Evaluation of Periodontal Status among Dental Students of Dow International Dental College, DUHS

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ABSTRACT

OBJECTIVE: To evaluate the periodontal status in dental students and to assess the knowledge and understanding of its management

METHODOLOGY: A cross sectional study was conducted on dental students of Dow International Dental College from October to November 2019 Karachi for the assessment of periodontal health. Sample size was calculated by Open epi with 95% confidence interval. Students were selected through non-probability sampling technique from batches of 3rd and 4th year. The data was collected from 80 students of Dow International Dental College, DUHS and the results have been classified into three groups i.e; Gingivitis, Periodontitis and Normal Healthy Periodontium using the criteria of clinical signs: presence of bleeding on probing and attachment loss of ≥2 mm. All four surfaces (mesiofacial, midfacial, distofacial, and lingual) of all posterior teeth were examined. Students with bleeding on probing, gingival inflammation, tooth mobility, furcation involvement and attachment loss more than 3.5mm were assessed by taking OPG and periapical radiographs. A self-assisted periodontal form was filled for each student in which their medical and dental history was noted down.

RESULTS: A total of 80 students were examined in which 22 students (male =14; female =8) showed clinical sign of disease. This was a clear sign of students having periodontitis. It was also observed that 31 students were having gingivitis and 27 students showed normal healthy periodontium.

CONCLUSION: The clinical students demonstrated a good amount of knowledge of disease and management despite having poor oral health in males as compared to females.

KEY WORDS: Periodontitis, Gingivitis, Normal Healthy Periodontium

INTRODUCTION

Oral health is generally characterised as an oral status that is devoid of any diseases or conditions which not only makes people look aesthetically pleasant, but also adds value to the overall function of the oral cavity[1]. Oral hygiene plays an essential part in public health and is an integral part of general health. Among the most common conditions which effect the oral health related quality of life of a person, periodontal diseases are the most pervasive oral diseases in the world, particularly in developing countries. The burden of periodontal disease differs in various regions, with higher frequency and incidence of periodontal disease recorded in Asian countries[2]. Periodontal diseases are chronic inflammatory diseases that inflict damage to the periodontal ligaments and the deterioration of the adjacent alveolar bone. Periodontal disorders have several stages, ranging from moderate to short-lived gingivitis to extreme periodontitis, which occurs after chronic inflammation[3]. As per World Health Organization, 18% Pakistani population have periodontal diseases and amongst them, 31% possess periodontitis[4].

The prevalence of periodontal disease in humans is a worldwide challenge. Age, ethnicity, oral hygiene and smoking are among the significant risk factors that may influence the initiation, advancement and intensity of periodontitis[5]. Periodontitis is greatly influenced by gender. Males are effected more than the females. Moreover, insufficient proper oral hygiene stimulates plaque deposition, which leads to a rise in pathogenic bacteria associated with extreme types of periodontal disease[6]. There's been a significant variation in potential connexions between periodontal and systemic disorders in recent years. The medical fraternity specially dentists or those who are in the process of becoming a qualified dental practitioner are extremely aware that such parallels may exist and, in some situations, is concerned about the consequences for them as individuals[7]. Dental students are well motivated class of individuals. The effect of joining a dental profession and learning about the consequences of keeping poor oral hygiene has always been a concern of the students which they share this knowledge with their families and friends.

The dental professionals are faced with the dilemma of diagnosing conditions relating to periodontal tissue.

The integrity and position of the junctional epithelium shall be the major criteria for determining the status of periodontium. The junctional epithelium marks the initiation of periodontal disease and can be used for its final diagnosis. Attachment loss more than 3.5mm is a good diagnosis for assessment of patient having periodontitis.

Recognizing the centrality of oral hygiene in the body as a whole and the high incidence of oral diseases, the collaborative efforts of dentists and physicians are important to human health and should be implemented as part of a holistic health promotion programme[8]. In addition, the understanding and attitudes of oral health practitioners demonstrate their knowledge of oral prevention strategies and procedures that have a measurable influence on the delivery of oral health care and then on the oral health of patients. It is also absolutely vital for dental students to be well acquainted of their own oral health as well, since they will be leading consumers of health care and will be responsible for improving public oral health in the future. Improved understanding of oral hygiene among dental students is conducive to the preservation of oral health in patients and is integral in the prevention of oral diseases[9].

Many of the previous analysis were based on questionnaire related surveys but very few of them involved the dental examination and evaluation of the periodontal status. Therefore, this cross sectional survey was planned to evaluate the periodontal status in dental students and also to assess the knowledge and understanding of its management.

