The Periodontal Health Status Among Patients Attending the Periodontal Department, School of Dentistry , Facualty of Medical Science, Sulaimani University,Kurdistan Region ,Iraq

Abdulkareem Hussain Al- Saidy

Abstract

Background: In our studys the sample included 672 patient (348 male and 324 female patients),who were attended the department of periodontics, school of dentistry University of Sulaimani during one academic year (2008-2009).The sample was divided into subgroups according to age and sex.

Aim: The aim of this study was to determine the number of patients and their chief complaints, type of periodontal diseases, and to determine the number of patients from outside and inside sulaimani city.

Methods: The clinical examination was recorded, including methods of detection of bacterial plaque , according to the plaque index (PL1) Sliness and Loe1964 ; gingival index (G1) according to Loe and Sliness1963;attachment loss (CAL); probing pocket depth (PPD).

Results: The questionnaires include general information such as, patients name; sex and age; address, visit to dentist (regular visit, irregular visit) ; chief complaints (routine checking; scaling & polishing; pain; bleeding; pre-prosthetic scaling and polishing; gingival swelling; teeth hypersensitivity; halitosis ; esthetic). There was significant relationship between: age groups and sex; patient age group and chief complain; male patients with plaque induced gingivitis and male patients with chronic periodonities; male age groups and visiting the dentist; female patients lived inside Sulaimani city and female patients lived outside Sulaimani; age groups of total patients [male and female] and visiting the dentist. In addition, there was high significant relationship between age groups and patients chief complaints; age groups of male patients and type of periodontal disease; between female age groups and type of periodontal disease.

Conclusion: Otherwise no statistically significant differences between male and female patients; the address of male patient (inside and outside Sulimani),and patients with plaque induced gingivitis and female patients with chronic periodontitis were found.

Keywords: Gingivitis, periodontal diseases.

School of Dentistry/ University of Sulaimani/ Kurdistan Region / Iraq.

Introduction

Periodontal diseases can be defined as, a chronic bacterial infections that affect the gingiva and alveolar bone, which supporting the teeth in the jaw**.** [1, 2] The main cause of periodontal diseases is bacterial dental plaque , [3**]** and there are a number of contributing risk factors that can increase patients' susceptibility to periodontal diseases, such as age ,[4] genetic, [5] cigarette smoking tobacco, [6, 7] pregnancy, [8] diabetes, [9] stress and depression ,[1]

vitamin C deficiency, [10] malocclusion ,[11] incorrect dental filling [12] and poor oral hygiene. [13] The warning signs of periodontal diseases are: red swollen gingiva, bleeding during brushing, gingival recession that causing the teeth to look longer than before, loose or separating teeth, and persistent bad breathe. [5] Gingivitis is the mildest form of periodontal diseases; it is reversible with professional treatment and good oral hygiene; untreated gingivitis could be advanced to periodontitis; which is irreversible. [5] Periodontitis comprises a group of multifactorial diseases in which periodontopathogens accumulate in dental plaque and trigger host chronic inflammatory and immune responses against periodontal structures .[14] Periodontitis can be either aggressive or chronic periodontitis.

Aggressive periodontitis is usually affect adolescents patients and its main features are rapid attachment loss and bone destruction. [15] While chronic periodontitis is commonly present in adults, and it is characterized by slow to moderate rate of progression. [16] Chronic periodontitis is the most prevalent type of periodontitis, [17] and it is a major cause of tooth loss in adults .[18,19] Patients with periodontitis suffered from gradual loss of tooth attachment in the alveolar bone which lead to formation of periodontal pockets, gingival recession, increasing mobility of teeth, loosing of their function and eventually teeth extraction, which may lead to alterations in type of food uptake, and possibly has an effect general health condition .[20,21] Periodontitis is an important source of chronic inflammation [22] and correlations with periodontitis have been reported for several systemic diseases [23] such as juvenile rheumatoid arthritis ,[24 , 25] coronary heart diseases, [26] preterm birth [27, 28] , and diabetes mellitus. [29-32] The prevalence of periodontal diseases is high in world population; up to 90% of them can be affected by periodontal diseases ;[33] in industrial nations 30% - 40% of adults have periodontitis ;10% of them with severe symptoms of periodontitis .[34] The purpose of this study was to determine the number of patients and their chief complains, and to determine the number of patients from outside and inside sulaimani city for the patients who attending the Department of Periodontology, School dentistry ,University of Sulaimani.

