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Prevalence of Dental Plaque, Gingival Bleeding and Dental Calculus among Patients Attended Periodontal Department of School of Dentistry at University of Sulaimani

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Abstract: *The purpose of this study was to determine the prevalence of plaque, gingival bleeding and amount of calculus in a group of patients attended department of periodontics at University of Sulaimani/ School of Dentistry in 2013.*
Methodology: *data collected from patient's records, the study sample consisted of 301 patients attended to Department of Periodontics - the School of Dentistry at University of Sulaimani, 169 male and 132 female, aging from 15 to 60 years old. The sample was divided into several groups according to age and sex,*
Plaque index, bleeding index and calculus index were used to determine the periodontal health condition for the sample.
Results: *majority of patients attended the clinic fell in 15-25 year age group, number of patients declined as patient's age increased. Data revealed a general reduction in plaque scores and bleeding index as age increased, whereas amount of calculus recorded an increase with increasing age. This study concluded that the prevalence of plaque and gingival inflammation decreased with age. Meanwhile, the amount of calculus deposition is increased.*

I. Introduction

Periodontium, defined as those tissues that are supporting and investing the tooth, comprises root cementum, periodontal ligament, bone lining the tooth sockets, and that part of the gingiva facing a tooth (1). Periodontal diseases are group of diseases and conditions that affect the periodontal supporting structures. The major etiological factor in initiation and progression of periodontal diseases is microbial dental plaque (1). More than 500 bacterial strains are found in dental plaque. These bacteria have evolved to survive in the environment of the tooth surface, gingival sulcus, and oral cavity. Recent technical advances have led to recognition that dental plaque is a biofilm (2,3).

Gingivitis is defined as inflammation of the gingiva that does not result in clinical attachment loss (4). From pathological point of view periodontitis can be defined as gingival inflammation at sites where a pathological detachment of collagen fibers has occurred and the junctional epithelium has migrated apically (5).

Gingivitis is a reversible disease, signs and symptoms of ginigival inflammation are returned to normal if the patient's plaque control measure was performed regularly and the local factors were eliminated properly. Whereas, periodontitis is an irreversible disease, once the attachment apparatus has been lost it is difficult to be restored, unless regenerative surgical intervention is performed, in another word healing is conventionally happen by repair rather than regeneration (4).

Gingivitis may be characterized by the presence of any of the following clinical signs: redness and edema of the gingival tissue, bleeding upon provocation, changes in gingival contour and consistency, presence of plaque and/or calculus, while no radiographic evidence of crestal bone loss is detected (6).

Page & Schröder have demonstrated that an initial gingival lesion develops within approximately four days from a condition of healthy gingiva if plaque is allowed to accumulate freely. Lang and associates demonstrated in1973 that students who completely freed their teeth of plaque at least every other day, did not develop clinical symptoms of gingival inflammation over a six-week period. On the other hand, those students who cleaned their teeth only every third or fourth day all displayed signs of gingivitis. If gingivitis remains untreated, there is a gradual increase in the edema in the gingiva. The subgingival microflora undergoes a gradual transformation into a preponderance of gram-negative anaerobic rods, straight, curved and mobile (7). The aim of the study is to determine the amount of plaque, bleeding and calculus according to gender and different age groups among a group of patients attended Department of Periodontics, School of Dentistry – University of Sulaimani.

II. Materials and Methods

The study sample consisted of 301 patients attended Department of Periodontics - School of Dentistry - University of Sulaimani, 169 male and 132 female, aging from 15 to 60 years old. All patients in this study answered a written questionnaire regarding their name; sex and age; address, telephone number, visit to dentist, chief complain their medical condition.

Periodontal examination was performed by using a graduated periodontal probe (Williams probe) and the following indices were used to determine the periodontal condition.

1. Plaque index according to Sillness and Löe, 1964 (8) as follow:

Score	Criteria
0	No plaque in the gingival area
1	A film of plaque adhering to the free gingival margin and adjacent area of the tooth. The plaque may only be recognized by running a probe across the tooth surface.
2	Moderate accumulation of soft deposit within the gingival pocket on gingival margin and or adjacent tooth surface which can be seen by the naked eye.
3	Abundance of soft material within the gingival pocket and or on the gingival margin and adjacent tooth surface.

Assessment of dental plaque was done by using plaque index system in scale 0-3, according to plaque index of Sliness and Löe 1964. The periodontal probe was used to detect dental plaque along the facial and lingual surfaces of the entire teeth except the wisdom teeth.

