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ORIGINAL ARTICLE

Effect of Smoking on Periodontal Health: Awareness among Azra Naheed Dental College Patients

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ABSTRACT

Background and Aim: Smoking is one of the most preventable causes of premature mortality around the globe. In addition to causing unattractive tooth staining, periodontal disease, bad breath, wounds impaired healing, and precancerous conditions, smoking is also detrimental to oral health. The present study aimed to determine the effect of smoking on periodontal health and to identify the level of awareness among smokers about the effects of smoking on their oral health.

Methods: A cross-sectional study was carried out on 200 participants in Azra Naheed Dental College (ANDC), Lahore from January 2022 to September 2022. This self-administrated questionnaire survey was used to determine sociodemographic characteristics, smoking cessation programs and individuals' willingness to quit smoking, as well as awareness of oral health affected by smoking. Dental patients aged ≥19 were enrolled. The questionnaires asked about the demographics of participants, their awareness regarding smoking effects on oral conditions, including staining of teeth, oral cancer, delayed wound healing, gum disease, and dental implants.

Results: Of the total 200 participants, there were 144 (72%) male and 56 (28%) females. The overall mean age was 35.8±14.1 years. Age-wise distribution of patients was as follows: 138 (69%) in 19-40 years, 51 (25.5%) in 41-60 years, 6 (3%) in 61-80 years, and 5 (2.5%) >80 years. About 57 (28.5%) had past medical history, out of which hypertension (HTN) was the most prevalent medical history 32 (16%) followed by combined hypertension and diabetes cases 13 (6.5%), diabetes 5 (2.5%), asthma 4 (2%), and vocal cord surgery 3 (1.5%). Regarding Dental history, the incidence of extraction and scaling, scaling, filling, extraction, extraction and filling, scaling extraction and filling, restoration, Root canal treatment (RCT), restoration and RCT, denture, artificial teeth, and capping were 21 (10.5%), 28 (14%), 15 (7.5%), 15 (7.5%), 12 (6%), 6 (3%), 1 (0.5%), 1 (0.5%), 1 (0.5%), 2 (1%), and 2 (1%) respectively. About 82 (41%) participants were smokers among total participants. The incidence of toothless, staining, halitosis, bad taste, effect on gums, delay in healing, tenderness, pain cured, bleeding gums, loose tooth, prostho work, and bad experience were 83 (41.5%), 151 (75.5%), 161 (80.5%), 75 (37.5%), 101 (50.5%), 63 (31.5%), 83 (41.5%), 113 (56.5%), 101 (50.5%), 65 (32.5%), 39 (19.5%), and 23 (11.5%) respectively.

Conclusion: The present study concluded that only 8% of respondents knew that smoking is associated with periodontal diseases, illustrating the lack of awareness of patients regarding the link between smoking and periodontal diseases across the board.

Keywords: Periodontitis, Smoking, Periodontal health, Assessment

INTRODUCTION

Smoking is one of the leading preventable causes of deaths worldwide[1]. Tobacco use causes cancer, lung disease, stroke, diabetes, heart disease, and chronic obstructive pulmonary disease (COPD). People who quit smoking before the age of 35 had the same death rate as those who never smoked[2, 3]. Gingiva, cementum, alveolar bone, and periodontal ligament are the four components of periodontium. Periodontits disease is regarded as one of the primary causes of tooth loss worldwide[3-5]. Periodontitis is due to bacteria aggregation in plaque collecting on the surface of teeth and the host's reaction to that. This inflammation results in the loss of periodontal support for the tooth, the degradation of connective tissue attachment, increasing periodontal pocket development, and eventually bone loss[6]. Although tooth plaque containing bacteria is the primary cause of periodontal illnesses, risk factors can alter the host response to these infections, altering the course of periodontal diseases and the rate at which they advance. One of these risk factors is tobacco use. Tobacco smoking has been closely linked to periodontitis, higher attachment loss, and smokers are more prone to advanced and severe types of periodontitis than nonsmokers[7, 8].