The aims of the study

To determine the number of patients, type of periodontal diseases and chief complaints of patients who visit the department of periodontology, school dentistry, University of Sulaimani.

Patients and Methods

The sample included (672) patient (348 male and 324 female patient),who attended the department of periodontics, school of dentistry University of Sulaimani for one academic year (2008-2009).The sample was divided in to subgroups according to age and sex as shown in table (1).

Materials and Instruments

The instruments used in this study included the following:-

Gloves, eye glass and masks (for examiner protection), Dental mirror (number 4) for intra oral examination, Cotton rolls (for isolation) ,Graduated periodontal probes type Williams (Marking at 1,2,3,5,7,8,9,10 mm), Dental chair with unit ,Kidney- shaped dish**,** Gauze**,** Straight sharp explorer and tweezers.

Questionnaire

All subjects in this study answered a written questionnaire regarding their name; sex and age; address, telephone number, visit to dentist, chief complaint.

Clinical (oral) examination

The clinical examination include measurement of plaque index, gingival

index, probing pocket depth and clinical attachment loss.

Plaque Index (PLI) [35]

The assessment of dental plaque was done by using plaque index system in scale 0-3, according to the plaque index of Sliness and Loe (1964), [35] by using a straight sharp explorer and measure the amount of plaque on all teeth for four surfaces , buccal (labial) , lingual (palatal) , mesial and distal surfaces .The scores and criteria for the plaque index were followed as proposed by author:-

Scores	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 recognized by running a probe across the tooth surface.
2	Moderate accumulation of soft deposit within gingival pocket on the gingival margin and /or adjacent tooth surface which can be seen by naked eye.
3	Abundance of soft matter within the gingival pocket and/or on the gingival margin and adjacent tooth surface.

Gingival index (GI)

The method of measurement of severity of gingivitis , according to the gingival index of Loe and Sliness1963[36] , inspection by naked eyes and by gentle probing via using Williams graduated periodontal probes all teeth for four surface buccal (labial) , lingual (palatal) mesial and distal. The scores and criteria for gingival index were followed as proposed by author:-

Scores	Criteria
0	Normal gingiva
1	Mild inflammation, slight change in colour, slight edema, no bleeding on probing.
2	Moderate inflammation ,redness, edema and glazing, bleeding on probing.
3	Sever inflammation, marked redness and edema ,ulceration ,tendency to spontaneous bleeding.

Probing pocket depth (PPD)

The distance in millimeters from the gingival margin to the base of gingival sulcus or pocket was recorded by using Williams periodontal probe inserted into gingival crevice as close as possible to the long axis of the tooth at four surfaces of each tooth, and the site for measurement were mid- buccal (labial) , mid- palatal (lingual), mesiobuccal and distobuccal surface no pressure was used to insert Williams probe and the probe was allowed to fall by its own weight.

Method of measurement of clinical attachment level [CAL]

By using Williams' graduated periodontal probe inserted into the buccal (labial), lingual (palatal), mesial and distal tooth surfaces the distance between the cemento-enamel junction [CEJ] and the base of pocket will measure to the nearest millimeter. In some cases when there was gingival recession, attachment loss was measured by adding the distance from gingival margin to the cemento-enamel junction to the probing

pocket depth. The level of CEJ could be determined by feeling it with the probe.

In some rare situations where the CEJ was totally obliterated by full crown coverage, Disto-occclusal or mesio-occlusal-distal filling extending below CEJ and badly caries lesion that where extending mesially or distally below CEJ. In such situations, the tooth would be excluded.

Statistical analysis

In this paper we used chi-square test [X^2] to find the relationship and the significance of these relationships. As well as we used F - test to compare and test the difference between the variances of different classification for the data which deal with.

