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Original Research

Abuse Of Different Drugs With Their Implications On The Periodontium- An Observational Study

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ABSTRACT

Background: Abuse of different drugs is rising globally. It has been seen that the younger future generations of the society are the most impacted. With drug abuse comes various systemic and local complications. One such complication is the worsening periodontal condition. The present study was conducted with the aim to evaluate the complications and effect of different drugs on periodontal health. **Materials and methods:** The present study was conducted amongst 120 subjects who were divided into three groups. Group I included heavy drug addicts, group II included low drug addicts and group III were controls. Periodontal condition was evaluated amongst all the subjects and recorded in a tabulated form. The results were evaluated using SPSS software. **Results:** The mean age of the patients was 37.54±56 years. There was significant difference in the oral conditions and symptoms amongst the addicts and controls. Bleeding on probing, clinical attachment loss and gingival index also varied significantly between the groups. **Conclusion:** From the present study it was concluded that the periodontal condition is significantly affected in drug addicts with worse among the heroin addicts. **Clinical significance:** It is well known fact that psychoactive substance abuse leads to reduction in immune response, poor oral hygiene leading to precarious oral environment as well as dry mouth. Dentist being a part of community health services, it is imperative to assess periodontal conditions of drug addicts as well as take part in campaigning and educating these subjects about deleterious effects of drugs and their impact on body as well as oral cavity.

Keyword: Addicts; Drug, Periodontal

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INTRODUCTION

Illegitimate abuse of substance is rising globally. It is more frequently seen amongst males than females. According to the reports by World Health Organization approximately 2 billion folks around the world devour alcohol and there are 76.3 million who are suffering from alcohol persuaded complications.¹ As per the 2012 world drug report, there are 3.4-6.6% of subjects aged between 16 to 64.1 years who are drug abusers around the globe. Addiction carries various deleterious effects like depression, anxiousness, loss of memory, neuropsychological ailments, and death can even occur after internal bleeding or hyperthermia caused due to drugs.² Addition to all these systemic issues, drug abuse can also lead to manifestations in the oral cavity like tooth decay, ulcerations, periodontal problems etc.^{2,3} Basically drug addiction is defined as dependence either physical and

psychological on psychotic substances like tobacco, liquor or other substances that can cross the blood brain barrier after ingestion and alter the chemical environment of the brain temporarily. Heroin is an addictive and illegal drug that is obtained from poppy plant's resin. It is abused in injectable form primarily in veins of arms and legs. Cracked cocaine is another form of cocaine that is obtained from heating and smoking of cocaine and it acts as a potent central nervous system stimulant. It is associated with increased incidence of heart disorders⁴, pulmonary diseases⁵, hepatitis⁶ and can lead to occurrence of various deadly diseases like HIV⁷. Various studies⁸⁻¹⁰ have evaluated the oral hygiene amongst intravenous drug abusers. They are associated with a higher prevalence of dental caries. The reason behind the higher frequency of dental caries is the reduced saliva flow and pH alteration in the saliva caused by the abused drug.¹⁶ The present study was conducted with the chief

aim to compare the periodontal condition of the drug abusers with normal subjects.

MATERIALS AND METHODS

The present observational prospective study was conducted in the department of Periodontology of Institution in collaboration with the two-local drug de addiction centers. The study was approved by the ethical board of the institute and the subjects enrolled in this study were informed about the study and a written consent was obtained from all in their vernacular language. Initially a survey was conducted amongst the subjects of the deaddiction centers and the subjects that required dental attention were invited to the dental department for further consultation. A total of 230 subjects came to the hospital for further dental treatment. Out of these subjects, the subjects fulfilling the inclusion criteria were enrolled in the study. Smokers, alcoholics and smokeless tobacco users were excluded from the study. Edentulous patients or patients who had received any kind of periodontal therapy in the past were also excluded from the study. Subjects using Heavy drug for at least past 1 year with no cognitive impairment were included in the study. Age matched subjects without any addictions who came for normal periodontal checkup were considered as controls. A complete and detailed history about the duration and frequency of previous abuse was noted. Patients medical history, dental history, oral hygiene habits were also taken into consideration. A group of experienced periodontists examined all the subjects. Complete examination of the oral cavity including the number of mobile teeth, trismus index, bleeding gums and burning sensation were recorded. All erupted teeth were evaluated under artificial lighting with the periodontal probe. Plaque index, gingival index, periodontal index, clinical attachment loss was assessed at four sites per tooth. The individual performing the periodontal examination was also blinded. All the obtained data was arranged in a tabulated version and statistical analysis was done using SPSS software. Student t test was used for the assessment of statistical difference between the groups. Probability value of less than 0.05 was considered as significant.