Smokers are generally at greater risk to acquire periodontitis and are more susceptible to experience tooth loss than nonsmokers during periodontal care[9]. Tobacco use has been identified as a significant risk factor for a variety of systemic disorders such as lung cancer, cardiovascular disease, and respiratory ailments[10]. Numerous studies reported that tobacco smoking causes harm in the mouth, ranging from aesthetic concerns like teeth yellowing or discolouration to potentially fatal diseases like oral cancer[11]. Smoking is known to enhance an individual's vulnerability to periodontal disease, resulting in a poor response to both surgical and nonsurgical periodontal therapy[12]. Tobacco use has been associated to lung illness, poor pregnancy outcomes, and cardiovascular disease[13]. Furthermore, smoking has been shown to impair dental health by hastening the periodontal disease start, progression, and severity[14], which is caused by periodontal pathogen's promising environment formation within the oral cavity[15]. Persistent smoking frequently lowered gingival bleed, masking one of the main clinical markers used by dentists to assess periodontal health. This frequently leads to misdiagnosis and the failure to recognize periodontitis in its early stages. The purpose of this study was to better understand the impact of cigarette smoking on periodontal health in the Pakistani population.

METHODOLOGY

A cross-sectional study was carried out on 200 participants in the Azra Naheed Dental College, Lahore from January 2022 to September 2022. This self-administrated questionnaire survey was used to determine sociodemographic characteristics, smoking cessation programs and individuals' willingness to quit smoking, as well as awareness of oral health affected by smoking. Dental patients aged ≥19 were enrolled. The questionnaires asked about the demographics of participants, their awareness regarding smoking effects on oral conditions, including staining of teeth, oral cancer, delayed wound healing, gum disease, and dental implants. Patients in the investigation who consumed at least one cigarette per day were classed as current smokers. All the patients who had

previously periodontal treatment or who had certain systemic disorders were excluded. Patients who met the inclusion criteria were clinically assessed using a clinical examination equipment probe known as the Michigan O probe with William markings. According to WHO recommendations[16], this is a light weight probe used to detect probing depth, recession, and attachment loss in the oral cavity. Furcation involvement was discovered and evaluated using another probe called the Nabors probe. Other variables investigated included bleeding on probing as well as the presence of plaque and calculus. SPSS version 27 was used to analyses the data. For statistical calculations, the Chi square test and frequency tabulation were utilized.

RESULTS

Of the total 200 participants, there were 144 (72%) male and 56 (28%) females. The overall mean age was 35.8±14.1 years. Age-wise distribution of patients was as follows: 138 (69%) in 19-40 years, 51 (25.5%) in 41-60 years, 6 (3%) in 61-80 years, and 5 (2.5%) >80 years. About 57 (28.5%) had past medical history, out of which hypertension (HTN) was the most prevalent medical history 32 (16%) followed by combined hypertension and diabetes cases 13 (6.5%), diabetes 5 (2.5%), asthma 4 (2%), and vocal cord surgery 3 (1.5%). Regarding Dental history, the incidence of extraction and scaling, scaling, filling, extraction, extraction and filling, scaling extraction and filling, restoration, Root canal treatment (RCT), restoration and RCT, denture, artificial teeth, and capping were 21 (10.5%), 28 (14%), 15 (7.5%), 15 (7.5%), 12 (6%), 6 (3%), 1 (0.5%), 1 (0.5%), 1 (0.5%), 2 (1%), and 2 (1%) respectively. About 82 (41%) participants were smokers among total participants. The incidence of toothless, staining, halitosis, bad taste, effect on gums, delay in healing, tenderness, pain cured, bleeding gums, loose tooth, prostho work, and bad experience were 83 (41.5%), 151 (75.5%), 161 (80.5%), 75 (37.5%), 101 (50.5%), 63 (31.5%), 83 (41.5%), 113 (56.5%), 101 (50.5%), 65 (32.5%), 39 (19.5%), and 23 (11.5%) respectively. Figure-1 illustrates the gender's distribution. Table-I represents the age-wise distribution of participants. Figure-2 depicts the medical history of participants. Incidence of different types of dental history is shown in Figure-3. Table-II shows the prevalence of varying levels of tooth staining among smokers' patients.

