

EFFECTS OF TOBACCO CHEWING ON ORAL HEALTH STATUS OF PATIENTS VISITING UNIVERSITY COLLEGE OF DENTISTRY, LAHORE

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ABSTRACT

This cross sectional study was designed to evaluate the effects of tobacco chewing on oral health status of patients visiting University College of Dentistry Hospital of the University of Lahore between October 2011 to March 2012. A purposive sampling of 200 individuals was selected and subjects were divided into 2 groups: tobacco chewers (n=100) and non-tobacco chewers (n=100) age ranged between 18 to 55 years. A structured questionnaire was used to collect history by two calibrated dentists who later examined the oral conditions. A statistically significant difference was found between tobacco chewers and non tobacco chewers with respect to mean values of missing teeth (M) and overall DMFT ($p<0.01$). Thirty eight (38%) percent tobacco chewers had some kind of oral mucosal lesion compared to only 6% oral mucosal lesions of non-tobacco chewers. This association between tobacco chewing and oral mucosal lesions was found to be statistically significant with $p=0.000$. Tobacco chewers had more calculus, shallow pockets ($<4\text{mm}$) and deep pockets ($>6\text{mm}$) as compared to non-tobacco chewers $p=0.000$. There was however no significant difference found between tobacco chewers and non tobacco chewers with respect to bleeding on probing $p=0.445$. The results of study suggest that tobacco chewing causes deleterious effects on oral tissues, teeth and thus enhance the risk of periodontal disease. Strict policies based on common risk factor approach need to be adopted by the health authorities to reduce the burden of general and oral diseases.

Key Words: Tobacco chewing, periodontal disease, oral health status.

INTRODUCTION

Oral diseases including the dental caries, periodontal disease and related oral mucosal lesions are major public health concerns worldwide in both established market economy (EME) and non established market economy (non-EME) countries. Although there has been an improvement in oral health but the problem still persists on a global scale and is on the rise in developing countries.^{1,2}

Tobacco consumption is considered as a primary cause of many oral diseases including periodontal disease.³ Tobacco smoking disrupts the physiological

turnover of tooth-supporting structures with the net effect being periodontal tissue breakdown.⁴ Tobacco smokers are 2.5 to 6 times more likely to develop periodontal disease than nonsmokers.⁵ Periodontal diseases can affect the quality of life of patients by affecting the function of the dentition and the dental appearance. It can also lead to the loss of teeth in susceptible patients.³

Around 2500 chemical constituents are present in raw or processed tobacco, causing carcinogenesis, depression, irritation, impaired oxygen transport, tumor and toxicity. The research on polycyclic hydrocarbons in tobacco chew, adds to the evidence that it contains

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28 carcinogens that cause oral cancer and pancreatic cancer.^{6,7}

Tobacco is chewed, smoked, sucked, sniffed and is the only legally available consumer product which kills people when it is used entirely as intended.⁷ Hence, "Tobacco is the single greatest cause of non-communicable disease and is likely to produce a world pandemic."⁸ Although tobacco deaths rarely make headlines, tobacco kills one person every six seconds.⁸ Smoked tobacco in any form causes up to 90% of all lung cancers and is a significant risk factor for strokes and fatal heart attacks.^{7,9}

A significant number of people use "smokeless tobacco," in the form of snuff a "pinch" of pulverized tobacco preparation inhaled through the nostrils across the globe and Pakistan is no exception. Now, however, it is mostly placed in the mouth (naswar), where the nicotine it contains is slowly and directly absorbed. Smokeless tobacco users are 2 times more likely to develop periodontitis than nonusers.^{10,11} For chew/spit tobacco users the risk of cancer of the cheek and gingivae has been found to increase 50-fold over that of nonusers.¹²

METHODOLOGY

This cross-sectional study was done among the apparently healthy subjects reporting to the Periodontology Department of University College of Dentistry, The University of Lahore Pakistan from October 2011 to March 2012.

