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STUDY TO DETERMINE THE ASSOCIATION BETWEEN SMOKING AND PERIODONTITIS

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Abstract:
Smoking is an important factor in periodontitis. Many studies have found that active smoking is closely associated with the prevalence and severity of periodontal disease. The purpose of this study was to examine the association of smoking with the prevalence of periodontal disease. ***Material & Methods:*** *A Cross- sectional descriptive study was conducted over a period of 6 months from Oct 2018 to March 2019, in the Dental Department of Services Hospital Lahore. The study was approved by the Ethical Review Board/ Committee of Services Hospital Lahore. Informed consent was taken from the patients. A total of 500 smokers were selected through questioning during screening from the population of patients presenting to outdoor/ diagnosis department. The smokers underwent a further detailed periodontal examination and were screened for the presence of periodontal disease. They were also cross questioned to rule out other causative factor related to periodontitits such as poor oral hygiene and diabetes.* ***Conclusion and Clinical Significance:*** *Smoking is a significant risk factor for impaired periodontal health. This needs to be considered before treatment planning for good prognosis and affective results of the provided treatment. Hence this habit must be diagnosed during history taking, evaluation and patient should be instructed to minimize and ultimately stop cigarette smoking for best treatment outcome.*

Key words: *Smoking; periodontitis; periodontal disease; risk factor.*

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INTRODUCTION:

Periodontitits is associated with a number of factors (Table 1). Smoking is a risk factor of several diseases such as lung cancers, myocardial infarctions, cardio-vascular disease, chronic ischemic heart diseases, and strokes. It also affects the prevalence, extent, and se-verity of periodontal diseases. Many studies have shown the association between and periodontitis. Due to the high number of smokers in many countries, the association between cigarette smoking and periodontal diseases is a significant public health problem. The aim of this research was to examine evidence for the association between smoking and periodontal disease, to discuss its pathology and its adverse effects on the periodontium.

A total of 500 smokers were selected from the patients presenting to outdoor/ diagnosis dept of Dental Services Hospital, Lahore. The smokers underwent a detailed periodontal exam to evaluate the presence of periodontitits. It was noted that the accumulation of carbon debris on tooth surfaces of smokers leads to increased plaque buildup. Mature supra or sub gingival plaque leads to periodontitits. Moreover, a decrease in the vascular supply of the underlying epithelium and a resulting decrease in the concentration of WBC's and reduced immune response favored the progression of periodontal disease.

Of the smokers who were screened for periodontitits, a large percentage (68 %) had some form of periodontitits whether it was bone loss, pocket formation or mobile teeth.

MATERIAL & METHODS:

A Cross- sectional descriptive study was conducted over a period of 6 months from Oct 2018 to March 2019, in the Dental Department of Services Hospital Lahore. The study was approved by the Ethical Review Board/ Committee of Services Hospital Lahore. Informed consent was taken from the patients. A total of 500 smokers were selected through questioning during screening from the population of patients presenting to outdoor/ diagnosis department of Dentistery, Services Hospital Lahore. The smokers underwent a further detailed periodontal examination and were screened for the presence of periodontal disease. They were also cross questioned to rule out other causative factor related to periodontitits such as poor oral hygiene and diabetes.

DISCUSSION AND LIMITATIONS:

Many authors suggested that tobacco smoking is associated with increased accumulation of supragingival and subgingival dental calculi. Although smokers had more calculus deposits than nonsmokers, the effect of smoking was independent of the number of present calculus debris. There have been consistent reports of more calculi in smokers than in nonsmokers [5].

