ORIGINAL ARTICLE

Association Between Smoking and Periodontal Disease

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ABSTRACT

Objective: To study the association between tobacco smoke and periodontal disease.
Study Design: Case-control study
Place and Duration of Study: Department of Dentistry, Sardar Begum Dental Hospital and Khyber College of Dentistry Peshawar from 1st July 2019 to 31st December 2019.
Methodology: Three hundred patients of age 20 to 50. Patients presenting with different dental problems were taken. Patient having any congenital anomalies, diabetes, blood dyscrasias, medication, malnutrition, immune system disorders and another systemic disease, parafunctional habits like bruxism, attrition, nail-biting, malocclusion, chemical and mechanical irritants, edentulous patients, tobacco chewers were excluded.
Results: Smokers with periodontal disease were 57.3% and non-smokers without periodontal disease were 70.6% the result was significant p-value was 0.0001. Periodontal disease with different level of smoking like non-smokers, light smokers, moderate smokers and heavy smokers the result was significant p-value was 0.0001.
Conclusion: Smokers experienced more periodontal diseases as compared to non-smokers.
Keywords: Smoking, Periodontal disease

INTRODUCTION

Periodontitis is an inflammatory disease of teeth supporting tissues destroying periodontal ligament, alveolar bone loss with gum recession and pocket formation.[1]Periodontal disease includes gingivitis which is reversible and non-destructive with few specific nonspecific bacterial invasion while periodontitis is irreversible and destruction of teeth supporting tissues like ligaments, cementum and loss of alveolar bone occurs because of specific periodontal pathogens and local irritating agents and may have periodontal pockets which are deepening of gingival sulcus.[2]

Periodontal disease is also associated with many risk factors for example age, sex, location, education, income, occupation, smoking status, tobacco use, and stress and alcohol consumption. Periodontal disease is also associated with medical conditions like diabetes, cardiovascular diseases, kidney diseases, arthritis, respiratory diseases and oral hygiene status. Moderate grade of periodontitis is initiated at an early age and clinically it is manifested at 35 years of age. In developing nations, the prevalence of periodontal is different in various areas of the world.[3] Smoking is the risk factor for periodontal diseases, while tobacco smoking is also estimated to cause an annual death rate of 8.3 m at end 2020. Smoking is unhealthy for periodontium safety by epidemiological studies. In the US national diet and health review, 41.9 percent of periodontitis was caused by smoking and up to 10.9 percent was also observed in former smokers. Although in Pakistan, 31.5 per cent of tobacco smokers and 30-35 percent of the general adult population is diagnosed with periodontal diseases.[4]Around the world about half of an adult people suffering from periodontitis, which eventually leads to tooth loss. It is caused by the interaction of gram-negative bacteria related to periodontal bacterial species and host immune response.[5]

National research on the periodontal disease is scanty in Pakistan, National Oral Survey[6] and some other studies provided information on periodontal disease and reported prevalence of the periodontal disease in Pakistan is 98%.[7-9]

As Khyber Pakhtunkhwa which is an educationally backward war-affected area of Pakistan and has low literary rate having direct access to any type of tobacco. This study was designed to find out the association between smoking and periodontal disease in patients who don't brush their teeth every day

PATIENTS AND METHODS

This is a case-control study with 300 sample size age 20 to 50 years (150 were cases and 150 were controls).The study was conducted in two dental hospitals Sardar Begum Dental Hospital and Khyber College of Dentistry Peshawar. The research was performed for three months. The collection of the appropriate sample was using unlikely convenient sampling techniques. The standardized questionnaire was used to collect data following receipt of verbal informed consent from patients. The research included patients who attended dental OPD. The patient was properly examined intraorally and in a dental chair, in good conditions. Mouth mirror, explorer 23(shepherd hook explorer) and a periodontal probe was used for intraoral examination of every patient. Periodontal disease was an outcome and dependent variable while independent variables are smoking, age, location and education. Periodontal disease index is used to assess the severity of the disease among smokers. The sample was divided into

four group's non-smokers, light smokers, moderate smokers and heavy smokers. Based on average daily cigarette consumption, smokers were classified as light (<10 cigarettes/d), moderate (≥10 to <20 cigarettes/d), or heavy (≥20 cigarettes/d) smokers[10].while patient having any congenital anomalies, diabetes, blood dyscrasias, medication, malnutrition, immune system disorders and other systemic disease, habits like bruxism, attrition, nail-biting, malocclusion, chemical and mechanical irritants, edentulous patients, tobacco chewers were excluded from the study. The data were analyzed in SPSS-20. Frequency and the percentage were calculated for data.