Result

Regarding the data in table [1] using chi-square test, its value [10.09] shows significant relationship between age groups and sex [p<0.1] as showed in table [9]. Using F-test [f = 1.23881] to compare the variances between males and females patient, since [p > 0.05] these is no statistically significant differences between male and female patient at the 95% confidence level as shown in table [10]. For the data in table [2], since the value of Chi-square [X^2 = 56.20], there is high significant relationship between age groups of male patients and chief complaint, as shown in table [9]. For the date in table [2] ,where the value of chi-square is [48.67] gives evidence that, there is no significant relationship between age groups of female patient and chief complain since the p – value is less than [0.10] as shown in table [9]. For date shown in table [3], the result of using chi- square test [X^2 = 70.15] gives a significant relationship between patient age group and chief complaint [P<0.01], see table [9].

The data in table [4], since the value of Chi-square [X^2 = 141.77], there is highly significant relationship between age groups of male patients and type of periodontal disease [P < 0.0.01], as shown in table [9].

By using F-test [F = 279.696] the result in table [10] gives a statistically significant difference between male patients with plaque induce gingivitis and a male patients with chronic periodonities [P<0.05]. For the data in table [4], the value of Chi-square is [X^2 = 50.40], and since [P<0.01], there is high significant relationship between females age groups and type of periodontal disease, as shown in table [9]. F-test value [F = 4.28665] showed that there is no significant differences between female patients with plaque induce gingivitis and female patients with chronic periodontitis as shown in table [10]. For the data in table [5], chi – square value [X^2 = 152.07] gives high significant relationship between age groups of total patients [male& female] and type of periodontal disease [P < 0.01] as shown in table [9]. F-test value [F=26.2057], showed that there is a statistically significant difference between total patients (male and female) with plaque induced gingivitis and total patients with chronic periodontitis [P<0.05], as shown in table [10].

For the data in table [6] chi - square value [X^2 = 16.94] since [P < 0.01], there is high significant relationship between male patient age groups and address of patients as shown in table [9]. F – test [F =2.36286] gives no significant difference between the address of male patients [inside and out side sulimani city [P < 0.05], as shown in table [10]. For the data in table [6] chi - square value [X^2 = 3.46], showed that there is no significant relationship between age groups and female address [P < 0.01], as shown in table [9]. F - test [F = 7.33705] shows that there is statistically significant difference between female patient live inside sulaimani city and female patients live in outside sulaimani city [P<0.05], as shown in table

[10]. For the data in table [7] chi – square [X^2 = 25.75], there is a significant relationship between male age groups and visit to dentist [P<0.01] as shown in table [9]. For the data in table [7] chi – square [X^2 = 12.0], there is no significant relationship between female age groups and female visit to the dentist [P<0.10] as shown in table [9].

For the data in table [8] chi-square value [X^2=18.68], there is a significant relationship between age groups of total patients (male and female) and visit to dentist, the results are shown in table [9].

Table (1): Distribution of Total (Male & Female) Patients according to sex and age.

Age groups	Male	Female
10-20 year	71	51
21-30 year	194	176
31-40 year	50	60
41-50 year	16	28
51-60 year	12	7
61-70 year	5	2
Total	348 Male	324 Female
Total number of male and Female	672 Patient	

Table (2): Distribution of male and female Patients according to age groups & chief complain.

Sex	Age group	Chief Complains									
Male		**Esthetic**	**Scaling & polishing**	**Pain**	**Bleeding**	**Pre-prosthetic**	**Gingival swelling**	**Teeth hypersensitivity**	**Halitosis**	**Routine Checking**	**Total**
	10-20 year	13	19	5	12	1	2	1	8	10	71
	21-30 year	25	66	8	39	7	3	0	15	13	194
	31-40 year	7	13	6	6	5	1	2	5	5	50
	41-50 year	2	3	4	2	1	0	1	1	2	16
	51-60 year	0	1	3	3	1	0	0	2	2	12
	61-70 year	0	0	0	2	1	0	0	2	0	5
	Total number of male patients of each chief complain	50	102	26	64	16	6	4	33	27	348
Female	10-20 year	9	11	6	12	1	0	2	4	6	51
	21-30 year	26	41	12	42	8	1	4	15	27	176
	31-40 year	4	10	11	12	3	1	3	5	11	60
	41-50 year	2	7	4	7	2	2	1	2	1	28
	51-60 year	1	0	3	1	2	0	0	0	0	7
	61-70 year	0	0	1	1	0	0	0	0	0	2
	Total number of female patients of each chief complain	42	69	37	75	16	4	10	26	45	324