METHODOLOGY

A cross sectional study was conducted on dental students of Dow International Dental College from October to November 2019 Karachi for the assessment of periodontal health. Sample size was calculated by Open epi with 95% confidence interval. The authors have received permission for this cross-sectional analysis from the Institutional Oversight Board and the Scientific Committees of the Dow University of Health Sciences. Third year and fourth year dental students, respectively, were encouraged to take part in the study using a self-directed questionnaire survey. The data was collected from 80 students of Dow International Dental College, DUHS and the results have been classified into three groups i.e; Gingivitis, Periodontitis and Normal Healthy Periodontium using the criteria of clinical signs: presence of bleeding on probing and attachment loss of ≥2 mm. All four surfaces (mesiofacial, midfacial, distofacial, and lingual) of all posterior teeth were examined. A non-probability sampling technique was used for recruitment. Sample size was calculated by Open epi with 95% confidence interval. Those who sign the informed consent were included in the inclusion criteria and the exclusion criterion included

third molars, any medical disorder impacting the dexterity of the subject, untreated disorders affecting periodontal conditions, subjects with orthodontic appliances or complex prosthodontic prosthesis or implants and those who were unwilling to sign the informed consent. Demographic details of participants, including grade and gender, was required to be filled in at first. A self-administrated questionnaire was used which recorded students medical history, dental history, their knowledge and awareness regarding the periodontal disease and clinical evaluation along with complete periodontal health status. Periodontal evaluation form was used in this study which recorded students' oral health index. Periodontal Probe was used as a tool to measure pocket depth.

Radiographs were taken for students those having pocket depth more than 3.5mm

Statistical Program for Social Sciences (SPSS) Software version 22.0 (SPSS®: Inc., Chicago, IL, USA) was used to enter and interpret the results. Percentages and mean were determined. In addition, the Chi-square test was used to allow distinctions between subgroups. The level of significance was set at ($P \leq 0.05$) and found to be statistically important.

RESULTS

A total of 80 students were enrolled and were asked to fill out the questionnaire out of which 37 were 3rd year students (male = 15 and female = 22) and 43 were 4th year students (male = 14 and female = 29). The age range of the study sample was between 18 and 23 years with a mean ± SD of the age of 20.93 years ±1.266 (Table I).

TABLE I: SOCIO DEMOGRAPHIC CHARACTERISTICS OF DENTAL STUDENTS

Variables	Frequency (n) %
Age	
18	1 (1.3)
19	13(16.3)
20	14(17.5)
21	21(26.3)
22	24(30.0)
23	7(8.8)
Mean + SD	20.93±1.266
Gender	
Male	29 (36.3)
Female	51 (63.7)
Grade	
3rd year	37 (46.25) (male = 15, female = 22)
4th year	43 (53.75) (male = 14, female = 29)

As far as the knowledge and awareness of the periodontal disease was concerned, majority of them were aware that it is initiated by dental plaque deposits (90.0%). High proportion of the students could identify the signs of gingival inflammation

(97.5%). The majority of students (96.25%) claimed that smoking could not only increase the likelihood of periodontal disorders arising, but could also be a significant risk factor. And similar proportion of the students also claimed diabetes and heart disease as potential risk factors which enhances the risk of acquiring periodontal diseases. Female students (88.2%) were more aware that long-standing periodontal conditions would induce dental mobility, accompanied by early loss of teeth due to advanced bone loss due to inflammatory processes. And majority of them were also aware about the conventional treatment modalities like scaling and prevention strategies like proper brushing could decrease the chances of gingivitis and periodontitis (92.5%) (Table II).

TABLE II: KNOWLEDGE ABOUT THE PERIODONTITIS AND THEIR RISK FACTORS AMONG DENTAL STUDENTS

Variables	Frequency (n) %
Periodontitis is initiated by dental plaque	
Yes	72 (90.0)
No	08 (10.0)
Bleeding on brushing or probing, swelling, halitosis are the signs of gingivitis	78 (97.5)
Smoking and other systematic diseases like cardio vascular, diabetes can give rise to periodontal diseases	
Yes	77 (96.25)
No	03 (3.75)
Periodontitis can lead to alveolar bone destruction and mobility of the tooth	
Males	15/29 (51.7)
Females	45/51 (88.2)
Prevention and management of gingival & periodontal diseases vary from proper tooth brushing to scaling and root planing	
Yes	74 (92.5)
No	06 (7.5)

As far is the gender distribution is related, out of 27 participants having normal periodontium, 3 were males and 24 were females, the conversion from gingivitis to periodontitis were found to be more in males as compared to females. Out of 29 males, 14 were having periodontitis i.e. 48.27% and out of 51 females, only 8 were having periodontitis i.e. 15.68% with p-value of 0.001 (Table III).

