

Oral manifestations and oral health care among the illicit drug abusers: A review

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Abstract: Drug abuse is a matter of growing concern as it is increasing day-by-day. Drug addicts are physically, mentally and emotionally dependent upon these drugs and cannot leave them on their own. These drugs have deleterious effect on patient's overall health in general and oral health in particular. Oral health problems are among the most prevalent health problems associated with drug addiction. Illicit drug use contains the non-medical use of a variety of drugs that are forbidden by international law. These illicit drugs include depressants, stimulants and hallucinogens.

I. Introduction

Globally, the prevalence of drug addiction is increasing day-by-day. Drug abuse affects many parts of the body, which includes the oral cavity, lungs, liver, brain, etc. Addicts undergo from physical, psychological, emotional and behavioral troubles. ¹The World Health Organization (WHO) has defined the term *drug of abuse* as a substance used for non-medical purposes with psychoactive effects, capable of being self-administered which can result in changes in perception, mood, consciousness and behaviour. ²Dental research has focused on clinical implications of drug abuse. Oral health problems are among the most prevalent health problems associated with drug addiction. ³ Drug abuse has both direct and indirect consequences for oral health and can exacerbate oral problems indirectly through its adverse effects on the users' behaviour and life style. ⁴ The present review article aimed to discuss the oral health consequences among patients with drug addiction.

Compromised oral hygiene and high sugar consumption have been observed among the drug addicts. ^{5,6} Depraved oral hygiene care among the drug addicts attributed to the difficult access for the dental care, less utilization of dental services and reluctance on the part of dentists to treat them and such barriers have been noticed in other areas of healthcare systems. ⁷ Data from the previous studies showed that, the drug users are unable to take full control of their lives and health until they enter a place of safety, such as drug relief therapy and rehabilitation units. ⁸The oral health of the drug users has received less attention. Easy access to dental

services is possible if patients are in rehabilitation centres and dentists should participate in such networks to act in line for strategies tackling drug abuse.^{8,9}

Illicit drugs

Illicit substance abuse shows globally an increasing tendency.¹⁰ Illicit drug use includes the non-medical use of a variety of drugs that are prohibited by international law. These illicit drugs include depressants, stimulants and hallucinogens.

Depressants such as opioids (heroin and morphine) and cannabis do exactly what the name suggests i.e they depress a person's nervous system.^{11,12} Stimulants such as cocaine,¹³ crack-cocaine and ecstasy cause the brain into overdrive and temporarily increase alertness and energy. Hallucinogens such as cannabis (marijuana and hashish), ecstasy and LSD (Lysergic acid diethylamide) affect the perception, emotions, and mental processes.

Depressant illicit drugs

Opioids

Opiate drugs include psychoactive constituents such as morphine, and semi-synthetic derivatives such as heroin. In opiate drug users generalized tooth decay especially on the smooth and cervical surfaces, tooth loss, and tooth extractions are common. Moreover, salivary hypofunction among these patients leads to xerostomia, burning mouth, taste impairment, eating difficulties, mucosal infections, and periodontal diseases.¹⁴

High caries experience has been found among the heroin users, due to the combination of xerostomia caused by opiates and the high sugar content of oral methadone solutions used to manage the withdrawal from the drug.¹⁵

Recent researches suggested that periodontal diseases are usually seen in the form of chronic periodontitis, along with necrotizing gingivitis. Various other conditions that take place in relation to opioid addiction include bruxism, candidiasis, and oral mucosal dysplasia. However, there is lack of evidence available to support the theory of a higher prevalence of oral cancer specifically in opioid abusers.¹⁶

Cannabis

Cannabis abuse includes mainly hashish and marijuana; it contributes to the increased risk of oral cancer along with dry mouth, and periodontitis. Onset of periodontitis among the young adults with cannabis abuse has a dose-response association regardless of concurrent tobacco smoking. A systematic review by Versteeg et al. showed that oral side-effects of cannabis includes xerostomia, leukoedema, high prevalence of *Candida albicans* but not candidiasis, and higher DMF scores, especially the decayed component.¹⁷