Table (3): Distribution of total patient (male & female) according to age groups & chief complain**.**

Age group	Chief Complain									
	Esthetic	Scaling & polishing	Pain	Bleeding	Pre-prosthetic	Gingival swelling	Teeth hypersensitivity	Halitosis	Routine checking	Total
10-20 year	22	30	11	24	2	2	3	12	16	122
21-30 year	51	107	20	81	15	4	4	30	58	370
31-40 year	11	23	17	18	8	2	5	10	16	110
41-50 year	4	10	8	9	2	2	2	2	3	44
51-60 year	1	1	6	4	3	0	0	2	2	19
61-70 year	0	0	1	3	1	0	0	2	0	7
Total number of patient for each chief complain	89	171	63	139	31	10	14	58	95	672

Table (4): Distribution of Male and female patient according to type of periodontal diseases.

Sex	Age groups	Type of Periodontal Disease		Total patients
Male		Plaque induced gingivitis	Chronic periodontitis	
	10-20 year	61	10	71
	21-30 year	185	9	194
	31-40 year	32	18	50
	41-50 year	4	12	16
	51-60 year	0	12	12
	61-70 year	0	5	5
	Total number	282	66	348
Female	10-20 year	48	3	51
	21-30 year	117	59	176
	31-40 year	34	26	60
	41-50 year	9	19	28
	51-60 year	0	7	7
	61-70 year	0	2	1
	Total number	208	116	324

Table (5): Distribution of total (Male & Female) patient according to type of periodontal disease**.**

Age Groups	Type of Periodontal Disease		Total
	Plaque Induce Gingivitis	Chronic Periodontitis	
10-20 year	109	13	122
21-30 year	302	68	370
31-40 year	66	44	110
41-50 year	13	31	44
51-60 year	0	19	19
61-70 year	0	7	7
Total number	490	182	672

Table (6): Distribution of patients according to age group & address**.**

Sex	Age Groups	Patient From Inside Sulaimani	Patients From Outside Sulaimani	Total
Male	10-20 year	56	15	71
Male	21-30 year	120	74	194
Male	31-40 year	41	9	50
Male	41-50 year	14	2	16
Male	51-60 year	9	3	12
Male	61-70 year	5	0	5
Total				**348**
Female	10-20 year	41	10	51
Female	21-30 year	130	46	176
Female	31-40 year	45	15	60
Female	41-50 year	24	4	28
Female	51-60 year	6	1	7
Female	61-70 year	2	0	2
Total				**324**

Table (7): Distribution of male and female patient according to age group & visiting the dentist.

Sex	Age Groups	Visit to Dentist			
Male		**Regular Visit**	**Irregular Visit**	**No Visit**	**Total**
	10-20 year	6	60	5	71
	21-30 year	56	117	21	194
	31-40 year	6	43	1	50
	41-50 year	3	11	2	16
	51-60 year	3	9	0	12
	61-70 year	2	3	0	5
	Total patients	76	243	29	348
Female	10-20 year	11	30	10	51
	21-30 year	35	124	17	176
	31-40 year	8	46	6	60
	41-50 year	2	24	2	28
	51-60 year	0	6	1	7
	61-70 year	0	2	0	2
	Total Patients	56	232	36	324

Table (8): Distribution of total (Male & Female) patient according to age group and visiting the dentist.

Age Groups	Visit to Dentist			
	Regular Visit	**Irregular Visit**	**No Visit to Dentist**	**Total Patient**
10-20 year	17	90	15	122
21-30 year	91	241	38	370
31-40 year	14	89	7	110
41-50 year	5	35	4	44
51-60 year	3	15	1	19
61-70 year	2	5	0	7
Total	132	475	65	672

Table (9): Summary of chi-square – test for finding significance of relationship between sex and age groups , chief complaints, type of periodontal disease ,address and visiting the dentist.