DISCUSSION

Since dental and medical students becoming future health professionals, they are expected to show adequate knowledge and practice of oral health in their school years. Around the same time, it is critically essential to maintain their oral health status, which not only impacts their own well-being and quality of life, but also their oral health attitudes and behaviour. To the best of our knowledge, research on the knowledge and status of periodontal disease among university students in Pakistan are limited, the main objective of which is to estimate the incidence and knowledge of aetiology of periodontal diseases and any related local or systemic risk factors[10,11]. The limitation of this analysis applies to the use of self-reported questionnaires, so answers could be subject to bias or imprecision. The distinction between our results and those of others can be problematic to some degree due to discrepancies and anomalies between the populations surveyed, the required variables studied, the nature of the sampling, the inclusion criterion, the subjectivity of the participants' self-reporting questions, and the variations in data collection and interpretation.

Majority of the students in our study were able to identify all the related signs of inflammation which could induce and enhance periodontal disease. This may be demonstrated by the college dental curriculum, which includes specific knowledge based subjects like psychology, anatomy and microbiology. The vast majority of students presumed there was an association between smoking and the occurrence of periodontal diseases. Our results are close to those of Al-Batayneh et al., who found that about 80 per cent of students reported that smoking had adverse effects on oral health[12]. Similarly, a study undertaken by Al-Zarea et al. showed that students of science disciplines were more aware of the association between periodontitis and smoking, diabetes mellitus and heart disease[13]. This can be demonstrated by students with scientific backgrounds such as dentistry who could be more involved in health-related topics and therefore receive a form of dental public health education that may include some oral health issues and their relationship to general health.

Our findings indicates that a high proportion of students were conscious that long-standing periodontal conditions would induce dental mobility leading to early loss of teeth attributable to advanced bone loss leading to inflammatory responses. In comparison, female students were slightly more

TABLE III: DISTRIBUTION OF NORMAL PERIODONTIUM, GINGIVITIS AND PERIODONTIUM ACCORDING TO GENDER

Gender	Normal Periodontium	Gingivitis	Periodontitis	Chi-Square P-value
Male	3 (10.2%)	12 (41.4%)	14 (48.3%)	0.001
Female	24 (47.1%)	19 (37.3%)	8 (15.7%)	

P=0.05 is considered as statistically significant

conscious of this than male students. This may be explained by the fact females are typically more health conscious, reinforced by the fact that smoking is more prevalent among males than females[14-16].

Males were more prone towards conversion of gingivitis to periodontitis as compared to females. Important consideration is that studies related to the natural history of periodontal diseases have been executed as single-gender studies focusing only on men[17,18]. Latest literature on periodontal risk assessment has shown that gender plays a key role in periodontal risk. Specifically, when the study is confined to the category of severe periodontitis, men are at greater risk compared to women, these results have supported the role of smoking, tobacco and diabetes as contributing factors to the disease progression[19].

Our findings are somewhat consistent with Alzammam et al. who performed a cross-sectional analysis of students at Jordan University on the significance and prevention of periodontal disease. This was a questionnaire-based analysis in which questions were linked to their level of brushing. It was found that most of the participants brushed their teeth while few of them did not. Females were more interested and more conscious of gingival diseases than males[20].

CONCLUSION

The study demonstrated the periodontal status among dental students and also assessed its knowledge and understanding of its management. Despite having reasonable knowledge, males were still having poor oral health as compared to females due to their habit of smoking or having tobacco which enabled them of having more pronounced periodontitis. Hence, there is a need to instruct dental students about dental hygiene because poor oral health will impact their overall quality of life. Improving knowledge of oral health can be shown to lead to improved actions and preferred oral hygiene practises. Given that healthcare professionals find a role model for their families, friends and patients, it is important to provide them with the skills required to sustain oral health.

AUTHOR CONTRIBUTIONS

Abrar SK: Concept, drafting, data collection & final approval
Kumar D: Critical revision
Allana R: Interpretation of data & design
Siddiqui S: Drafting of text
Kumar L: Data collection
Darwesh SA: Critical review

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