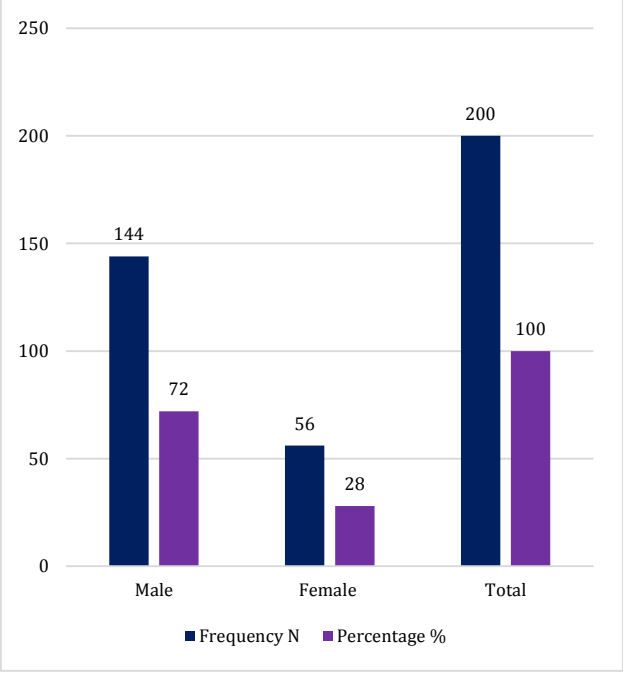

Figure-1: Gender's distribution (n=200)

Table-1: Age-wise distribution of participants (n=200)

Age groups (years)	Frequency (N)	Percentage (%)
19-40	138	69.0
41-60	51	25.5
61-80	6	3.0
>80	5	2.5
Total	200	100

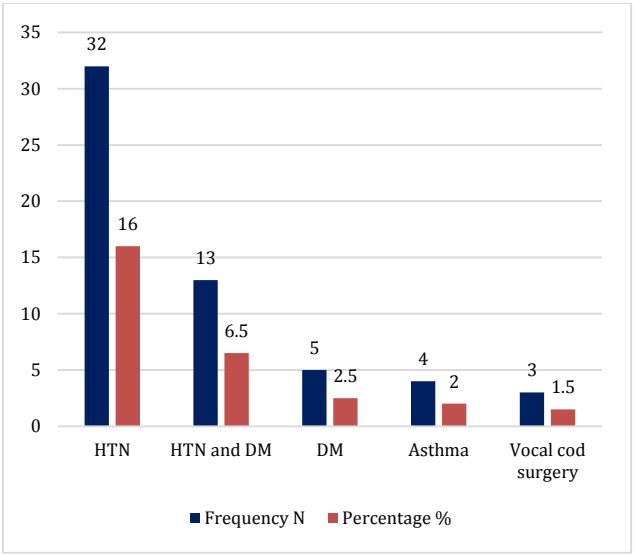

Figure-2: medical history of participants (n=200)

