

Original Research Article

Awareness of Smokers about the Effects of Smoking on Periodontal and Oral Health in the Military Dental Hospital in Omdurman (Sudan) in 2018

Abstract:

Background: Smoking considers as a risk factor for the initiation and progression of oral and periodontal diseases. **The aim** of this study was to assess the awareness of smokers about the effects of smoking on periodontal and oral health.

Methods: in this descriptive cross-sectional study, data was collected using designing questionnaire. Demographic data such as age, occupation and educational level were taken then factors associated with smoking awareness, the effect of the number of cigarettes and the duration of smoking on the oral periodontal health and the oral symptoms (complaints) associated with smoking. We followed simple random method to select study participants at the Military Dental Hospital in Omdurman, Sudan. Data were analyzed by SPSS version 23 and result presented as frequencies and proportions in table and figures.

Results: A total number of 385 smoking males, with mean age 27.8 were selected to participate in this study. The mean of cigarettes smoking per day was 10 cigarettes and the mean of the duration since started smoking was 8 years. The majority of smokers (85.5%) did not aware about the effect of the number of cigarettes on periodontal and oral health. Also, 93 % of them didn't aware about the effects of the duration of smoking on oral and periodontal health. 63% of smokers complained from color change of oral mucosa, 35% staining of the teeth, 19.2% bad breath and 17% delay in wound healing.(with statistical significant difference) More than half (58.20%) of smokers were aware that smoking can

cause oral cancer and 76.10% indicated that smoking was cool. Most of the study participants (89.10 %) didn't receive adequate information about the risk of smoking on their health from their dentists and 88.60% of them didn't hear about the Nicotine Replacement Therapy (NRTs).

Conclusion: the present study demonstrates that high percentage of smokers didn't aware about the harmful effects of smoking on oral and periodontal health.

Keywords: Awareness, Smoking, Periodontal, Oral health.

Abbreviations:

Cpd: Cigarettes per day

GDPs: General Dental Practitioners

NRT: Nicotine Replacement Therapy

US, FDA: The United States Food and Drug Administration

1-Introduction

Smoking had been known as a human habit for almost four centuries. Columbus was offered golden tobacco leaves when he came to America. The journey of tobacco to Spain through Columbus's crew, who carried tobacco plants and seeds with them and introduced its cultivation in Spain and from it to Mexico. Then tobacco was introduced into India by Portuguese traders and then spread rapidly into Malaysia, Japan, china and the world (1).Smoking may be considered a serious health issue as its epidemiological studies had shown that it may have a strong relationship to cancer and may cause physiological disturbances in the pulmonary, cardiovascular, and gastrointestinal system. Smoking was also associated with various changes in the oral cavity which were related to staining or discoloration of teeth, delayed and impaired wound healing, dental caries, halitosis,

Periodontal diseases and attachment loss of the periodontal supporting tissues, bone loss, mobility of teeth, failure of dental implants and life-threatening disease such as oral cancer (2).

Dentists had been aware of the effects of tobacco on the soft and hard tissues of the oral cavity and the implications of this in clinical practice. In the past 20 years, there had been an increased awareness about the role of tobacco use on the prevalence and severity of periodontal diseases (3). Tobacco smoke might affect the function of the immune system, numerous studies in vitro and in vivo have demonstrated so far that there is an immune-suppressive effect of tobacco smoke on T and B-lymphocytes (4). Tobacco, both in smoked and smokeless forms is considered as a global epidemic, which is one of the most common causes of death all over the world. Smoked nicotine forms include cigarette or bidi, cigar, chillum, and hookah while smokeless forms are khaini, gutka, zard, gul, gudaku, and tuibur. (5) Smokers are classified into current smokers: Those who had smoked ≥ 100 cigarettes in their lifetime. Former smokers: Those who had smoked ≥ 100 cigarettes in their lifetime and do not currently smoke. Non-smokers: those who did not smoke ≥ 100 cigarettes in their lifetime and do not currently smoke (6). The cumulative smoking exposure was categorized as light-short-term (≤ 19 cigarettes per day cpd), and heavy-long-term (≥ 20 cpd) (7). It was observed that patients referred by their general dental practitioners (GDPs) to a restorative consultant clinic, lacked awareness of the relationship between smoking and periodontal disease. It was perceived that GDPs might not be relaying this essential information to their patients in an effective way (8).