RESULTS

There 130 (43.3%) smokers and 170 (56.6%) were non-smokers who were asked to brush their teeth twice a day i.e. after breakfast and before going to bed. Smokers with periodontal disease were 57.3% while non-smokers without periodontal disease were 70.6% the result was significant p-value was 0.0001. Periodontal disease with different level of smokers e.g. non-smokers, light smokers, moderate smokers and heavy smokers were included and the result was significant p-value was 0.001 (Tables 1-3).

Table 1: Number of smokers and non-smokers

Smoking habit	No.	%
Smokers	130	43.3
Non-smokers	170	56.6

Table 2: Association between smoking and periodontal disease

Smoking habit	PD^+	PD^-	P-value
Smokers	86(57.3%)	44(29.3%)	0.0001
Non-smokers	64(42.6%)	106(70.6%)	

Table 3: Periodontal disease with different level of smoking

Level of smoking	PD^+	PD^-	P-value
Non-smokers	64	106	0.0001
Light smokers (≥10 cigarettes/day)	42	23	
Moderate smokers (10-20 cigarettes/day	27	16	
Heavy smokers (≥20 cigarettes/day)	17	5	

DISCUSSION

Smoking is a public health issue. It is a leading risk factor for the global burden of the disease. At the end of 2030, it is estimated that the annual mortality rate will be increased upto 8.3 million by tobacco smoking. Smoking is modifying factor for periodontal disease and has a negative influence on periodontal health. Prevalence of tobacco smoking in Pakistan is 31.5% while the prevalence of the periodontal disease in Pakistan in the general population is 30–35%.[4]

In the current study, there is an association between smoking and periodontal disease, p-value is 0.0001 shows the result is significant. In a current study, there are 43.3% of smokers while 56.6% are non-smokers. Smokers with periodontal disease are 57.3%. The results are similar to other studies work done by Mutamuliza et al[11] studied the risk factors of periodontal disease of adults in Rwanda and found that age, smoking status and some other factors are the significant risk factors for periodontal disease.

Smoking is a leading factor causing periodontal disease. There were 51.09%, 16.12% and 12.84% smokers reported with periodontal disease, caries and bleeding gums respectively. It is found that there is an association between smoking and periodontal disease p-value <0.001.[12]

Gender, age, occupation, smoking, some systemic diseases and oral hygiene habits were significantly associated with periodontal status (P≤0.037).[13] Lely et al[14] concluded that there is an association between smoking and periodontal disease with P-value 0.000 (p<0.05). The smokers had 4.43 times more periodontal disease as compared to non-smokers. Association between smoking and periodontal disease is found but it was modified by age as a periodontal disease was found to be reduced in the older population as compared to the younger population. Smoking is a significant aggravating factor for periodontal disease.[15] Tobacco in any form is more commonly used in male and its use cause periodontal disease.[16] Heavy smokers more than 20 cigarettes/day with 5 times greater risk of periodontitis as compared to never smokers in US NHANESsurvey.[17]

Ah-Young Jan[10] stated that Light smokers consume <10 cigarettes per day had no increase in periodontal disease as compare to non-smokers. A study conducted in a Japanese population with 1,332 sample size and aged 30-50 years including smokers with cigarette consumption as 1-19, 20 0r >21 cigarettes per day, as daily increased cigarette consumption leads to increase in periodontal increased as compared to never smokers. In this study, they did not mention about light smokers so no comparison was made between light smokers and non-smokers. In the present study light smoker, moderate smoker and heavy smokers associated with periodontal disease with significant results. Therefore present study showed periodontal disease among smokers than in non-smokers.

CONCLUSION

This study shows a positive association between cigarette smoking and periodontal disease. Smoking cause changes in periodontium which leads to periodontal disease. Patients should be advised to leave smoking as soon as possible and in return the patient will get benefits after quitting this habit.

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