

## ORIGINAL ARTICLE

# PROPORTION AND FACTORS RELATED TO PERIODONTAL DISEASE AMONG YOUNG ADULT ATTENDED AL-FATAH DENTAL FACULTY, LIBYA

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## ABSTRACT

*This study was conducted to determine the proportion and factors associated with periodontal disease among younger adult attended Al Fatah Dental Faculty in Libya. A cross sectional study with universal sampling methods was carried out from July 2010 until September 2010 among 70 Libyan subjects aged between 20-35 years. The data in this study was collected using self administrated questionnaire, followed by oral examination done by trained dentists. The results of this study showed that, the prevalence of periodontal disease in Libyan subjects was 75.7%. Gender, oral care habits, smoking were found significantly associated with presence of periodontal disease. Gingivitis has been found the most common types of periodontal disease (94%). High percentage of periodontal disease in this study was among men (87.9%) compared to women (69.9%). In conclusion, modifiable factors like changing lifestyle such as avoiding smoking and practicing oral care can be promoted to prevent periodontitis.*

**Key words:** Periodontal disease, miswak, oral habit.

## INTRODUCTION

Periodontal diseases are defined as inflammation of the periodontium - the tooth supporting structure which consists of gingiva, cementum or the outer layer of tooth root, alveolar bone where the tooth is anchored, periodontal ligament which are the connective tissue fiber that run from the cementum and the alveolar bone<sup>1</sup>. These chronic oral infections caused by the presence of a biofilm matrix adhere to the periodontal tissues. This matrix is called dental plaque, which is defined as colourless adherent material on the tooth surface and surrounding oral tissues. This matrix contains different types of oral bacteria such as *Performance gingivals*, *Streptococcal sp.* and others. The accumulated and unremoved dental plaque can lead to the development and progression of periodontal disease<sup>2</sup>. Plaque induced periodontal diseases can be classified into two general categories based on whether attachment loss accrued: gingivitis and periodontitis. Gingivitis is the mildest form of periodontal disease is quite common and about 75% of adults over 35 have some evidence of this condition and caused by accumulated dental plaque<sup>3</sup>. Gingivitis may remain contained in the marginal gingival tissues or it may develop into periodontitis with destruction of tooth supporting periodontal tissues and alveolar bone. This condition was termed as periodontal attachment loss and alveolar bone loss<sup>4</sup>. In recent years several risk factors of periodontal diseases have

been identified. These include the oral factors such as oral hygiene, socio-demographic factors such as age, gender, race, ethnicity, education, income and geographic area. Systemic illness such as diabetes, blood disorder, AIDS, stress, diet problems and others also has been shown contributing to the risk of development of periodontal diseases. Furthermore, many recent studies stated that periodontal disease has been found linked with many systemic illnesses such as heart disease, diabetes, low birth weight, maternal pre-term among pregnant women<sup>5</sup>.

## METHODS

A cross-sectional study was conducted in Faculty of Dentistry, Al-Fatah University Libya between July 2010 and September 2010. Universal sampling method was used in this study. Any respondent attended to Al-Fatah Dental Faculty either college students, staffs and community aged 20-35 years, Libyan and volunteered to participate were recruited. The data were collected during awareness campaign on periodontal disease which carried out only for 3 months and open to public especially younger adult. There were 2 sets of data collection: set 1 questionnaire and set 2 oral examinations.

A pre- test was conducted earlier to test for the validity and reliability of the questionnaire among Libyan. The questionnaire was set in Arabic

language. The questionnaire was used to assess the socio-demographic status, oral practices, lifestyle habits, medical condition of the patient and female reproductive history. In addition to the questionnaire, oral examination was conducted to collect information about the periodontal health status of the respondents. The oral examinations were made by 3 dentists participated in a 7-day training and calibration session. The session focused on the interpretation of indices measuring pathologies sought during clinical examinations. Measurements were made on each selected tooth for gingival bleeding, calculus and periodontal pocket depth. Periodontal pocket depths were measured from the edge of the free gingiva and all around the tooth based on Community Periodontal Index (CPI). The University of Michigan "0" periodontal probe, with Williams marking was used for CPI measurements. In CPI, the dentition was divided into six sextants. The highest score for each sextant was recorded. The recording per sextant was based on findings from indicated index teeth. If no index teeth were present in a sextant qualifying for examination, all the remaining teeth in that sextant were examined<sup>6</sup>. A score of 0-4 are recorded as followed:

0 = no sign of disease.

1 = gingival bleeding after gentle probing.

2 = supragingival or subgingival calculus present.

3 = a pocket depth of (4mm and 5mm).

4 = a deeper pocket (6mm and more).

