

Association of Sociodemographic Factor and Tobacco Consumption with Periodontitis

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ABSTRACT

Objective: To determine the association of Sociodemographic Factors and Tobacco Consumption with Periodontitis of Paramedical staff.

Methods: This cross sectional, comparative study was conducted at Muhammad Medical College in collaboration with Dentistry Department LUMHS, from January 2014 to June 2014. The study was approved by ethical committee. The study sample was 91 adults all were males. Data was collected by interview and clinical examination was done to find the periodontal status. Demographic details were recorded on predesigned proforma and study population included the paramedical staff working in the basic medical sciences department.

Results: The age range was 25-60 years. All males were included as the females did not consent. The study population was 91 individuals; the prevalence of periodontitis was seen in 67(74%) staff members and 24(26%) had healthy gums. When the correlation between tobacco consumers and periodontitis was analyzed that exhibiting periodontitis was 55 that is 82 % staff members were tobacco consumers and 12 that is 18% had no history of tobacco consumption, the p value was <0.001 and showed highly significant results when tobacco consumers and non-consumers were compared.

Conclusion: Periodontitis is a health hazard and predisposing factors are a lack of oral hygiene, poor education and consumption of tobacco.

Keywords: Periodontitis, Tobacco, Gutka/Smoking, Risk factors, Poverty.

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INTRODUCTION:

Amongst oral diseases periodontitis is most common and its features include inflammation and ultimately resorption of alveolar bone.¹ Causative factors are numerous and once it starts it become irreversible, it is initiated by microorganisms and then host factor promote its

propagation.² Tobacco chewing and smoking is well-known cause for initiation and propagation of periodontitis.³

Many results acknowledge that tobacco promotes the destruction of periodontium through several pathways which involve the micro-circulatory system as well as defense system concerned with connective tissues and bone metabolism of patient.⁴

If periodontal inflammation is strong and for a longer period it produces loss of teeth, hence oral functions are involved like the ability to chew, talk and facial looks. Studies published from 1965-2000 Surgeon General's report 2004⁵ reported that these studies focused on smoking and its relationship with health and identified that main causative correlation is definitely present between tobacco and periodontal disease and they

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thoroughly studied active smoking and health problems and found that there is ample evidence to draw conclusion between periodontitis and smoking or chewing tobacco. Periodontitis is a health hazard, biological mechanism of periodontal disease is characterized by preponderance of microorganisms which are highly resistant and depression of host defense activity also occurs, the mechanism that explains the relationship between smoking and periodontal disease is that nicotine acts on host cells and alters inflammatory response to bacteria and act in a toxic way either directly or via other mechanisms to damage periodontal tissue.

This study was conducted to assess the severity of periodontitis in tobacco users either consumed in the form of gutka or smoking in the form of cigarette in the paramedical staff of the medical college.

METHODS:

This study was conducted from January 2014 to June 2014, approved by ethical committee. Demographic details were recorded on pre-designed proforma and study population included the paramedical staff working in the basic medical sciences department. Written consent was taken from them. Severe periodontitis was labeled as two or more interproximal sites with 6 mm attachment (not on the same tooth) and one or more interproximal sites with 5 mm pocket depth. Moderate periodontitis was identified as two or more interproximal sites with 4 mm clinical attachment (not on the same tooth) or two or more interproximal sites with pocket depth of 5 mm (not on the same tooth). Mild periodontitis was classified two or more interproximal sites with 3 mm attachment and two or more interproximal sites with 4 mm pocket depth (not on the same tooth) or one site with <5 mm. Inclusion criteria for this study were: Paramedical staff aged above 25 and less than 60 years and not taking antibiotics. Exclusion criteria were: Edentulous, Staff members with braces and/or dentures

The demographic details regarding name, age, sex, salary, smoking and eating habits were recorded on a pre-designed proforma. Examination

of teeth was done, the status of periodontitis was assessed, attachment loss and pocket depth were done with the help of periodontal probe HU FRIEDY PCP 2 with 2-4-6-8-10-12 mm graduation, it was positioned parallel to the long axis of the tooth at each site, bleeding from gums was also recorded.⁶ The data was analyzed and was presented in percentages and by SPSS Version 22.

RESULTS:

In our study, the age range was 25-60 years. All males were included as the females did not consent. The study population was 91 individuals; the prevalence of periodontitis was seen in 67(74%) staff members and 24(26%) had healthy gums. When the status of periodontitis was assessed it was found that mild periodontitis was present in 30(44%) workers. Moderate periodontitis in 25 that is 38% and severe in 12 that is 18% of staff members. When the correlation between tobacco consumers and periodontitis was analyzed that exhibiting periodontitis was 55 that is 82% staff members were tobacco consumers and 12 that is 18% had no history of tobacco consumption, the p value was <0.001 and showed highly significant results when tobacco consumers and non-consumers were compared.

DISCUSSION:

Periodontal disease is a gum disease, it is a chronic infection and produces difficulty of mastication, tooth mobility, tooth loss. This, in turn, will affect the quality of life (CDC 2013).⁷ In the US 47% adults aged >30 years have periodontitis. 8.7% had mild 30% had moderate and 8.5% had severe periodontitis. In our study population, the incidence was 74% this might be due to poverty, lack of knowledge, nutritional deficiency, inadequate dental care, improper oral hygiene. The prevalence of mild, moderate and severe periodontitis was 44%, 38%, 18% respectively.