Title	Chi – square	P – value	significance
Distribution of total (male &female) patients according to sex and age	10-09	0.0726	S
Distribution of male patients according to age groups& chief complain	56.20	0.0460	HS
Distribution of Female patients according to age groups & chief complain	48.67	0.1635	NS
Distribution of total patients (male & female according to age group and chief complain	70.15	0.0022	S
Distribution of male patients according to type of periodontal disease	141.77	0.000	HS
Distribution of female patients according to type of periodontal disease	50.40	0.000	HS
Distribution of total patients (male &female) according to type of periodontal disease.	152.07	0.000	HS
Distribution of male patients according to age groups& address	16.94	0.0046	HS
Distribution of female patients according to age groups & address	3.46	0.6299	NS
Distribution of male patients according to age groups & visiting the dentist	25.75	0.0041	S
Distribution of female patients according to age groups & visiting the dentist	12.00	0.2850	NS
Distribution of total patients (male& female) according to age groups and visiting the dentist	18.68	0.0445	S

Table (10): Summary of F – test for comparison between Male, Female, type of Periodontal Diseases and address of patients.

Title	F-test	P – value	significance
Comparison between male and female patient	1.23881	0.819959	NS
Comparison between males patient with plaque induce gingivitis males patient with chronic periodontal disease	279.696	0.00819	S
Comparison between females patient with plaque induce gingivitis and females patient with chronic periodontal disease	4.28665	0.136107	NS
Comparison between total patients (male & female) with plaque induce gingivitis & total patients (male& female) with chronic periodontal disease.	26.2057	0.002704	S
Comparison between male patients live inside Sulaimani city and males patient live outside Sulaimani	2.36286	0.367084	NS
Comparison between females patient live inside Sulaimani city & females patient live in outside Sulaimani	7.33705	0.047346	S

Discussion

The objectives of the present study are to determine the numbers of the patients; their chief complains and the type of periodontal diseases for patients who attend the Department of Periodontology, School of dentistry, University of Sulaimani during one academic year (2008-2009). There was a lack in data of similar research in Kurdistan Region so the establishment of the agreement of all our result with those in literature could not be achieved. To carry out a meaningful comparison between various studies is difficult due to the use of different criteria and method of examination and sample selection.

It is well-known that aging is a risk factor associated with oral diseases. [37] Severe periodontal breakdown is more common in older patient than in younger one. [38- 40] In this study most of the patients are young age males and females and this may be due to they pay attention to their aesthetic more than olders .Therefore, most of the patients have plaque induced gingivitis, and whenever the age of the patients increase the patients have likelihood chronic periodontitis increased because periodontal destruction is increased with age. Any data are hardly available concerning the chief complaints (CCs) of patients with periodontitis. [41] Many patients in this study were complained from pain, gingival bleeding, gingival swelling , and teeth hypersensitivity and halitosis which consider as a warring sign that enhance the patient to visit dentist as soon as possible.

In this research most of the patients have irregular visit to the dentist and some of patients visited the Department of Periodontology for routine checking, this indicated that the studied sample of patients have a low dental education because they visit their dentist when they have a dental complain. Therefore, dentist in Sulaimani and periodontist in department of

periodontology need to work hardly in order to motivate and improve the dental education of their patients. Moreover, this study revealed that the number of patients from outside sulaimani city is less than those from inside the city ,this may be due to low dental education level of the patients in the villages and the second reason was the difficulty of transport of patients because the villages is so far from the School of Dentistry in Sulaimani. Therefore, in order to overcome this problem and to increase the number of patients, who will visit Department of Periodontology School of Dentistry we give these suggestions:

Firstly, the staff of School of Dentistry should go to the villages, schools, factories and farms in order to increase dental patients' education.

Secondly, The School of Dentistry should make advertisements in its' website in internet, face book, twitter; TV channels, newspapers, Radio and Posters to explain the whole clinical activities of the School of Dentistry and to motivate and educate the patients .In addition, The school of Dentistry should open a special pharmacy to sell all medicine and materials which are used by the patients in suitable low cost in order to encourage patients to visit the school of dentistry and finally, a special cafeteria should be opened for the patients who visit the School of Dentistry for their rest and comfort because they come from different distant areas.

Conclusions

1-In this study, most of the patients are young age males and females.

2-Most of the patients (males and females) have plaque induced gingivitis

3-Many patients in this study are complain from pain, gingival bleeding, gingival swelling, teeth hypersensitivity, and halitosis

4-A number of patients come for routine checking, and most of the patients have irregular visit to the dentist.