A purposive sampling of 200 individuals was selected and subjects were divided into 2 groups: tobacco chewers (n=100) and non-tobacco chewers (n=100) age ranged between 18 to 55 years. Excluded patients were smokers in control and chewer groups, subjects aged less than 18 years and older than 55 years, diabetics, subjects using antibiotics, non-steroidal anti-inflammatory drugs and steroids for any systemic disease, edentulous patients, Immune compromised patients i.e. with HIV/AIDS.

The materials used were mouth mirror, explorer, community periodontal index treatment needs (CPITN) probe, William's periodontal probe, gauze piece and tweezers. Informed Consent was taken after imparting sufficient information; if the patient desired to be a part of the study then his consent (signature or thumb impression) was recorded in the informed consent form.

A structured questionnaire based case history format of data collection was used. The study team consisted of two calibrated dentists who took history of all the study participants and later examined the oral conditions. The information on missing, decayed and filled teeth was recorded using the WHO criteria for recording caries.¹³ Other information recorded included: A detailed clinical oral examination for the assessment of *periodontal status* that is to measure the pocket or probing depth. [PPD] [<4mm, 4 to 6 mm or > 6 mm], Bleeding on probing [BOP], Number of teeth present in the mouth and Calculus.

Data were entered and analyzed in SPSS version 16.0. Chi-square test at 1% level of significance was applied to see the association and correlation between two or more than two variables. Z test of difference between two sample means at 1% level of significance was applied to compare quantitative variables in the study.

RESULTS

All the 200 subjects were examined, out of which 104 were males and 96 were females. In tobacco chewer group, 71 were males while 29 were females. In non-tobacco chewer group, 33 were males while 67 were females.

Table 1 reports the comparison of mean values of parameters D, M, F and DMFT in tobacco chewers and non tobacco chewers group. It shows that a statistically significant difference between tobacco chewers and non tobacco chewers with respect to mean values of parameters of missing teeth (M) and overall DMFT ($p < 0.01$). Results reveal that tobacco chewers had more missing teeth than non-tobacco chewers. However no significant difference was found between two groups with respect to parameters of decayed teeth (D) and filled teeth (F) with $p > 0.05$.

Table 2 reports the prevalence of oral mucosal lesions in tobacco chewers and non tobacco chewers. It reveals that maximum number of tobacco chewers i.e. 38% have some kind of oral mucosal lesion compared to only 6% oral mucosal lesions of non-tobacco chewers. This association between tobacco chewing and oral mucosal lesions was found to be statistically significant with $p = 0.000$.

Table 3 reports the comparison of mean values of parameters i.e. bleeding on probing, calculus, shallow pocket and deep pocket in Tobacco and Non-tobacco chewer group. It shows that Tobacco chewers had more calculus, shallow pockets (<4mm) and deep pocket

ets (>6mm) as compared to non-tobacco chewers. These associations were found to be statistically significant at $p=0.000$. There was however no significant difference found between tobacco chewers and non tobacco chewers with respect to bleeding on probing $p=0.445$.

DISCUSSION

This study was conducted to investigate the effects of tobacco chewing on oral health status of patients visiting Department of Periodontology, Faculty of Dentistry, University of Lahore. The results of the study confirmed that there was a significant difference with respect to the prevalence of oral mucosal lesions between tobacco chewers (38%) and non tobacco chewers (6%) which is similar to the finding of Croucher et al who found (36%) more prevalence of oral mucous

lesions amongst UK resident Bangladeshi women community who used tobacco with betel quid.⁹ The results of the study also reveal that there was a significant difference between tobacco chewers and non-tobacco chewers with respect to oral hygiene status based on presence of calculus but there were no significant differences between tobacco chewers and non tobacco chewers with respect to oral hygiene measures adopted. Similar observations were found in studies conducted amongst UK resident Bangladeshi women community by Croucher et al and an Indian population by Parmar et al, who found better oral hygiene status among non tobacco chewers over tobacco chewers.^{9,14} This suggests that tobacco chewing plays an important role in compromised oral hygiene and oral health deterioration.