Cannabis users have short-term decrease in saliva, which causes high susceptible to smooth-surface caries. A study done by Madinier et al showed that about half the cannabis users reported pulpitis during the period of cannabis smoking, that may be attributed to the adverse effects of cannabis on their vasculature.¹⁸

Stimulant illicit drugs

Cocaine

Cocaine and crack-cocaine have significant adverse effects on the oral and dental health. Depending on the route of drug administration, cocaine abusers shows several oral and facial manifestations. Cocaine snorting is associated with changes in the sense of smell, chronic sinusitis, perforation of nasal septum and perforation of the palate.

Oral administration of cocaine may result in bruxism and gingival lesions. Local application of cocaine onto the gingiva by addicts to test its quality may lead to gingival recession.¹⁹ Cocaine has stimulant effects on the facial and masticatory muscles. Hence, these drugs users' needs more attention in relation to the maintenance of oral hygiene.²⁰

Crack-cocaine

During the heating, cocaine made cracking sound, this form of cocaine is known as crack-cocaine. Smoking of crack-cocaine produces burns and sores on the lips, face, and inside of the mouth which may increase the risk of oral transmission of HIV.^{19,21}

Cocaine and gingival changes

At the site of application of cocaine, usually the maxillary anterior teeth develop gingival lesions. The gingiva exhibits a white slough (can be easily removed), underlying ulceration and erythema leading to painful and

retracted gingivae. In addition, gingival laceration may be aggravated by excessively vigorous tooth-brushing during the ‘high’ period. Radiographs revealed severe alveolar bone loss and such changes are probably related to the strong vasoconstrictive properties of cocaine.²²

Cocaine and hard tissue changes

Bruxism is a common complication in cocaine users leading to dental attrition and pain in the temporomandibular joint and masticatory muscles. Following oral or nasal application, cocaine powder reduces salivary pH, causes the susceptible to dental erosion.^{19,23}

Cocaine and nasal septum perforation

Nasal septum perforation is a commonly reported complication, seen in approximately in 5% of cocaine snorers. About half of the cocaine snorters have recurrent epistaxis with intranasal crusting, rhinitis and chronic sinusitis. Due to the perforation of the nasal septum there may be reduced nasal support and results in a broad, flat nose, so-called saddle nose deformity.²⁴

Cocaine and palatal perforation

Chronic use of cocaine seems to have effects on the palate. In general, perforation of the nasal septum occurs first and is followed several months later by a slowly enlarging palatal perforation. In addition, majority of the patients with cocaine-induced palatal necrosis are found to be female (72%), despite the fact that more men use cocaine than women do. Hence, it has been suggested that women are more prone to palatal perforation due to cocaine usage.²⁵

Hallucinogens

Hallucinogens such as ecstasy and LSD (Lysergic acid diethylamide) has resulted in several oral complications such as dry mouth, bruxism, and problems associated with malnutrition caused by drug-induced anorexia. The most frequent problems reported are chewing, grinding, and temporomandibular joint (TMJ) tenderness by these ecstasy users.²⁶

Table 1.1: Oral manifestations of illicit drugs

Drug type	Example	Route of administration	Oral side-effects (31)
Depressants (CNS depressants)	Morphine	Snorting, smoking and injection	<ul style="list-style-type: none"> • Xerostomia • Dental caries • Gingival recession
Stimulants (Psychomotor stimulants)	Cocaine	Snorting and injection	<ul style="list-style-type: none"> • Bruxism • Cervical tooth-substance loss • Perforation of the nasal septum and/or palate • Gingival recession - mostly on anterior maxillary teeth • Buccolingual dyskinesia (crack dancing/twisted mouth)
Hallucinogens (Psychotomimetic agents)	Cannabis	Snorting, smoking and injection	<ul style="list-style-type: none"> • Xerostomia • Dental caries • Erosion of enamel • Hyperkeratosis • Leukoedema

			<ul style="list-style-type: none"> • Leukoplakia • Oropharyngeal cancer risk
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Ecstasy

