foods, which increase the risk of periodontal disease and tooth decay. These combined factors explain the higher prevalence of oral and periodontal diseases in drug users compared to the general population.[12]

Review of literature

In a study by Rayyan A. Kayal, cannabis was the most commonly used drug among the participants, with 66.7% reporting its use. Amphetamines were the second most common (52.6%), followed by alcohol (43.9%), heroin (35.1%), and cocaine (8.8%). All participants in the study were diagnosed with some level of periodontitis, with moderate chronic periodontitis affecting 60% of the group, mild periodontitis affecting 29.1%, and severe periodontitis affecting 10.9%. Cocaine and heroin users exhibited significantly higher mean clinical attachment loss compared to non-users. Additionally, more than half of the participants had pocket depths of 5-6 mm, with cocaine users showing the highest percentage (80%) of pocket depths in this range.[13] Shariff conducted a cross-sectional epidemiologic study with 1,939 participants comparing frequent recreational cannabis (FRC) users with non-users. The results revealed that FRC users had significantly more sites with probing depths (PD) ≥ 4 mm, ≥ 6 mm, and ≥ 8 mm, and more sites with attachment loss (AL) ≥ 3 mm, ≥ 5 mm, and ≥ 8 mm than non-users, showing deeper pockets, higher AL scores, and greater odds of severe periodontitis.[14] Thomson conducted a longitudinal study with data from 1,037 participants, examining the association between cannabis use and periodontitis across various exposure levels. It found that cannabis use was strongly correlated with periodontitis, particularly for clinical attachment loss (CAL) of ≥ 5 mm, with a higher incidence of periodontitis cases by age 32 in heavy cannabis users.[15] Zeng (2014) further examined this relationship with the same cohort at ages 26, 32, and 38, using a generalized linear mixed model. The study revealed that regular cannabis smoking (weekly or daily) was linked to increased AL from ages 26 to 38, reinforcing the connection between cannabis use and worsening periodontal health. Meier also followed this cohort, analyzing the impact of cumulative cannabis use and tobacco exposure on periodontal health from ages 18 to 38. The findings confirmed that cannabis use, independent of tobacco consumption, contributed to increased AL and periodontal decline.[16] Jamieson conducted a cross-sectional study with 441 Aboriginal Birth Cohort members, showing an elevated risk of periodontitis in cannabis users, though no adjustments for cofactors were made. This study, like Shariff's, used the CDC/AAP periodontal classification system.[17] However, Lopez conducted a screening study among 9,163 high school students, finding no significant association between cannabis use and CAL ≥ 3 mm, though cannabis use was linked to necrotizing ulcerative gingivitis (NUG) in non-tobacco smokers. While the data suggests a strong connection between cannabis use and periodontal diseases, particularly in adults, certain studies, like Lopez's, indicate this may not apply to younger populations or specific periodontal outcomes, such as CAL, depending on age and exposure levels.[19,20]

Several studies have investigated the effects of crack cocaine use on periodontal health, revealing a significant association between crack cocaine use and increased periodontal disease. Antoniazzi conducted a cross-sectional study comparing 106 crack cocaine users with 106 non-users matched for age, sex, and tobacco use. The prevalence of periodontitis was significantly higher among crack users (43.4%) compared to non-users (20.8%). Crack users exhibited higher levels of visible plaque index (VPI), bleeding on probing (BoP), probing depths (PD) ≥ 3 mm, and clinical attachment loss (CAL) ≥ 4 mm. After adjusting for confounding variables, crack users were found to have a 3.44 times greater likelihood of developing periodontitis, with additional risk factors including age over 24, lower education, smoking, and alcohol use.[21] Ramos Cury also found that crack/cocaine addicts had significantly greater PD compared to non-addicts, though after adjusting for covariates, periodontitis was not significantly associated with crack/cocaine use but was linked to age over 35 and higher plaque index.[22] Yukna reported on 20 case studies of cocaine users, showing that cocaine-induced vasoconstriction, epithelial sloughing, ischemic necrosis, and local anesthesia led to periodontal tissue damage, with many users unaware of the risk to their gums. Casarin conducted a cross-sectional study comparing subgingival bacterial samples between crack users and non-users and found no significant difference in the

total bacterial counts of key periodontal pathogens. However, crack users were more likely to have higher bacterial counts of species associated with periodontitis, such as *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis*, *Prevotella intermedia*, and *Fusobacterium nucleatum*, suggesting that non-bacterial factors may also contribute to the increased occurrence of periodontitis in crack users. [23]

Periodontal Management of Narcotic Drug Users

Dentists must be well-versed in recognizing signs of illegal drug intoxication and understanding their potential health impacts on patients. Common signs of substance use include changes in physical appearance, behavior, and hygiene, as well as specific symptoms like needle marks or unusual body odors. Elective dental care should generally be postponed for at least 24 hours following the use of stimulant drugs or cannabis. Managing addicted patients poses various challenges, including behavioral issues, poor compliance, immune response defects, liver damage, malnutrition, and increased risk of infections like HIV or hepatitis. The use of vasoconstrictors in local anesthetics, epinephrine-impregnated retraction cords, or nitrous oxide can elevate cardiovascular risks, especially in stimulant or cannabis users, making it safer to opt for anesthetics without vasoconstrictors.[24] Patients using methamphetamine, particularly those with "meth mouth," require careful dental management, which begins with cessation of drug use. Treatment plans should be simpler than for non-addicted patients, with short appointments and multiple breaks to manage anxiety. Informed consent regarding the impact of drug use on dental restorations should be obtained, and preventive measures such as fluoride treatments, remineralization products, and sugar-free gum can help manage dry mouth.[25] For pain control, nonsteroidal anti-inflammatory drugs are preferred over opioids, though care must be taken with drug interactions and managing potential relapse. A multidisciplinary approach is recommended for managing severe oral and psychological damage from drug use. Treatment should focus on disease control, caries management, and patient motivation, with tailored prosthodontic solutions such as fixed or removable prostheses to improve esthetics and function.[26] Special consideration must be given to pain management, which is often complicated in drug users due to the risk of relapse and the need for careful monitoring of opioid use. Collaboration with the patient's physician and support system is key to ensuring both effective pain relief and long-term recovery.[27]

Conclusion

Identifying dental patients with substance abuse is a critical aspect of modern dental practice. While addressing the negative oral health outcomes is essential, helping patients seek treatment for sobriety is equally important. The connection between narcotic drug use and periodontal health is multifaceted, as addiction results in both direct physiological effects on the gums and teeth, as well as indirect consequences from unhealthy lifestyle choices and related systemic health issues. Providing comprehensive care for individuals with narcotic addiction involves a holistic approach that includes dental treatment, addiction recovery support, and nutritional guidance to reduce the detrimental effects of drugs on periodontal health.

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