Although products for nicotine replacement therapy (NRT) such as gum, trans dermal patch, intranasal spray, inhaled and oral preparation have been available for over 20 years, they have been excluded until recently from insurance-based health service provision in many countries. They have therefore not been widely prescribed by doctors

who help smokers wanting to quit (9). According to US , FDA(The United States Food and Drug Administration) (NRT) are nicotine gum, rapid release gum ,nicotine lozenges ,nicotine patches, high does nicotine patch ,nicotine oral inhaler ,nicotine nasal spray, nicotine sub lingual tablet, electronic Cigarettes ,Combined therapy , Nicotine vaccines and Nicotine preload (10).

Periodontal diseases can affect the quality life of patients by affecting the function and appearance of their dentition. Smoking is considered as one of the major risk factors for the oral and periodontal disease. Accordingly, there is a need to demonstrate the awareness of smoker about the effect of smoking in the oral and periodontal health.

2-Materials and Methods:

We conducted a descriptive cross-sectional study hospital base among smokers male in the Military dental hospital in Omdurman, Sudan. A designed pretesting and revised self administered questionnaire was used to collect data from study participants. We collected demographic data such as age, occupation and educational level then the awareness of smokers about the effect of the number of cigarettes and the duration of smoking on the oral and periodontal health, Dentist consultation, oral symptoms (complaints) associated with smoking among smokers and the knowledge about nicotine replacement therapy. A simple random sampling technique was used to select study participants. Sample size was estimated based on this equation; $N = Z^2 pq/n2$. Therefore, 385 participants were accessed to achieve 95% confidence interval and 5% margin of error .Data was analyzed by SPSS version 23 and the results presented as frequencies and proportions in Tables and figures. Difference between two proportion was used for the oral symptoms (complaints) that associated with smoking among smoker.

3-Results:

A total number of 385 participants were included in this study. The participants were male smokers with an age range extended from 18 to 70 years old and the mean of age for them was 27.8. Of the total smokers, 44, 4 % were students and 70.4% have the University level of education as seen in table 1. The finding of our study showed that the mean of cigarettes smoked was 10 cigarettes per day and the mean smoking duration was 8 years as seen in Table2. In addition, 85.5% of smokers didn't aware of the effect of the number of cigarettes that they have taken, and 93 % didn't aware of the effect of smoking duration on periodontal and oral health as shown in table3. In this study 76.10 of smokers smoked because they think that it was cool to smoke as seen in table3. Our results showed that 58.8 % of smokers were aware of the effect of smoking on the etiology of oral cancer, but 89.10% of the smokers didn't talk with their dentist about the dangers of smoking and 88.60% of them didn't hear about nicotine replacement therapy as seen in Table3. 63% of smokers complained from color change of oral mucosa (p-vale <0.01), 35% Staining of the teeth (p-vale <0.01), 19.2% bad breath (p-vale <0.01), 17% delay in wound healing (p-vale <0.01), 16% taste impairment (p-vale <0.01) and 10% other changes in the teeth, oral and periodontal tissue(p-vale <0.01) with statistical significant difference results as demonstrated in Table4. The results showed that 89% of smokers did not hear about NRTs and 77% of smokers who heard about NRTs Saied electronic cigarettes as seen in figure 1 and 2.

Table1: The smokers Age, occupation and education level

Age Range(years)	Mean ± (SD Years)
18-70	27.8286± 8.76259
Occupation	Frequency (385) Percent (%)
Students	(171) 44.40%
Un employ	(21) 5.50%

Employ	(114) 29.60
Business man	(79) 20.50%
Educational level	Frequency (385) Percent (%)
Un educated	(1) 0.30%
Primary school	(7) 1.80 %
High School	(102) 26.50%
University level	(270) 70.10%
Post graduate	(5) 1.30%

Table2: The mean of the numbers of cigarettes per day and the duration of smoking:

smoking	Mean \pm SD
Numbers of cigarettes per day	10.7610 \pm 6.52559
Duration of smoking	8.0312 \pm 6.34134