Periodontitis is dependent on many factors this includes complex interactions of bacteria in dental plaque which includes dental biofilm, the strength of host response and predisposing environmental factors. The most important

Table-1: Comparison of Periodontitis with non-periodontitis patients on the basis of demographic variables

Demographic Variables		Total No.	Periodontitis	No-Periodontitis	p value
Age in years	25 to 35	51	40(78%)	11(22%)	<0.001
	36 to 45	25	19(76%)	06(24%)	
	46 and above	15	08(53%)	07(47%)	
	Total	91	67(74%)	24(26%)	
According to salary	< 10 thousands	25	22(80%)	03(12%)	<0.001
	> 10 thousands	40	35(87%)	05(13%)	
	>20 thousands	26	10(39%)	16(61%)	
	Total Numbers	91	67(74%)	24(26%)	
According to	Illiterate to primary	40	38(95%)	02(05%)	<0.001
	Metric to inter	25	19(76%)	06(24%)	
	Graduate and above	26	10(38%)	16(72%)	
	Total number	91	67(74%)	24(26%)	

Table-2: Comparison of Periodontitis in Tobacco Consumer and Non-Tobacco Consumers and its Severity.

Periodontitis	Tobacco Consumers (Periodontitis)	Tobacco Non-Consumers (Periodontitis)	p value
67 (100%)	55 (78%)	15 (22%)	< 0.001
Severity of Periodontitis	Numbers	% of severity of Periodontitis	
Mild	30	44%	
Moderate	25	38%	
Severe	12	18%	
Total	67	100%	

environmental factor is tobacco consumption either in the form of smoking or chewing. This increases the risk and prolongs the course of periodontitis. Dangerous effects of smoking /chewing tobacco have been known for several years, cigarette smoking has been identified as one of the cause of death which is preventable (CDC

2013)⁷ whereas, it is labeled 2nd strongest modifiable risk cause for periodontal disease and first reason for periodontal disease is a dental plaque. Our finding also suggests that periodontitis is common in tobacco consumers. It has also been reported by Haber J, in 1993 that smokers are almost 4 times more likely to have severe

periodontitis than non-smokers.⁸

Our study included only the male adults, therefore, we cannot report on the prevalence in females but many studies have reported preponderance in males. Zhang reported it is 3.5 times more common in males.⁹ The mild to moderate form of periodontitis is the most common with prevalence estimate ranging 13-55% depending on the sample characteristic and case definition used.^{10,11} We found the highest incidence in individuals consuming tobacco and the incidence of a mild degree of periodontitis was highest. Tobacco consumption was highest in young age group of 25-35 years; the young generation is highly addicted to tobacco.¹²

Tobacco could be consumed in various forms but smoking in the form of cigarette leads to an alteration in the microcirculatory system and changes in vascular functions this leads to an improper or negative effect on immune and inflammatory reactions in periodontal tissues. Those who smoke have decreased blood vessels in the inflamed area of gingiva as compared to non-smokers.¹³ Chronic smokers have well documented negative effect on vessels of periodontal tissues. Initial exposure to tobacco leads to redness of gingiva, which is due to simultaneous increase in blood pressure against a small but well-defined vasoconstriction seen in healthy gums, this is mediated by sympathetic nerves.¹⁴

Smoking even one cigarette has been suggested to have the potential to cause a decrease in gingival blood flow.¹⁵ Minute but consecutive vasoconstriction and the inability for revascularization due to cigarette smoking lead to loss of immune response and late healing thereby predisposing to periodontal disease.¹⁶ Vascular dysfunction produces hypoxia in gums when the oxygen tension in the pockets is compared in smokers and non-smokers it was found that oxygen tension was low in smokers giving evidence that supports detrimental effect on the vascular system.¹⁷ Many experiments conducted on animals and human have drawn the inference that tobacco has a prolonged effect and this is not a simple narrowing of blood vessels. The main action on vessels of gingiva is decreased redness

less oozing of blood during probing and fewer vessels will be visible on clinical examination or histology.

Therefore in latest study by Johnson & Guthmiller on the etiology for negative effects of smoking on gums is that there is less immunoglobulin G2 production, long-term reduction in blood flow, vascularity and overgrowth of periodontal bacteria and neutrophils play a destructive role, negative effects on growth factor and also on cytokine production there is depressed fibroblast growth as well as decrease attachment and collagen production.¹⁸ Biological mechanisms that explain the relationship between smoking and periodontal disease is that tobacco contains nicotine which directly or indirectly deteriorate periodontal tissue. It is estimated, tobacco use kills more than 5 million people per year; this means 1 in every 10 adult's death worldwide. It is also a common risk factor in a number of chronic diseases including cancer lung disease and cardiovascular diseases.¹⁹

CONCLUSION:

Periodontitis is a health hazard and predisposing factors are a lack of oral hygiene, poor education and consumption of tobacco.

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