RESULTS

The study enrolled 40 subjects in each group. The mean duration of drug addiction was 5.6+/- 1.8 years. There were 30% addicts with the family history of drug addiction. Amongst the cases the mean age was 37.54 +/- 5.6 years and amongst the controls the mean age was 38.45 +/- 4.2 years. There were 65 males in cases and 21 were males in controls. There were 45% of the controls that were smokers and 50% of them were alcoholics. Mean frequency of addiction was 1.8+/- 0.6 times. From the graph we can clearly infer male predominance in both Group I and Group II. Amongst the controls 55% were smokers and 60% were alcoholics (table 1, graph 1)

Table 2 shows the signs and symptoms that were observed amongst different groups. Amongst subjects of Group I, 77.5% had mobile teeth and 87.5% had dry mouth. Dry mouth was most prevalent amongst subjects of Group I. There were only 12.5% controls with dry mouth. There was a significant difference between the groups. There was no significant difference amongst the subjects having trismus between the three groups. Only 22.5% subjects in Group I, 17.5% subjects in Group II and 5% subjects in Group III had trismus. All the patients presented with clinical attachment loss. It was more than 5 mm in 75% subjects of Group I and 65% subjects of Group II. Only 55% controls showed attachment loss of more than 5mm. There was a significant difference between subjects showing more than 5 and 6 mm attachment loss. Table 3 illustrates the average values of periodontal variables amongst different groups. The mean plaque index in Group I, group II and Group III was 5.23 +/-4.76, 4.12 +/- 3.22 and 2.15 +/- 2.98 respectively. There was no significant difference between the groups. It was seen that bleeding on probing was maximum in Group I (75.6+/-6.1) and minimum in Group III (45.89 +/- 19.19). There was a significant difference between the groups as p value was less than 0.05. The study showed significant difference in the gingival index between the three groups with maximum in Group I followed by Group II and Group III respectively.

Table 1: Baseline characteristics of the study population

VARIABLE	CASES	CONTROLS
Mean age	37.54 +/- 5.6 years	38.45 +/- 4.2 years
Gender (males)	65	21
Duration of drug addiction	5.6+/-1.8 years (4-7 years)	NA
Family history of addiction (%)	30	NA
Frequency of addiction	1.8+/- 0.6 times	NA
Smokers (%)	55%	45%
Alcoholics (%)	60%	50%

Graph 1: Gender distribution of the subjects

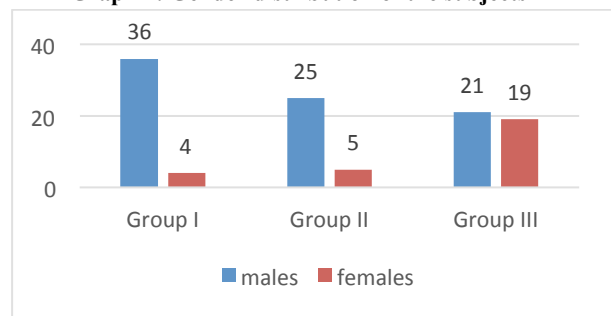


Table 2: Associated oral signs and symptoms amongst different groups

Variable	Group I (heavy Drug Adicted)	Group II (heavy Drug Adicted)	Group III (control)	P value
Mobile teeth	31(77.5%)	24(60%)	14(35%)	<0.05
Dry mouth	35(87.5%)	27(67.5%)	5(12.5%)	<0.05
Bleeding gums	29(72.5%)	21(52.5%)	19(47.5%)	<0.05
Burning sensation	27(67.5%)	19(47.5%)	7(17.5%)	<0.05
Trismus	9(22.5%)	7(17.5%)	2(5%)	>0.05
Clinical attachment loss				
>3 mm	40 (100%)	40 (100%)	40 (100%)	>0.05
>4 mm	38(95%)	37(92.5%)	32(80%)	>0.05
>5 mm	30(75%)	26(65%)	22(55%)	<0.05
>6 mm	19(47.5%)	13(32.5%)	8(20%)	<0.05

**p-value considered significant if p<0.05*

Table 3: Average periodontal variables amongst different groups

Variable	Group I (heavy Drug Adicted)	Group II (Low Drug addicted)	Group III (control)	P value
Plaque index	5.23 ± 4.76	4.12 ± 3.22	2.15 ± 2.98	>0.05
Bleeding on probing	75.6±6.1	60.55 ±19.42	45.89 ±19.19	<0.05
Clinical attachment loss	4.91±1.1	2.84±0.89	2.05±0.12	<0.05
Gingival index	5.11±2.08	3.9±1.01	1.5±0.93	<0.05
Periodontal index	5.53 ±0.82	3.8±0.76	2.6±0.44	>0.05