Table 3: The awareness that number of cigarettes and duration of smoking affect the oral and periodontal health, smoking can cause oral cancer heard about NRT, cool to smoke

Awareness that number of cigarettes and duration of smoking affect the oral and periodontal health	Frequency (385) Percent (%)
Number of cigarettes	56 (14.5%)
Duration of smoking	27 (7 %)
Dentist consultation	Frequency (385) Percent (%)

Smokers did not consult the Dentist	(343) 89.1%
Smokers consult the Dentist	(42)10.9%
Smoking can cause oral cancer	Frequency (385) Percent (%)
Yes	(226) 58.8 %
No	(159) 41.2%
Heard about nicotine replacement therapy	Frequency (385) Percent (%)
Yes	(44)11.4%
No	(341) 88.60%
Cool to smoke	Frequency (385) Percent (%)
Yes	(293) 76.10%
No	(92) 23.9%
Received advice from dentists about the risk of smoking	Frequency (385) Percent (%)
Yes	(343) 89.1%
No	(42)10.9%

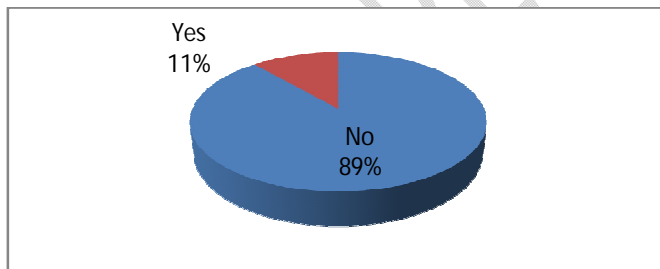
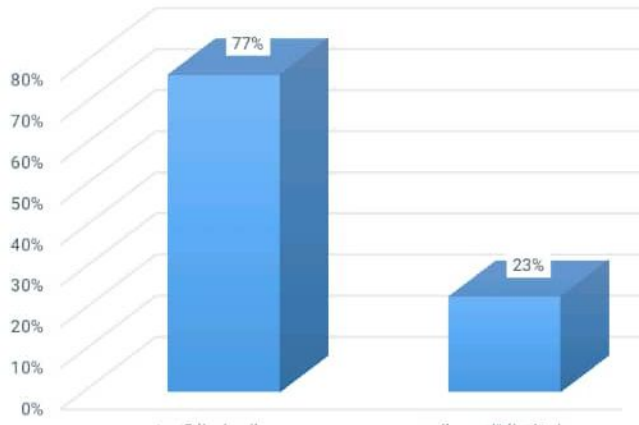


Figure 1: Smokers heard about Nicotine Replacement Therapy



Electronic cigarette smoking cessation stickers.

Figure 2: The knowledge about nicotine replacement therapy

Table 4: The oral symptoms (complaints) that associated with smoking among smoker:

The oral symptoms (complain)	% yes	% No	P- value
bad breath	19.2% (74)	80.8% (311)	< 0.001
Staining of teeth	35% (135)	65% (250)	< 0.001
Taste impairment	16% (62)	84% (323)	< 0.001
Delay in wound healing	17% (65)	83% (320)	< 0.001
change in color of oral mucosa	63% (243)	37% (142)	< 0.001
Other changes in the teeth. oral , and periodontal tissue	10% (38)	90% (347)	< 0.001

4-Discussion

Smoking is one of the major risk factors for oral and periodontal diseases which are associated with an increased rate of gingival and periodontal destruction. Finding of this study indicated that the mean age of smoker males was 27 years which is in agreement with a study done by singhal et al, who showed that the highest rate of smokers were among 25-50 years of age and the people below 25 years of age were influenced mainly by peer group and initiated smoking, while people in age group of