Sextants with CPI score 0 represented healthy. Sextants with a CPI score 1 and 2 represented a gingivitis. Score 3 and 4 represented areas of pocketing of 2:4mm. Instead of scoring severity per tooth surfaces, the plaque, gingival bleeding and calculus recordings were based on the absence or presence of clinical findings as suggested<sup>6,7</sup>. The resulting indices, the Visible Plaque Index (VPI), the Gingival Bleeding Index (GBI) and Calculus Surface Index (CSI) were reported as percentage of teeth examined (excluding the wisdom teeth). The presence and absence of gingival bleeding was determined by gentle probing of the gingival crevice with the University of Michigan "0" periodontal probe with William's marking. The appearance of bleeding within 10 seconds indicated a positive score that was expressed as a percentage of the total number of gingival margin examined.

## RESULTS

The data of this study were analysed in SPSS version 18 and were found to be normally distributed. Descriptive and statistical analyses were conducted. Chi-square test was used to examine the association between determinants and periodontal disease. P-value less than 0.05 was considered as significance.

### Description of the study group

A total of 70 Libyan subjects aged 20 - 35 yrs old were recruited into the study. The response rate was 88 % for the self administered questionnaire. In oral examination women respondents were higher than men (52.9% vs. 47.1%) and all respondents had a high level of education (Table 1). All respondents were single and not married. The mean of age was 23.5 years, with minimum age of 20 years and maximum age of 35 years. Oral care habits of respondents were assessed by self administered questionnaire depending on the types of oral care they used. The respondents were asked about tooth brushing, dental flossing, mouth wash and miswak use. Forty seven percents (n=33) of the respondents had tooth brushing twice a day, 32.9% (n=23) once daily, only 17% (n=12) had tooth brushing more than twice/day. About 80% of respondents never use tooth flossing methods to clean their teeth. Only 18.6% have used mouth wash as an oral care habit.

### Statistical analysis on determinants of periodontal disease

A Pearson chi-square was computed to test the association between periodontal disease and gender of respondents, dental flossing and mouth wash, presence of calculus on the tooth surface and smoking habit. The result revealed that, there was a significant association between presence of periodontal disease and the mentioned factors. Smokers have reported 100% of having periodontal disease than non smokers. There was no significance association between toothbrush used and periodontal disease found in this study.

Table 1. Bivariate analysis of periodontal disease and factors

Category	n	Periodontal Disease Present(%)	Periodontal Disease Absent(%)	$\chi^2$	$\rho$
Gender					
Male	33	87.9	12.1	5.02	0.025
Female	37	69.9	35.1		
Age					
<24 year old	38	73.7	26.3	0.19	0.76
≥24 year old	32	78.1	21.9		
Types of oral care habit					
Tooth brushing used	67	74.6	25.4	1.09	0.32
Dental flossing	14	28.6	71.4	18.6	<0.05
Mouth wash and miswak	13	30.8	69.2	14.8	<0.05
Presence of calculus on tooth	47	100	0	45.9	<0.05
Smoking habit	13	100	0	3.6	0.02

## DISCUSSION

This study aimed to determine the prevalence and factors associated with periodontal disease in Libya, association between periodontal disease and determinant factors such as gender, age, oral care habit, and smoking, were significant. Literatures accumulated over the past 20 years and offered evidence about the role of smoking in developing periodontal disease. Most of these literatures indicated that smokers have greater bone loss and attachment loss, as well as more frequent to develop periodontal pockets, than non-smokers<sup>1,8-10</sup>. In this study smoking has been found significantly associated with gingival bleeding on probing which was the main indicator for the presence of the periodontal disease. This indicated that smoking remains the most important risk factors of developing periodontal disease. The same result applied to presence of calculus on tooth structure by the frequency used and the type of oral care habits. Respondents who practised flossing and mouth rinsing still developed periodontal disease. This study has shown a significant association between the smoking habit and the severity of periodontal disease. A study done by Grossi et al (1994) in Erie County, New York State involving 1361 subjects aged 25 to 74 years. This study showed that those who smoked were at greater risk for developing periodontal disease than non smokers. It is well known that, oral care habits such as tooth brushing, dental flossing, mouth rinse and miswak use were considered to be effective methods in preventing tooth decay and

periodontal disease occurrences. Fehrenbach (2007) indicated that lack of oral hygiene encourages bacterial build up and biofilm formation and increase certain species of pathogenic bacteria associated with more severe forms of periodontal disease. Self-care behaviour such tooth brushing and flossing was reported high (97.1%) among our respondents and they had tooth brushing once a day or more, while only 20% have used flossing method. Our study showed that, there was a significant association between practice of dental flossing, mouth wash and the used of miswak with prevention of periodontal disease. Our study respondents were older than previous study subjects and they might have more positive attitude and knowledge about the role of brushing and flossing in preventing periodontal disease than younger subject's do<sup>1,4,5</sup>. Gender was another significant association factor seen in this study. Males have reported to have more prevalence of periodontal disease. This may due to smoking habit as this was predominant among them. The results have supported previous research findings<sup>8-9,11</sup>.

## CONCLUSION

This study assessed the periodontal health status and provides local evidence for the public health requirements in the periodontal field, which is essential for development of national oral health policy and also for planning a specific intervention programme.

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