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Research Article

Psychosocial Stress In Relation To Periodontal Status, an Observational Study

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Abstract: The intention of this study is to detect the relation of stress in the periodontal disease, and to evaluate the other socio-economic factors that could be linked to the severity of the periodontal diseases. This is an observational study, to detect the relation of psychological stress and its effect on periodontal status. Involving a sample size of 69 patients. The study conducted in two groups: the control group was 33 subjects with healthy periodontium, and the other study group was 36 chronic periodontitis patient; the stress level evaluated using a standard questionnaire according to The Perceived Stress Scale (PSS), also the periodontal parameters of each participant was evaluated at 6 sites using the Ramfjord teeth. (Statistical Package for the Social Sciences) SPSS 18 is used for comparing between means using paired – samples T test. The comparison of stress score with periodontal disease severity in the two groups showed a statistically significant increase in the stress score in chronic periodontitis patients The present study showed statistically significant association between psychological stress levels and the severity of chronic periodontitis. This could be due to deregulation of the immune system. In the future larger sample size should be used also Determination of a biological marker that correlates well with levels of stress and serves as an appropriate experimental measure of stress.
Keywords: chronic periodontitis, immunity, stress.

INTRODUCTION

The etiology of periodontal disease is multifactorial. Several risk factors are involved like uncontrolled diabetes, smoking, specific infections, age, psychosocial stress and depression [1,2,3].

Particularly psychosocial stress, have been concerned as risk indicators for periodontal disease. Socioeconomic status, occupation, competitive work load, emotional disturbances, has led to increased stress levels in the modern lifestyle [4].

It is proposed that acute cases use the prostaglandin pathway to initiate periodontal disease.As the infectious process becomes more chronic, inflammation occurs producing increased levels of cortisol, cytokines, and other modulators of stress, manifesting themselves as clinically evident periodontal disease [5].

The impact of stress on periodontal health is not merely by its presence or absence but the type, duration and how an individual copes with it. Individuals under stress tend to adopt behavioral changes like poor oral hygiene maintenance, smoking, clenching or grinding of teeth. It is, therefore, necessary and worthwhile to understand these mechanisms in pursuit of analyzing the relationship between psychosocial stress and periodontal disease.

Therefore, based on current studies, while etiological mechanisms have not been fully experimentally recognized, psychosocial stress does modulate neuroendocrine and immune system activity linked to periodontal disease. The intention of this study is to detect the relation of stress in the periodontal disease, and to evaluate the other socio-economic factors that could be linked to the severity of the periodontal diseases.

MATERIALS AND METHODS

This is an observational study, to detect the relation of psychological stress and its effect on periodontal status. Involving a sample size of 69 patients. The study conducted in two groups: the control group was 33 subjects with healthy periodontium, and the other study group was 36 chronic periodontitis patient attending the periodontology clinic at Riyadh dental colleges. The patients with an age group of 25

years and above, with at least 20 teeth in the mouth, were selected and recruited for the study.

The exclusion criteria included: systemically ill subjects (diabetes, hypertension), Subject on any antibiotic, steroidal, chemotherapeutic or antipsychotic drug therapy, Subjects did scaling or root planning less than 3 months, Pregnancy and smokers. The nature of the study explained to all the participants and consent obtained prior to the commencement of the study. A detailed Institutional Ethical Committee Approval had been taken before the start of the study.

Psychological evaluation

The stress level evaluated using a standard questionnaire according to The Perceived Stress Scale (PSS), which is a classic stress assessment instrument[6]. This tool, while originally developed in 1983, remains a popular choice for helping us understand how different situations affect our feelings and our perceived stress. The questions in this scale ask about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way. Individual scores on the PSS can range from 0 to 40 with higher scores indicating higher perceived stress.

Scores ranging from 0-13 would be considered low stress.

Scores ranging from 14-26 would be considered moderate stress.

Scores ranging from 27-40 would be considered high perceived stress[6].