TABLE 1: MEAN VALUES OF PARAMETERS D, M, F AND DMFT IN TOBACCO AND NON TOBACCO CHEWERS GROUP

	Tobacco chewer group (n= 100)	Non-tobacco chewers group (n= 100)	Z test value	Statistical Significance (p value)
	Mean $\pm$ SD	Mean $\pm$ SD		
Decayed Teeth (D)	1.34 $\pm$ 1.27	1.44 $\pm$ 1.40	0.24	>0.05
Missing Teeth (M)	4.09 $\pm$ 3.39	2.27 $\pm$ 0.75	3.37	<0.01
Filled Teeth (F)	1.14 $\pm$ 1.08	1.19 $\pm$ 0.97	0.54	>0.05
DMFT	5.80 $\pm$ 4.53	3.12 $\pm$ 3.01	3.82	<0.01

TABLE 2: PREVALENCE OF ORAL MUCOSAL LESIONS IN TOBACCO AND NON TOBACCO CHEWERS GROUP

Oral mucosal lesion status	Tobacco chewer (n=100)	Non-tobacco (n=100)	Total (n=200)	Statistical Significance (p value)
Oral sub mucous fibrosis	11	00	11	0.000
Leukoplakia	13	04	17	
Lichen planus	06	02	08	
Tobacco pouch	08	00	08	
Total	38	06	44	

TABLE 3: COMPARISON OF MEAN VALUES OF PARAMETERS BLEEDING ON PROBING, CALCULUS, SHALLOW POCKET AND DEEP POCKET IN TOBACCO AND NON-TOBACCO CHEWERS GROUP

	Tobacco chewer (n=100)	Non-tobacco chewer (n=100)	Statistical Significance (p value)
Calculus	95	53	0.000
Shallow pocket (< 4mm)	51	18	0.000
Deep pocket (> 6mm)	17	01	0.000
Bleeding on probing	98	95	0.445

In the present study the incidence of periodontal pocket was found significantly higher in tobacco chewer group compared to non tobacco chewers. Similar results were found by Sumanth et al¹⁵ who compared periodontal health status in betel quid chewers with or without use of tobacco and found a higher incidence of periodontal pocket depth amongst tobacco and betel quid chewers. Fischer et al¹¹ also reported similar findings and demonstrated that smokeless tobacco users had twice more severe active periodontal disease compared to non-tobacco users. While Parmar et al¹⁴ found that there is deterioration of periodontal conditions with periodontal pocket formation in tobacco chewers compared to non tobacco chewers. Results of this study are also coherent with findings of Synders et al¹⁶ who reported that use of tobacco products exacerbates periodontal disease and Kumar et al who found a significant impact on the severity of periodontal diseases among tobacco users as compared to non-users and the higher risk of periodontal pockets formation as the duration and frequency of tobacco consumption increased.¹⁷

In the present study it was seen that tobacco chewers had more missing teeth compared to non tobacco chewers which is similar to a previous study done by Neely et al¹⁸ who studied the effects of betel nut and tobacco in periodontal disease and found that tooth loss was significantly dependent upon interactions between the mean attachment loss and betel nut use and history of missing teeth.

The possible limitation of this study could be a small sample size which was justified since the study was conducted on tobacco chewers and not smokers. Most of the patients who reported to the department were smokers and hence had to be excluded from the study.

The proposal for policy development is that it should be based on the common risk factor approach, key concept underlying the integrated common risk approach is that promoting general health by controlling a small number of risk factors may have a major impact on a large number of diseases including oral diseases at a lower cost, greater efficiency and effectiveness than disease specific approaches.¹⁹ Efforts should also be made to incorporate the World Health Organization's MPOWER document in policies which is an effective mean to control tobacco use across the globe.²⁰

This study concludes that tobacco chewing has negative effects on oral tissues including teeth and

associated supporting structures and thus enhances the risk of developing periodontal diseases.

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