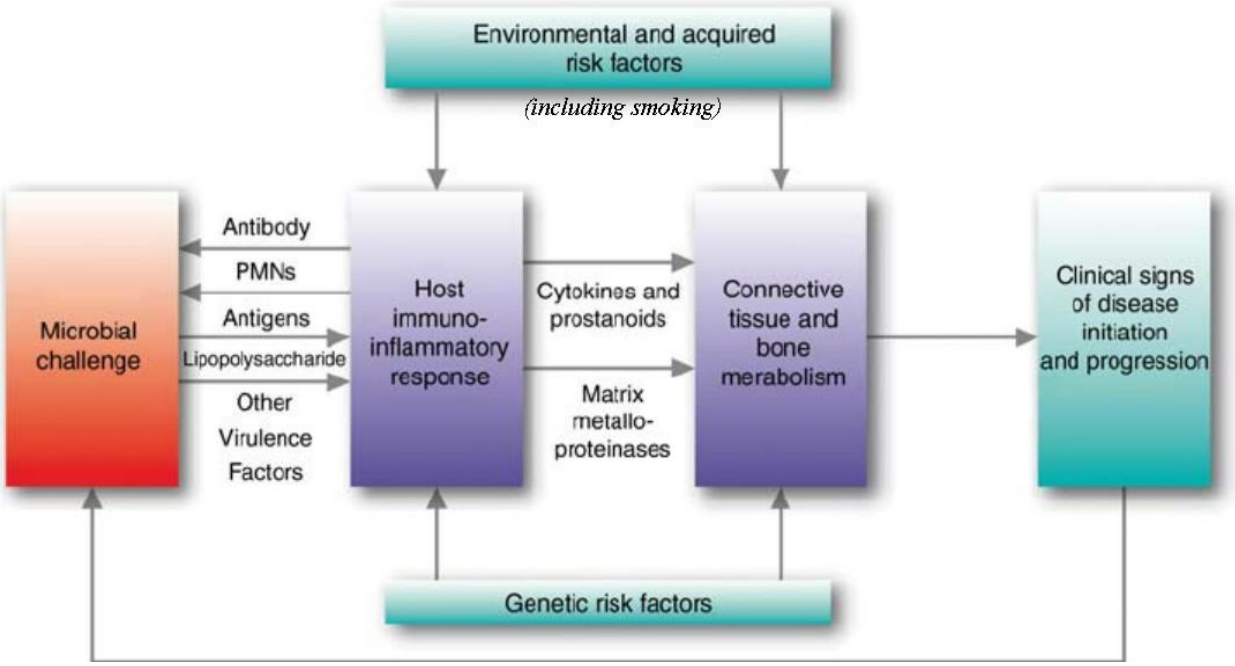
In three-day-old plaque, the proportion of gram-positive bacteria was statistically higher in smokers in comparison with nonsmokers [3]. There are some controversial findings. Bergstrom et al. found no difference in mean plaque index scores amongst 285 musicians (31% smokers and 69% nonsmokers). In addition, they found no quantitative difference in the growth rates of plaque between smokers and nonsmokers [4].

In another study, PDL cells were plated for one day and then were treated with various concentrations of smoke extract (CSE). It was concluded that CSE causes cell death at concentrations equal to or greater than 5%. PDL cells-induced collagen gel contraction was reduced at CSE concentrations of 1.5%. CSE selectively increased the expression of collagen Vα3, decreased collagen XIα1, and increased the expression of matrix metalloproteinase 1 (MMP1), MMP3, and to a lesser extent MMP2 and MMP8. CSE also increased the expression of integrins α1, α2, and α10 (collagen receptors) as well as integrin α9 (a tenascin receptor) (28).

