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Original Research

Knowledge of smoking and periodontal diseases: A cross-sectional study

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ABSTRACT:
Background: Smoking has been considered to be an epidemic affecting globally. Its side-effects as well as adverse effects are of common knowledge. These may range from discoloration or staining of tooth structures to manifestations such as oral and lung cancers. The smoking habit has demonstrated major consequences on periodontal tissue health and may even affect outcomes of periodontal treatment or therapy. Although awareness of these oral effects among the general population has been shown to increase, very little is known about the side-effects of smoking on the health of the periodontium. **Aim**: This study aimed to assess the knowledge regarding the presence of smoking habits and periodontal diseases among the general population. **Materials and methods**: This prospective and cross-sectional study analysis was performed on 300 study participants who attended the dental out-patient department for seeking dental treatment. The objective of this study was explained in a detailed manner to all study subjects. After this, written informed consent was collected. Statistical data analysis was performed by analyzing the collected data by using the SPSS (Statistical Software Package for Social Sciences), Version XII. **Results**: 60 % of subjects were smokers whereas 40 % of subjects had no history of smoking. 55 % of study participants were educated among the smokers' group while 45 % among the non-smokers had no education. 15 % of study participants were of low-income group. On analyzing the frequencies of maintaining oral hygiene status, it was observed that there was no significance (P = 0.6) between smokers who performed brushing regularly on comparing with subjects with no history of smoking. However, in the present study, a low level of knowledge was seen in both the smokers and non-smoking subjects on the bad effects of the habit of smoking on periodontal health. **Conclusion**: There appears to be a lack of knowledge in the general population regarding the effects of smoking on periodontal health and thus, efforts should be made to increase the awareness by dentists who meet their patients regularly.
Keywords: Smokers, non-smokers, periodontitis, knowledge.

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INTRODUCTION

There are various risk factors responsible for causing periodontal diseases or periodontitis which include quality or nutritionally balanced diet, smoking habit, different social and demographic factors such as diabetes mellitus, hypertension, etc. [1]

Periodontal diseases are comprised of a heterogeneous group of diseases that are found affecting periodontal tissues. Most common periodontal diseases include gingivitis and periodontitis. Periodontitis is the commonest form of oral disease responsible for bone destruction among the adult population. Untreated cases

of periodontitis may inevitably cause loss of teeth, impairment in mastication which ultimately results in bad esthetics. Besides this, periodontitis also causes adverse alterations affecting physical health, the average quality of life (QoL), and finally, economic productiveness. [2]

A variety of ill effects of smoking habit has been well cited in the literature. It is a fact that smoking in any form can seriously affect and impair different body organs and various parts of the human body resulting in diseases such as lung carcinoma, bronchitis, premature or early childbirth, cardio-vascular disorders, cerebrovascular diseases, atherosclerosis, etc. [2,3]

Inhalation of tobacco products causes impingement over a wide plethora of periodontal disease therapy or treatment plans that include mechanical debridement along with local and systemic anti-microbial therapies, periodontal regenerative surgeries, and oral implant placements. [4]The association of smoking with the initiation of periodontal disease is evidence-based as it supports a definitive diagnosis of "smoking-associated periodontitis" which is characterized by gingival fibrosis, gingival erythema, and occurrence of edema which is related to the severity of the disease. Also, smoking-related periodontitis possesses a proportionately greater amount of pocket formation in anterior maxillary lingual sites and distinctive recession of the gingiva in these sites, in addition to a significant lack in any association between periodontal health status and levels of oral hygiene practices followed. [4]In supportive evidence, analytical studies have demonstrated that subjects who smoke have a higher incidence of loss of teeth when compared to those who do not indulge in smoking. [4, 5, 6]

The habit of smoking tobacco leads to an impairment of gingival microcirculation and alteration in vascularity. Thus having a negative influence on the local immunological system resulting in an inflammatory process. It has been seen that those who smoke have lesser numbers of blood vessels increasing inflammation in periodontal ligament tissues when compared with non-smoking individuals. Thus, repeated cycles of vasoconstriction and impairment of vascularization due to the presence of smoking habit may cause sympathetic vasoconstriction resulting in a lowered immunological response. [7,8[Thus, smoking cigarettes is an important risk factor in the development of periodontitis.[9] Apart from having a poor effect on periodontal tissues, smoking also, causes a delay in healing of oral wounds following extraction of teeth or surgeries, can cause bad breath or halitosis and discoloration of teeth. [10]

Numerous studies provide substantial evidence of poor periodontal health in smokers. [11] Also, it has been seen that smokers suffering from diseases of periodontium report aggressiveness along with the severity of the disease. Also, there is a lack of knowledge regarding the adequacy of brushing techniques or frequency of brushing among subjects. [12]

Thus, the current study aimed to assess the knowledge regarding the effects of smoking habits on periodontitis in subjects seeking dental treatment in a tertiary hospital.