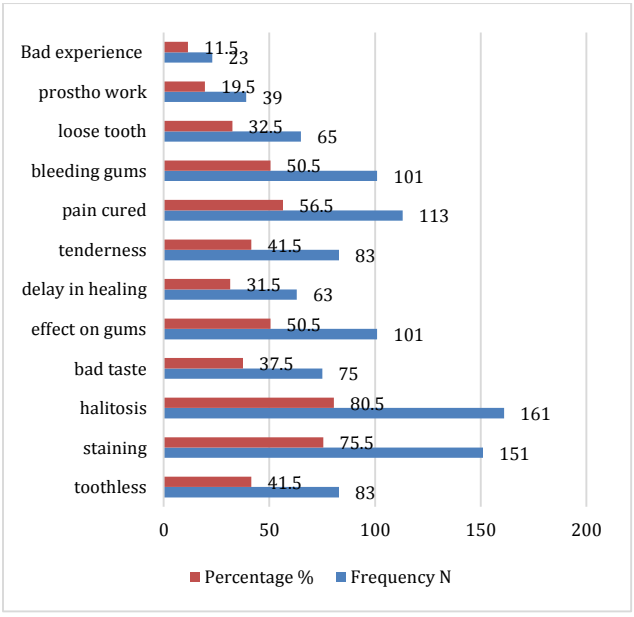

Figure-3: Incidence of different types of dental history

Table-2: prevalence of varying levels of tooth staining among smokers' patients (n=82).

Tooth staining level	Frequency (N)	Percentage (%)
Mild	25	30.5
Moderate	37	45.1
Severe	20	24.4
Total	82	100

DISCUSSION

The present study mainly investigated 200 participants regarding their knowledge of smoking's impacts on periodontal health that varies from tooth discoloration to severe cases of oral cancer, with

possible consequences for tooth decay and associated morbidity. Smokers are three times as likely as nonsmokers to acquire mouth cancer. Smoke contains many precarcinogens, which form free radicals that disrupt the immune system and trigger cell mutations[17]. The participants were conscious regarding mouth cancer caused by smoking. A significant rise in public awareness was due to pictorial demonstration on cigarette packing as a warning signs. Next to dental decay, periodontal disease is the most common, followed by oral pathology, which is discussed globally[18]. As a consequence, the poor socioeconomic group has solid coverage for the whole spectrum of smoking-related periodontal disorders.

Several studies have indicated that smoking is a risk factor for periodontitis, contributing to tooth loss and edentulous as compared to nonsmokers[19-21]. In smokers, there is a decrease in pro-inflammatory cytokines, resulting in immunosuppression and periodontitis[22]. The reduced blood supply by fibrinolytic activity caused by smoking might leads to delayed healing particularly dry socket risk factors after dental extraction[23].

Loss tooth replacement could be effectively treated with dental implant. Implant failure could be caused by smoking a significant risk factor as observed in a previous study[24]. The implant's failure rate was significantly higher in smokers depending on their duration of smoking, number of cigarettes per day, and quitting time[25]. There is evidence that smoking increases the incidence of perimplantitis and marginal bone loss[26]. The current study's findings contrast with prior research by Jang et. al.[27], in which the participant's knowledge regarding the association between oral cancer (52%) versus smoking {90%) but is less aware of its influence on periodontal health.

The majority of participants (80.7%) showed a desire to quit smoking, with 55.7% wanting to participate in cessation programmes. A systematic assessment of the evidence reveals that quitting smoking reduces the incidence of periodontitis and improves results of non-surgical treatment[28]. Dentists are "ideally positioned" to warn patients about the hazards of smoking[29]. They must also encourage patients to participate in smoking cessation initiatives. These strategies can be included into dental care methods. Dentists are 'ideally situated,' and hence may play an important part in advising their patients to quit smoking. As a result, studies have revealed various challenges to the dentist providing these services, such as a lack of time, a lack of training, and a concern of interfering with the patient-dentist connection[30].

According to Huang et al[31], although smoking is more frequent in middle-aged to elderly persons, it is becoming increasingly common in adolescents and young adults. Our patients were all above the age of 20, and the research included individuals up to the age of 70, so we had a wide variety of ages to study. Another study reported that variable was blood on probing, and 92 patients (40.5%) out of 227 participants had bleeding on probing, whereas the other participants had no bleeding. Tanaka et al.[32] discovered that participants who believed that periodontal disease is significantly associated with smoking had a high degree of public knowledge, which contradicted prior studies.

CONCLUSION

The present study concluded that only 8% of respondents knew that smoking is associated with periodontal diseases, illustrating the lack of awareness of patients regarding the link between smoking and periodontal diseases across the board. They were ignorant of its effect on dental implants, demanding additional training. Dentists are in a strategic position to promote awareness and provide smoking cessation counseling.

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