



Impact of Smoking on Dental Caries and Gingival Health Among Dental Student in The College of Dentistry / Tikrit University/ Iraq

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Abstract

Smoking has a negative impact on overall health including oral health causing dental caries, gingivitis, periodontitis, calculus and other effects.

Aim of study: This study was conducted to assess correlation between cigarette smoking and oral health condition among dental student in college of dentistry/ Tikrit university.

Material and Methods: Students (male only) from Tikrit university were selected on a random basis, after consent form has been obtained from participants. They were divided into two groups, smoking and nonsmoking groups. Dental caries experience was diagnosed and scored according to the index of DMFs (WHO).

Results: In the present study dental caries and mean value of (PI, GI, Cal) index were higher among smoking students than non-smoking group.

Conclusion: According to our findings in the current study, smoking had an effect on dental caries and gingivitis, as smoking dental students had higher levels of dental caries and gingivitis than nonsmokers.

Introduction:

Tobacco is the most popular substance smoked, and smoking is the most popular way to consume tobacco. The agricultural product is frequently blended with additives before being burned ⁽¹⁾. Smoking tobacco was first introduced into Europe, which is an addictive habit. Now, smoking is recognized as one of the most important factors cause of preventable disease and

death. Tobacco smoke contain Hundreds of different compounds, and some occur in concentrations judged to be harmful to health ⁽²⁾. Some of these substances were detected as carcinogenic, and smoking has been involved in the oral neoplasia etiology ⁽³⁾. One of the most pervasive public health issues is tobacco . Tobacco use has a harmful impact on both systemic and oral

health, including tooth caries and periodontal disorders ⁽⁴⁾. The consequences of smoking on dental caries are not well understood ⁽⁵⁾. While it was discovered that smoking has a direct impact on periodontal disease ⁽⁶⁾.

Although smoking is most likely linked to a higher risk of dental caries, a cause-and-effect relationship has not yet been established. ⁽⁷⁾ Smoking has a deleterious impact on the saliva's ability to buffer stimuli, temperature and humidity of the oral environment ⁽⁸⁾. This changes the oral cavity's natural environment and upsets the normal, healthy balance of oral bacteria, which favors caries bacteria ^(9,10).

Nicotine and other cigarette hazardous substances will impact the immune response of the surrounding tissues and lead to periodontal disease ⁽⁹⁾. Nicotine substances in cigarettes stimulate the sympathetic ganglia to produce neurotransmitters including catecholamines ⁽¹¹⁾. These cause vasoconstriction by affecting alpha- receptors on blood vessels. The periodontal tissue is also affected by the vasoconstriction of peripheral blood vessels caused by smoking ⁽¹²⁾. The vasoconstrictive actions of nicotine may be responsible for the decreased gingival blood flow, Therefore, smokers exhibit less overt indications of gingivitis than non-smokers, and smokers also exhibit less obvious clinical signs of gingival inflammation, such as redness, bleeding, and exudation ⁽¹³⁾.

Material and Methods:

This study was done in Tikrit university, college of dentistry. 60 students of males from dentistry college, were randomly participated in the present study to determine the effect of smoking and its relationship to oral health basis. Consent forms have been obtained from participants. Age range of participant 18-25. The dentition status of tooth surface was recorded according to WHO (2013) ⁽¹⁴⁾. Plaque index of Silness and Loe (1964) was used for plaque assessment; gingival index of Loe (1967) was followed for recording gingival health condition ^(15,16).

Excluding Criteria: In this study, some groups were excluded, such as those with chronic and infectious diseases.

Results:

The distribution of sample of this study was explained in the Table (1). The percentage of smoking students in this study was lower than those who non-smoking.

Caries experience (Ds, DMFs) among dental students participate in this study was illustrated in the Table (2). It was shown that mean value of Ds and DMFs were higher among smoking than non-smoking group. Statistically no significant difference was found between them. Mean value of DMFT among smoking and non-smoking group was shown in the Table (3). Smoking groups have a higher mean value of DMFT than non-smoker groups, statistically there was no significant difference between them.

Gingival health status of the study and control group was explained in the Table (4). The mean value of (PLI, GI, Cal) index were higher among smoking group than non-smoking one, statistically there was highly significant difference between them.

Discussion:

At both the national and international levels, smoking is a significant public health issue. It causes a significant rise in periodontal diseases and a high risk of tooth caries ^(8,9). In contrast to our results, previous studies suggested that a people with a habit of smoking had less dental caries, possibly due to the thiocyanate concentration, one of tobacco component, which acts as an anti-cariogenic activity. It was found that thiocyanate concentration was greater in smoker saliva than normal saliva that exhibited a caries-inhibiting effect, so that there is a probability that the prevalence of dental disease will be lesser ⁽¹⁷⁾. Other studies agree with our results, reported that smoking tobacco is one of a risk factor for increasing caries activity, with a higher DMFT score and higher prevalence of dental caries in males ⁽¹⁸⁻²¹⁾. Biology of caries development affected by active smoking that focuses on the changes in the dental plaque and saliva ⁽²²⁾.

A few studies suggested that lower pH levels, higher Streptococcus mutants and lactobacilli numbers and less saliva buffering capability could be attributed to increased dental caries susceptibility. The results also revealed that salivary flow rate exhibited no significant difference between smoking and nonsmoking one ⁽²³⁾. Smoking clearly has a lot of detrimental effects on the oral cavity, it produces xerostomia intraorally ⁽²⁴⁾. Xerostomia and caries have a well-established association ⁽²⁵⁻²⁷⁾. Additionally, research suggested that smoking can worsen the effects of caries lesions by suppressing ascorbic acid, they discovered a statistically significant difference in the caries lesions prevalence but not in the mutans streptococci quantity between the study group (with low plasma ascorbic acid levels) and the control group (with greater plasma ascorbic acid levels) ⁽²⁸⁾. About gingivitis, some studies disagree with our finding. It has been demonstrated

that dental plaque levels in smokers and non-smokers were comparable, but that smokers' gingival inflammation was less severe than those of non-smokers ^(29, 30). As it reduces gingival inflammatory response to dental plaque ⁽³¹⁾. Observational studies demonstrated that Plaque levels in smokers were comparable to or higher than those in non-smokers ^(32,33).

Conclusion:

According to our finding in the present study, smoking had an effect on dental caries and periodontal disease, as dental students had higher levels of dental caries and periodontal disease than nonsmokers.

Dental students should be more understanding of the general and oral health effects of smoking than other people. Smoking prevention programmers should be considered as an integral component of medical and dental teaching and practice.

Table (1): Mean the percentage of smoking and non- smoking group

	N	%
Smoking	20	33.3 %
Non-smoking	40	66.7 %
Total	60	100 %

Table (2): Mean of (Ds, DMFs) among smoking and non-smoking group

Smoke	Mean (Ds)	T- test	Mean (DMFs)	T- test
Smoking	4.60	= 0.22	9.55	= 0.17
Non-Smoking	4.33	P-Value = 0.828	9.25	P-Value = 0.864

Table (3): Mean of DMFT among smoking and non-smoking group

Smoke	Mean	T- test
Smoking	5.90	= 0.480
Non-Smoking	5.45	P-Value = 0.635

Table (4): Mean of (PLI , GI , Cal) among smoking and non-smoking group

G H smoke	PLI	GI	Cal
	Mean	Mean	Mean
Smoking	0.67	0.3	0.23
No Smoking	0.52	0.2	0.07
T- test	1.27	0.77	1.99
P- value	0.21	0.45	0.05

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