5-The number of patients from outside Sulaimani city is less than those from inside the city.

Acknowledgments

I would like to thank the staff of Department of Periodontology School of Dentistry, University of Sulaimani, for their cooperation and support to complete this study .In addition, my deep thanks to Dr. Saeed A. Lattef, the assistant of Dean of School of Dentistry, University of Sulaimani for his valuable help.

References

[1] Rosania,A., E.,Kathryn, G.Cheryl M., and David A. Stress, Depression, Cortisol, and Periodontal Disease.
J Periodontal,2009;80:260-26.

[2] Darveau RP. Periodontitis: a polymicrobial disruption of host homeostasis Nat Rev Microbiol., 2010; 8(7):481–90.

[3] Lindhe, J., N. Lang ,and T.Karring.Clinical Periodontology and Implant Dentistry, 2008, Blackweel Munksgaard ,USA,.

[4] Grossi,S. ,and J. Zambon . 1994. Assessment of risk for periodontal disease .Risk indicators for attachment loss.
J Periodontal **,**1994*;* 65:260-267.

[5] Carranza, F., M. Newman ,H. Takei, and P. Klokkevold .
Clinical Periodontology,2006; .Saunders Elesvier, China.

[6] Bergstrom, J.,H.Prebr . Tobacco use as a risk factor .J Periodontal, 1994; 65:545-550.

[7] Gautam, D. K ,Vikas Jindal, S. C. Gupta, Amrinder Tuli, Bhanu Kotwal, and Rambhika Thakur. Effect of cigarette smoking on the periodontal health status: A comparative, cross sectional study.

Journal of Indian Society of Periodontology J Indian Soc Periodontol.,2011; Oct-Dec; 15(4): 383–387.

[8] Tilakaratne,A., M.Soory, A. Ranasinghe,S Corea,S. Ekanayake, M.De Siliva. Periodontal disease status during pregnancy and 3 months post-partum in a rural population of Sri-Lankan women .Journal of Clinical Periodontology, 2000 ; 27:787-792.

[9] Yunus,S..Short communication: Diabetes and its implication in Periodontics. Biomedical Research ,2009;20(2):87.

[10] Cotarn R.,Kumar, Buckley,L. The relationship between malocclusion and periodontal disease .J Periodontal , 1972 ;43:415.

[11] Buckley,L. .The relationship between malocclusion and periodontal disease.J Periodontal ,1972;43:415.

[12] Leon, A. Amalgam restorations and periodontal disease.Br Dent J. ,1976;140:377.

[13] Ryan ,M..Non-surgical approaches for the treatment of Periodontal Diseases. Journal of dental clinic of North America **,** 2005;49:611-636.

[14] Repeke CE, Cardoso CR, Claudino M, Silveira EM, Trombone AP, Campanelli AP, Silva JS, Martins Júnior W, Garlet GP,Non-inflammatory destructive periodontal disease: a clinical, microbiological, immunological and genetic investigation. J Appl Oral Sci., 2012 ;Feb;20(1):113-21.

[15] Lang N, Bartold PM, Cullinan M, Jeffcoat M, Mombelli A, Murakami S, etal. **.**Consensus report: aggressive periodontitis Ann Periodontol**,**1999;4:53.

[16] Lindhe J, Ranney R, Lamster I, Charles A, Chung CP, Flemmig T, etal. Consensus report: chronic periodontitis. Ann. Periodontol. 1999, 4: 38.

17- Albandar JM **:** Epidemiology and risk factors of periodontal diseases. Dent Clin North Am**,** 2005**;**49:517–532.

[18] Phipps KR, Stevens VJ Relative contribution of caries and periodontal disease in adult tooth loss for an HMO dental population. J Public Health Dent**,1**995*;* 55:250 –252.

[19] Shlossman M, Knowler WC, Pettitt DJ, Genco RJ Type 2 diabetes mellitus and periodontal disease. J Am Dent Assoc**,**1990 ;121: 532–536.

[20] Nevins M, Becker W, Kornman K, editors. Periodontal diagnosis and diagnostic aids. Proceedings, World Workshop in Clinical Periodontics**,**1989;July 23-27, Chicago: American Academy of Periodontology.