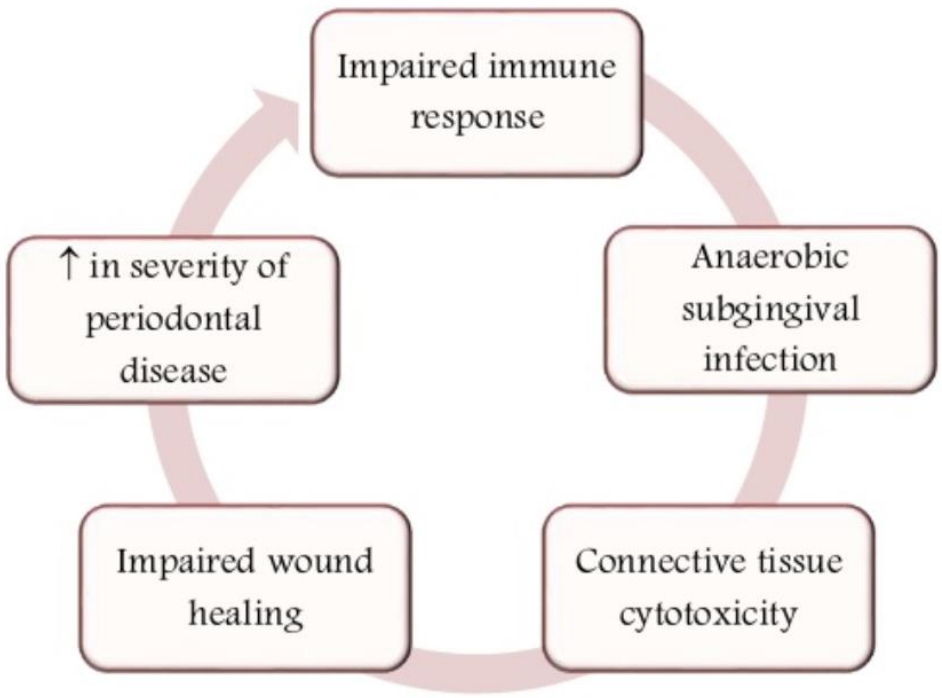
Bergstrom et al. declared that probing depth (PD), al-veolar bone loss, and tooth mobility were significantly increased in smokers [(4).] It has been noted that cigarette smokers had significantly fewer teeth than nonsmokers . The effect of smoking in tooth loss is due to periodontal disease rather than tooth decay. Gomes et al. showed that visible plaque index, gingival bleeding index, and bleeding on probing were similar in smokers and nonsmokers; however, regardless of tooth surface, periodontal PD in buccal/lingual sites and clinical attachment loss were more in smokers than in nonsmokers [(20).] Severe periodontal disease with increased bone loss, greater periodontal attachment loss, gingival recession, and periodontal pocket formation are more frequent in smokers [(48).] Many authors declared that effect of cigarette consumption and periodontal attachment loss were dose dependent. Destructive effects of smoking on periodontal tissues may be mainly from systemic side effects and almost independent of the site within the mouth although some additional local effects may be present in areas such as anterior palatal sites [(49).] Comparing clinical parameters of periodontal disease between smokers and nonsmokers showed that clinical symptoms were greater in smokers. The symptoms were presented by

a greater number of perio pockets and gingival recession, excessive loss of epithelial attachment, and accelerated alveolar bone loss; however, gingival bleeding was reduced in these patients [48, 51]. An additional analysis of gingival tissue adjacent to periodontitis sites showed that MMP-2 levels were higher in the exposed than in unexposed animals. This finding suggests that MMP-2 might be one of the molecules responsible for the increased tissue degradation in the periodontal tissues of smokers.

Table 1 –Risk factors associated with periodontal disease
1. Genetic predisposition
2. Smoking and tobacco use
3. Mal-aligned or crowded teeth
4. Parafunctional habits e.g. Grinding or clenching of teeth
5. Hormonal imbalance e.g. during pregnancy
6. Medicines such as Phenytoin, Cyclosporine and Nefidipine
7. Systemic Diseases e.g. Diabetes
8. Poor nutrition e.g Scurvy



Mechanism of periodontal disease progression by smoking



CONCLUSIONS:

Tobacco smoking has widespread systemic effects, many of which may provide mechanisms for increased susceptibility to periodontitis and the poor response to treatment. The frequency of smoking directly affects the prevalence of periodontal disease. The smoking status of the family members may also be relevant to both behavioral influences and the potential consequence of passive smoking. Smoking changes the normal bacterial population in the mouth and human immune response that leads to destruction of the supporting tissues of the tooth. More research needs to be done to study the exact means by which smoking affects the health of peridontium. It has been noted that a down regulation of anti-inflammatory factors along with with an upregulation of proinflammatory cytokines is involved. Different byproducts of cigarette smoke might have different effects on the progression of periodontitis. Moreover, treatments in patients with periodontal disease must be focused on understanding the association between genetic and environmental factors. We can identify our patients' risks and achieve better results only through customizing dental treatment to suit individual needs better. To pursue strategies of prevention, early detection of disease, and prompt intervention, the dental profession should continue to target and educate patients regarding the effects of smoking on periodontal health. In this way, dentistry will also make a significant contribution to the general health and well-being of our youth and future generation.

Conflict of Interest.

The authors do not report any conflict of interest in this study. No financial help of any sort was received in funding this study

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