Ecstasy-induced tooth wear attribute to grinding and clenching and is more commonly found on occlusal surfaces of posterior teeth as compared to incisal edges and there may be associated problem of jaw clenching than tooth grinding. High intake of carbonated drinks to overcome the sensation of dry mouth after drug taking may lead to dental caries and erosion. Topical use of ecstasy may result in oral-tissue necrosis and mucosal fenestration.²⁷

Dental management

The identification of dental patients with substance abuse is an important task in the modern practice of dentistry. The following steps are important in these patients to deliver safe and qualitative dental care:

Identification of drug abusers

The identification of dental patients with substance abuse is an important task in the modern practice of dentistry. Drug addicts present various oral manifestations (Table 1.1), which are relevant to the dentist and for the treatment aspects for example vasoconstrictive activity of cocaine.²⁸

Vital signs must be measured at every appointment to assess the systemic health. Needle path may be obvious when the blood pressure cuff is positioned. Oral health-care providers should require consent from the drug addicts to sign a statement indicating that drugs have not been used within the previous 24 hours.²⁹

The Oral Physician must obtain the medical history of patient as well as extra-oral observation and clinical examination to identify the patient with substance abuse problems. Periodontitis in adolescents may recommend a requirement to question the client regarding marijuana use. Breath odours may be indicative. Enlarged parotid glands should be investigated for etiological factors.³⁰ Table 1 indicates oral manifestations of illicit drugs.

Habit cessation programs

A study describing the patterns of tobacco counselling among the physicians and dentists determined the association between provider advice to quit and cessation activities among current smokers. The findings were 33% of adolescents, who visited a physician or a dentist in the past year reported that a physician counselled them about the dangers of tobacco use and 20% stated similar message from the dental surgeon.^{31,32}

Considerations while giving appointments

Regular visits for oral health services are difficult due to the life-style of the drug addict. Substance abusers have repeated neglected appointments and stoppage to pay for services may be seen. Behaviour management problems are possible. A patient who comes to the appointment in an inebriated state should be rescheduled. The client should be escorted and accompanied to their home by a responsible person. This can include a family member, friend or caregiver.²⁹

Oral health care

The dental practitioner should be aware of the possibility for increased blood pressure and monitor vital signs during each appointment. Cocaine and vasoconstrictors have a tough interface that can result in to cardiac arrest.³³ The vasoconstrictive activity of cocaine enhances the response to epinephrine (frequently used as a vasoconstrictor in local anaesthetics). It blocks nerve conduction to the dental local anaesthetics lidocaine, Xylocaine and Articaine. Hence, administration of a local anaesthetic after recent use of cocaine may induce an acute increase in blood pressure.²⁸

During the minor surgical procedures, extreme variations in blood pressure were observed in patients who used cocaine or crack. Therefore, dentists should be alert for signs of recent or chronic use of cocaine and potential medical risks during the dental treatment.²⁸ If excessive bleeding is observed, treatment should be stopped and digital pressure should be applied. Referral for medical evaluation and necessary blood coagulation tests should be advised before further treatment procedures.³⁰

Drug abuse is associated with dysplastic mucosal changes, periodontal destruction, dental caries, xerostomia and loss of teeth. The Oral health care should be aimed at alleviating the associated pain, destigmatizing the patient and offering them a comfort zone so that they will be motivated towards the dental treatment and it may positively influence their outlook towards their life and to maintain better oral hygiene. They also should be screened for HIV as some illicit drugs like methamphetamines increases the tendency to indulge in risky sexual behaviours.³⁴

II. Conclusion

Drug abuse is a matter of growing concern as it is increasing day-by-day. Drug addicts are physically, mentally and emotionally dependent upon these drugs and cannot leave them on their own. These drugs have deleterious effect on patient's overall health in general and oral health in particular. Drug addicts suffer from poor oral hygiene, xerostomia, increased prevalence of dental and periodontal diseases. Therefore, dentists attending to these patients should follow the proper protocol while handling such situations.

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