MATERIALS AND METHODS

This prospective, cross-sectional study analysis was carried out on 300 study participants who attended the dental out-patient department (OPD) for dental treatment. This study was conducted by following guidelines proposed by the World Medical Association Declaration of Helsinki". The purpose of the study was explained in detail to all study participants. Following which, informed consent was obtained. Inclusion criteria for selecting study subjects were- 1) all study participants were males within the age range of 18 years and above. A pre-validated questionnaire comprising of-questions regarding patient's- a) age; b) gender; c) level of education; d) income generated monthly e) frequency of visits to dentists; f) nature and frequency of oral hygiene procedures' g) any medical or systemic conditions such as- diabetes, hypertension and cardiovascular diseases; h) presence or absence of smoking habit; i) knowledge regarding effects of smoking on periodontal health.

STATISTICAL DATA ANALYSIS:

The collected data was analyzed by using the SPSS (Statistical Software Package for Social Sciences), Version XII. Chi-square test was used for estimating the association between smoking with social and demographic characteristics and knowledge regarding periodontitis. The level of statistical significance was fixed at a probability (P) value of lesser than 0.05.

RESULTS

Of the total cases studied, 60 % of the study group had a smoking habit while 40 % were non-smokers. 55 % of study subjects were educated in the smokers' group while 45 % of non-smokers received no education. 15 % of the study participants were of the low-income group. On analyzing the frequency of maintaining oral hygiene, it was found that there was a non-significant difference (P = 0.6) between the numbers of smokers who brushed regularly when compared to those who had no history of smoking. However, in this study, low awareness was observed among both smokers and nonsmokers groups regarding the effects of smoking on periodontitis. (Tables 1, 2, and 3)

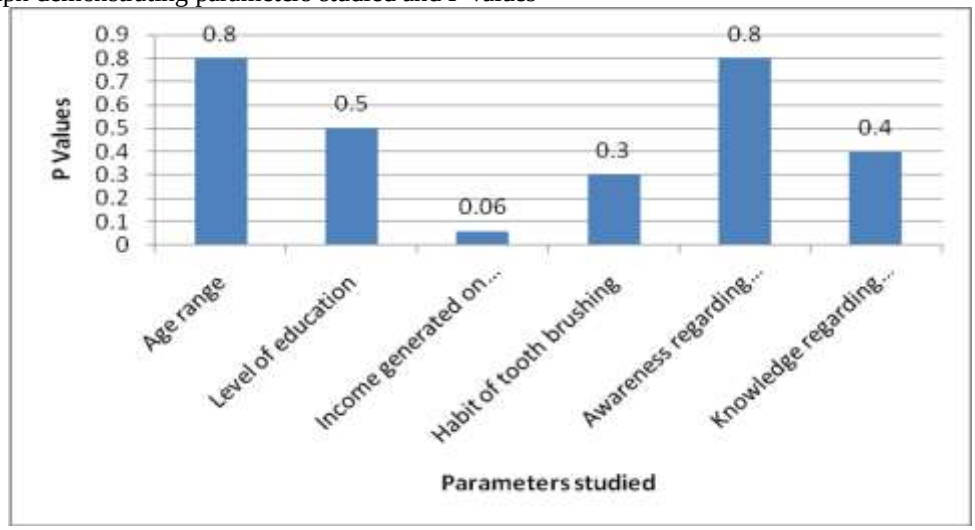
Table 1: Demonstrating socio-demographic features and habits seen among smokers along with non-smokers

Studied variables or parameters	Smokers (n = 60) (n %)	Non-smokers (n = 40) (n %)	P values
(I) Age range: a. 18 to 34 years b. 35 to 55 years c. 56 to 80 years	 58 32 10	 53 29 18	 0.8
(II) Level of education: a. Educated b. Uneducated	 72 28	 29.1 70.9	 0.5
(III) Income generated on monthly basis- (Low-income group with < 5000)	15	75	0.06
(IV) Habit of tooth brushing	48	52	0.3