25-50 years started smoking due to the stress (11). The majority of those who smoke were students, followed by employees, and businessmen or free workers. The lowest proportion was observed among unemployed people. Study conducted by Tin-Oo et al in Malaysia in 2013 supported our findings, where the majority of study participants who smoked were students (12). Another study done by Sutej et al showed that Cigarettes smokers decrease the periodontal health in young population (13) Students usually were affected by their friend's opinions on smoking issues in addition to the amount of the stress that they experienced during study and examinations. These factors most likely considered as causes that push students to start smoking habit. The effect of smoking depends on both dose and duration. Our finding indicated that the mean of the number of cigarettes smoked per day was high (10 cigarettes per day), and the mean of the duration since started smoking was long (8 years). This high number of cigarettes and for long duration was most likely because they want to practice some sort of freedom and enjoyment. Our result is in accordance with Sutej et al who reported that more than half of smokers (55.3%) smoked 1-10 cigarettes per day (13). In our study, the majority of the study participants didn't aware of the bad effect of high number of cigarettes that they smoke. Approximately (93.5%) of the study participants didn't aware of the effect of smoking duration on periodontal and oral health. This is in agreement with Singhal et al who reported that smokers had significantly less awareness of the adverse effects of smoking on their oral and periodontal health as compared with non-smokers (11). Another study done by Sepolia et al, Concluded that there was a lack of awareness among smokers regarding the associated between Smoking habits and periodontal diseases mainly periodontitis (14) .Our result is not in agreement with the study conducted by Baklen et al who

documented a majority of smokers patients 84.5% showed awareness of the adverse effects of smoking on oral tissue (15).

We found that 80.8% of smokers did not complain of oral malodor, because they did not notice the smell or adapted to it.

In our study, more than half of our study participants complained of change in the color of their oral mucosa followed by staining of teeth, bad breath, delayed wound healing, taste impairment and other change on periodontal tissue with statistical Significant difference. Unlike a study done by Puranik et al on India which reported proportion of alteration of taste was (78.4%) and the delayed wound healing was (93%) among smokers patients (16).

In the present study More than half (58.20%) of smokers were aware that smoking can cause oral cancer, this finding is in agreement with More et al who found that 90% of patients recognized that smoking lead to oral cancer (17)

Smoking caused oral and periodontal diseases because cigarettes nicotine affects both the innate and adaptive immune response. Also, smoke was shown to increase the production of numerous pro-inflammatory cytokines such as TNF-a, IL-1, IL-6, and IL-8 leading to gingival and periodontal tissue destruction and bone loss. Smoking also decreases the level of anti-inflammatory cytokines such as IL-10(13). Tobacco acts by reducing the flow of blood to gingival tissues that cause deprivation of oxygen supply and nutritional reach to the tissue. Make it more susceptible to bacterial infection (14).

Tobacco smoke decreases in taste perception and causes oral mucosal tissue and gingival hyperkeratosis and Melanosis which may lead to a change in the color of the oral mucosa to a gray-black color (14).

We found that the majority of study participants didn't ever consult medical doctor or dentist about the danger of smoking. This result is in accordance with Baklenet al result which showed that only 32% of patients were informed about side effect of smoking by their dentists (15). Our findings indicated that majority of study participants didn't hear about the nicotine replacement therapy (NRT). Those who have heard about the NRT did able to differentiate between them and said the electronic cigarette (77%) and smoking cessation stickers(23%). This result is similar to the study conducted by Tin- et al who found a high proportion of smokers who had no idea about NRT and with the study of Sachan et al in which majority of smokers were un aware of the tobacco cessation programs (20).

Nicotine replacement products contain pure nicotine with an aim to reduce the patient's inclination towards tobacco consumption and the physiological and psychomotor withdrawal symptoms. They increase nicotine levels in the blood stream, due to which the person will smoke fewer cigarettes, resulting in reduction in the consumption and toxicity to it (21).

5-Conclusion

Our findings indicated that smokers included in this study were not aware about the smoking effect on the oral and periodontal tissue. Most of them were aware that smoking can cause oral cancer. Smokers were not aware about the relation between the number of cigarettes, duration of smoking and the oral disease. Majority of smokers had no idea about the nicotine replacement therapy.

Recommendation :

We recommended supporting students and young people to avoid smoking and raise the awareness of those who currently smoke to cease smoking. Also increase the awareness on the effects of smoking on oral and periodontal health.

We recommend using the advertisement, audio-visual aids, and print media to show the benefits of smoking cessation on oral and systemic health.

Consent:

Verbal consent

Writing consent is not applicable

Ethical Approval:

It is not applicable

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