[21] Hung HC, Willett W, Ascherio A, Rosner BA, Rimm E, Joshipura KJ. Tooth loss and dietary intake. J Am Dent Assoc, 2003; 134:1185–1.

[22] Siribamrungwong M, Puangpanngam K.Treatment of periodontal diseases reduces chronic systemic inflammation in maintenance hemodialysis patients**.** Ren Fail., 2012;34(2):171-5.

[23] Azarpazhooh A, Tenenbaum HC, Separating fact from fiction: use of high-level evidence from research syntheses to identify diseases and disorders associated with periodontal disease. J Can Dent Assoc., 2012 **;**Mar;78:c25.

[24] Lagervall, M., Jansson, L. & Bergstrom, J. Systemic disorders in patient with periodontal disease. Journal of Clinical Periodontology,2003; 30, 293–299.

[25] Mercado, F. B., Marshall, R. I. & Bartold, P. M. Inter-relationships between rheumatoid arthritis and periodontal disease. A review. Journal of Clinical Periodontology**,**2003; 30, 761–772.

[26] DeStefano, F., Anda, R. F., Kahn, H. S., Williamson, D. F. & Russell, C. M. Dental disease and risk of coronary heart disease

and mortality. British Medical Journal,1993 ;306, 688–691.

[27] Offenbacher, S., Katz, V., Fertik, G., Collins, J.,Boyd, D., Maynor, G., McKaig, R. & Beck, J Periodontal infection as a possible risk factor for preterm low birth weight. Journal of Periodontology,1996; 67, 1103–1113.

[28] Offenbacher, S., Beck, J. D., Lieff, S. & Slade, G. Role of periodontitis in systemic health: spontaneous preterm birth. Journal of Dental Education,1998; 62;852–858.

[29] Teng YA, Taylor GW, Scannapieco F, Kinane DF, Curtis M, Beck JD,etal. .Periodontal health and systemic disorders. Journal of the Canadian Dental Association , 2002; 68: 188-192.

[30] Ebersole JL, Cappelli D, Mathys EC, Steffen MJ, Singer RE, Montgomery M, etal. Periodontitis in humans and non- human primates: Oral-systemic linkage including acute phase proteins. Annals of Periodontology,2002; 7: 102-111.

[31] Mealey, B.L., Oates TW. Diabetes mellitus and periodontal diseases. J Periodontol,2006; 77:1289–1303.

[32] Mealey BL, Ocampo GL. Diabetes mellitus and periodontal disease. Periodontology 2000, 2007; 44:127–153.

[33] Bruce, L., S.Bryan, and W. Newell.. Periodontal diseases .The Lancent. ,2005 ;366 (9499): 1809-1820.

[34] Meisel, P.,and K. Thomas. Photodynamic therapy for periodontal diseases: State of the art. Journal of Photochemistry and Photobiology B:Biology, 2005. 79 (2) : 159-170.

[35] Silness J. and Loe H.: Periodontal disease in pregnancy. II. Correlation with oral hygiene and periodontal condition. Acta. Odont. Scand., 1964 ;22: 121-135.

[36] Loe H. and Sillness J.: Periodontal disease in pregnancy.I. prevalence and severity. Acta .Odonta . Scand,1963;21:533.

[37] Sun-Young Chung, Keun-Bae Song, Sang Gyu Lee,Youn-Hee Choi. The strength of age effect on tooth loss and periodontal condition in Korean elderly Archives of Gerontology and Geriatrics,2011; Volume 53, Issue 2 , Pages e243-e248.

[38] Sheiham,A..The epidemiology of dental caries and periodontal disease.journal of clinical periodontology,1979 ;6:7-15.

[39] Hugoson,A. Jordan,T. Frequency distribution of individuals aged 20-70 years according to severity of periodontal diseases. Community Dentistry and oral Epidemiology,1982 ;10:187-192.

[40] American Academy of Periodontology-Research, Scicence and therapy Committee. Periodontal diseases of children and adolescents. Pediatr Dent., 2008-2009;30 (7 Suppl):240-7.

[41] Brunsvold MA, Nair P, Oates TW Jr Chief complaints of patients seeking treatment for periodontitis. J Am Dent Assoc. ,1999; Mar;130(3):359-64.