p-value considered significant if p<0.05*DISCUSSION**

Various abused substances have harsh consequences on the oral health. Cocaine can lead to movement disorder and hence transient chorea. It can also present itself with a twisted mouth well known as crack dancing mouth due to buccolingual dyskinesia. Heroin abuse can manifest as decayed and missing teeth due to caries. All this is because of malnutrition and negligence of oral hygiene due to impaired neurological and physiological functions. Addicts are also prone to parkinsonism, depression, hypotension, embolism and various other systemic disorders. Periodontitis is characterized

by heavy calculus deposits and inflammation of the gingiva with significant attachment loss. The main etiological factor for periodontitis is dental plaque. It generally manifests due to imbalance between the host response and the pathogenic oral flora. The prevalence of dental caries and periodontitis is more amongst the addicts. Due to drug abuse there is suppression of pain response and hence subjects ignore the pain due to dental decay and periodontal problems. Subjects also restrict visiting the dentists because of fear of being caught because of oral symptoms. Drug abusers, smokers, tobacco chewers have increased risk of oral cancerous and pre-cancerous conditions. Tobacco itself is a risk factor oral conditions and periodontitis. It is associated with increased attachment loss, loss of teeth, increased pocket depth etc. intravenous drug abusers are prone to blood borne diseases due to the habit of needle sharing. There have been increased incidence of hepatitis, AIDS amongst them. Many of the addicts due to negligence, xerostomia, microbial flora alteration has high plaque deposits and hence high incidence of periodontitis. Cells of the inflamed periodontium release cytokines and growth factors that affect maturation and differentiation of osteoclasts acting as a linking path between bone destruction and inflammation, thus leading to periodontitis. In case of drug abusers there is alteration of the cellular immune system. There is increased production of IL-8 along with enhanced chemotactic activity of the neutrophils amongst the drug abusers. In a study, matrix metalloproteinase activity was seen amongst the rats that were exposed to cocaine.¹¹ Drugs have also altered the homeostatic balance of the cytokines that were secreted by T helper cells.¹² The present study clearly inferred the predominance of periodontal diseases amongst the addict group. Both groups, group I and Group II had poor oral hygiene with higher periodontal indices. Lack of education with poor standard of living are regarded as significant risk factors for periodontal disease.¹³ Saliva which is a complex oral biological fluid performs multiple functions in oral cavity. It aids in speech, deglutition, mastication and protects the teeth and mucosal surface by pathogenic oral flora.¹⁴ According to the study by Protrka et al.,¹⁰ on assessing the salivary flow amongst the addicts and non-addicts, they found a significant difference in the flow rates. The flow of stimulated and unstimulated saliva was significantly reduced amongst the addicts. According to a study by Mateos-Moreno et al.¹⁵ higher prevalence of periodontal disease was amongst abusers of multiple drugs out of which majority were cocaine abusers. Our study showed that drug abusers had poorer periodontal health and amongst abusers, periodontal health was significantly compromised amongst heroin users compared to cocaine abusers. In our notice there hasn't been any study yet comparing the effect of cocaine and heroin on the periodontal health. Handlers of numerous illegitimate drugs have inferior periodontal status. This has been seen with the use of drugs like cocaine, heroin, methamphetamine,¹⁶ and marijuana¹⁷. There have been evidences that show that abusers don't restrict themselves to single type of drug incase use multiple drug for psychological benefit. Regular abuse of cocaine is considered to have severe orofacial alterations, like perforation of the septum of nose,

gingival alterations, palatal perforations and erosion of enamel. Amongst cocaine abusers there is increased risk of medical emergency after administration of epinephrine in any form.¹⁸ This increases the incidence of cardiovascular complications after or during any dental treatment. Due to long term addiction, oral hygiene is also compromised due to malnutrition, physiological effects or lack of awareness. Due to the habit of grinding and clenching of teeth, drug abusers also have increased pain and tenderness in muscles. Different studies have suggested that abuse of heroin is associated with compromised oral health and periodontal status like our study.^{19,20} The present study showed a significant difference in the oral hygiene status and awareness about oral hygiene amongst the abusers and the controls. According to a study by Kosta et al²¹ the most common oral diseases amongst the drug addicts was periodontitis and gingivitis. There is a need to create awareness amongst the youngsters about the harmful and deleterious effects of drugs. Regular screening programmes should be conducted to reduce the prevalence of drug abuse.

CONCLUSION

The prevalence of periodontitis was significantly higher amongst the drug abusers compared to the normal controls. The condition was worse amongst the low drugs addicts compared to heavy drug addicted addicts. There is a need to educate the subjects about the deleterious effects of drugs and their impact on body. There was a significant difference in the oral hygiene condition of the cocaine and low n abusers.

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