Table 2: Showing an assessment of knowledge regarding periodontitis in smokers and non-smoking subjects

Studied variables or parameters	Smokers (n %)	Non-smokers (n %)	P values
(I) Awareness regarding periodontal health or periodontitis a) Yes b) No	 58 42	 59 41	0.8
(II) Knowledge regarding causes of gum or periodontal diseases a. Intake of sweetened food or beverage b. Presence of plaque c. Both plaque and sweet food or beverage d. No knowledge on this	 20.1 11.1 10.4 58.4	 9.2 22.3 9.4 79.1	0.4

Graph I: Graph demonstrating parameters studied and P values



DISCUSSION

The current study participants had more smokers (60 %) when compared to non-smokers (40 %). Similarly, the study cohort had a more educated class when compared to those with no education. However, there was a lack of awareness in both the study groups when comparing various parameters for judging knowledge regarding an association of smoking habit with the occurrence of periodontitis.

Mullaly (2004) et al in their study demonstrated a high odds ratio of 14.1 in subjects with periodontitis who regularly smoked. Thus, indicating that the presence of smoking acts as a strong predictor for chronic periodontitis. [13]

Similarly, Laxman and Annaji (2008) in their cross-sectional study found that smoking tobacco contributes significantly towards the development of periodontitis.[14] Also, Buduneli (2004) in his cross-sectional analysis obtained a positive correlation between smoking habits and various biochemical and clinical presentations of periodontitis and the risk of development of periodontitis among individuals who smoked.[15] Brothwell (2001) found that 40 % of cases with chronic periodontitis have a high odds ratio of 5.4.[16]

Sadikin et al (2015) assessed the awareness regarding periodontitis and knowledge level in subjects who had the habit of smoking and in those who were non-smokers. It was observed that 80.2 % of individuals who never smoked and 68.4 % of subjects who had a smoking habit were aware of the fact that the habit of smoking affected the health of the periodontium. 27 % of non-smokers believed that the reason behind tooth mobility was due to the effects of smoking, while none of the smokers exhibited any awareness regarding this. However, this study concluded a low level of knowledge and awareness regarding the association between smoking and periodontitis among smokers when compared to those who had never smoked. [17]

Terrades et al (2019) analyzed the knowledge of patients on the deleterious effects of smoking and their understanding regarding the role of dental professionals in the cessation of a habit of smoking. The study results showed that the patient's exhibited good awareness regarding a dentist's role in the cessation of the smoking habit. However, there was less awareness among smokers regarding the ill-effects of smoking on gingival and periodontal health and disease. [18]

Lung et al (2009) reported that 78 % of studied patients had awareness regarding the negative effects of smoking on oral health. Of these, 52 % of patients did not know the ill-effects of smoking on oral tissues whereas, hardly 6 % were of any knowledge regarding a link present between oral disease and smoking habit. [19]

Njorobi et al in 2018 conducted an assessment of the knowledge and practice on periodontitis involving a total of 388 Tanzanian adults. They observed that patients who had mobile phones, had access to audiovisual media and with over seven years of educational status had more knowledge about periodontal health and regularly practiced oral hygiene protocols more elaborately.[20]

Dye et al in 2006 reported that individuals who are in habit of smoking relate to periodontal diseases more when compared to those who had no smoking habit. [21]

Besides, Yahya et al in 2017 made observations that the non-smokers possessed greater knowledge about smoking being the cause of halitosis (bad breath) and oral cancer. [10] However, Lung et al (2005) in their analysis found that approximately 6 % of study participants possessed some knowledge regarding the effects of smoking on oral health, mainly periodontal issues. [22]

CONCLUSION

Smoking has been repeatedly established as an important and significant risk factor for causing periodontal disorders, mainly, periodontitis. Tobacco acts by reducing the flow of blood to gingival tissues that cause deprivation of oxygen supply along with nutritional reach. This prevents gingiva from maintaining good health and eventually, by leaving it susceptible to a multitude of bacterial infections. However, there appears to be limited knowledge among the general population regarding the ill effects of smoking on periodontal tissues hence, the general dental practitioners and specialists need to educate all patients visiting them for any type of dental treatment, therapy, or consultation.

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