2. Papillary Bleeding Index (PBI): The Papillary Bleeding Index was first introduced by Saxer and Muhlemann (1975. (9).

Score	Criteria
0	no bleeding
1	A single discreet bleeding point
2	Several isolated bleeding points or a single line of blood appears
3	The interdental triangle fills with blood shortly after probing
4	Profuse bleeding occurs after probing; blood flows immediately into the marginal sulcus

Papillary bleeding index allows both immediate evaluation of the patient's gingival condition and his/her motivation, based on bleeding tendency of the gingival papillae. This index obtained through observation of bleeding after running the periodontal probe from the base of the papilla on mesial and distal aspects through the sulcus toward the tip of papilla.

3. Calculus: calculus was detected according to Presence or absence of calculus on buccal and lingual surfaces of all dentition except wisdom teeth by using Periodontal Screening and Recording.

III. Results:

Table 1: number of patients attended the dental Hospital:

		Age groups			
Sex	**No**	**15-25**	**26-35**	**36-45**	**> 45**
Male	169	62	44	25	20
Female	132	78	38	18	16
Total	301	140	82	43	36

Table 1 is showing the total number of patients attended the clinic between October 2013 to May 2014, according to gender and different age groups. A total of 301 patients, 169 male and 132 female divided into four age groups (15 - 25), (26 - 35), (36 - 45) and (> 45).

Number of males attended the clinic was higher than female in all age groups except (15 - 25) age group. The table also shows that the patient's number had declined with increasing the age of the patients in both males and females. The numbers of patients under the age group (15 - 25) was 140 patients followed by 83, 43 and 36 for (26 - 35), (36 - 45) and (> 45) age groups respectively.

Table 2: the average plaque and bleeding indices and amount of calculus according to sex:

Sex	Plaque	Bleeding	calculus
Female	0.89	0.77	1.32
Male	1.09	0.85	1.44

Females also demonstrated a lowered mean of plaque score, bleeding index and calculus than males as shown in Table 2.

Table 3: the average of plaque and calculus scores and calculus distribution according to age:

Age	Number	plaque	Bleeding	Calculus
(15-25)	140	1.12	0.83	1.29
(26-35)	82	1.06	0.88	1.41
(36-45)	43	0.94	0.75	1.64
(>46)	36	0.92	0.74	1.66

Table 3 is showing the periodontal status – plaque index, bleeding index and calculus distribution according to different age groups. Plaque score shows a decrease as the patients age increased. This was followed by a general decrease in bleeding severity in the other age groups. Whereas, calculus has increased as the age increased.

IV. Discussion:

The study was conducted on a group of patients attended Department of Periodontics - University of Sulaimani. The majority of patients were seeking periodontal treatment, whereas, a limited number of the patients had come for periodic scaling and polishing.

The periodontal condition of the patients was assessed by using plaque index and papillary bleeding index and calculus distribution. These indices have been used over decades for assessment of periodontal condition and treatment needed for the patients with high degree of reliability.

Generally, number of male was higher than female. The two younger age groups constituted the majority of the patients involved in the study. Only in 15-25 age group, number of female was higher than male; this may be related to behavior and social culture and tradition. The majority of patients participated in this survey was from the University of Sulaimani included students and employees. This is probably due to the location of the University Dental Hospital, which is located inside the university campus and that makes it easy for the patient to attend the hospital for maintaining their periodontal health and seeking periodontal health care. It is also due to the fact that younger patients are more appreciative about their health and appearance; also because this age group is going through hormonal changes in their life and this render them to be more reactive to dental plaque, thus they might show changes in their gingival appearance. It is acknowledged that patients at this age are suffering from gingival bleeding because of hormonal changes which results to puberty type of gingivitis.

In this study, the amount of dental plaque decreased with increasing age, this is probably the result of more balanced hormonal status in older age groups and older people has gone through frequent motivation and oral hygiene instruction and some dental treatment procedures.

The increased plaque accumulation resulted in an increase in the severity of gingival bleeding. Whereas, calculus distribution was increased when the patient's age increased. Regarding the amount of dental plaque and bleeding according to sex, female revealed less plaque and bleeding than male. In this study the amount of calculus also showed to be more in male than female. The previous studies have shown that the prevalence of gingivitis and periodontitis are more in males than females (10,11). "The explanation for these results was that male usually neglecting his oral hygiene, this is owing to the fact that male has a negative attitude toward oral health and regular visit to dental clinic (12). Furthermore, it has been suggested that estrogen hormone in female is more protective in maintaining the periodontal health condition (13).

V. Conclusion:

This study concluded that:

1- The prevalence of plaque and gingival inflammation decreased with age in both males and females.

2- Higher age groups revealed an increase in the amount of calculus deposition.

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