Periodontal parameters

Five independent examiners performed the clinical examinations. The periodontal parameters of each participant was evaluated at 6 sites using the Ramfjord teeth (16, 21, 24, 36, 41 and 44) [7], using a UNC 12 periodontal probe. These teeth were used to determine, the gingival index (GI) according to Löe and Silness [8], the plaque index (PI) according to Silness and Löe [9], the probing pocket depth (PD) and loss of attachment were measured according to Glavind and Löe [10]. If an index tooth was absent, the tooth nearest in the sextant was examined. If all the teeth of the sextant were missing, that sextant was excluded. Teeth exhibiting extensively destroyed crowns or which were not fully erupted was also excluded from the examination procedure, Probing Pocket Depth and Clinical Attachment Level were measured and recorded to the nearest millimeter, A 'pre-study' reliability test was conducted by performing duplicate dental examinations in ten participants, selected at the Department of Periodontics, Riyadh Dental College. The re-examinations to evaluate reproducibility 'during the study' were performed two hours after the end of the initial examination in the participants.

STATISTICS

Descriptive statistics analyses done with the (Statistical Package for the Social Sciences) SPSS 18. Comparing between means using paired – samples T test.

RESULTS

The total sample size was 69 and was divided into group 1 (without periodontal disease) and group 2 (with periodontal disease). The first group consisted of 33 subjects while the second group consisted of 36 subjects. Stress was assessed with the self-answer questionnaire and this was compared with periodontal parameters.

Table 1: Two groups and the clinical parameters with the stress score of each group.

	Subjects	**Male**	**Female**	**Bruxism**	**GI**	**PI**	**PPD**	**Recession**	**CAL**	**Stress Score**
Grp-1	33	8	25	4	0.72±0.30	0.77±0.29	1.97±0.70	0	0	17±5
Grp-2	36	15	21	12	1.62±0.50	1.39±0.59	4.05±0.89	1.10±0.83	3.27±0.52	25±5

Table 2: The age grouping for the subjects and their stress scores.

		Stress. Score			Total
		0-13 Low	14-26 Moderate	27-40 High	
AGE	<30	11	25	1	37
	31-35	2	9	2	13
	36-40	1	5	4	10
	41-45	0	1	3	4
	46-50	0	0	1	1
	51-55	0	0	3	3
	>56	0	0	1	1
Total		14 (20.3%)	40(57.9%)	15(21.8%)	69

Table 3: Clinical attachment loss in each stress category.

		STRESS.SCORE			Total % (n)
		Low stress % (n)	Moderate stress % (n)	High stress % (n)	
CAL	0 no cal	39.4(13)	60.6(20)	0	(33)
	1-2mm mild	4.8(1)	61.9(13)	33.3(7)	(21)
	3-5mm moderate	0	50(4)	50(4)	(8)
	>5mm severe	0	42.9(3)	57.1(4)	(7)
Total		20.3(14)	57.9(40)	21.8(15)	100(69)

Table 4: Showing the percentage of every stress group.

Stress Score	Frequency	Percent
Low stress (0-13)	14	20.3
Moderate stress (14-26)	40	57.9
High stress (27-40)	15	21.8
Total	69	100.0

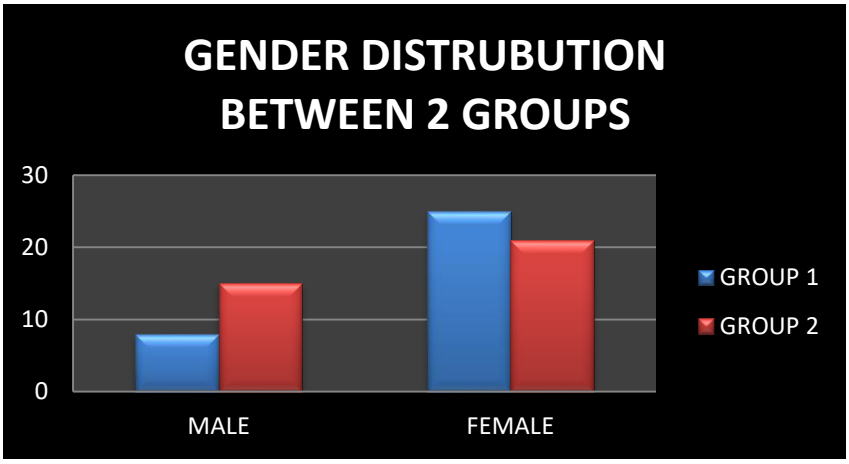

Fig-1: Gender distribution between the two groups.

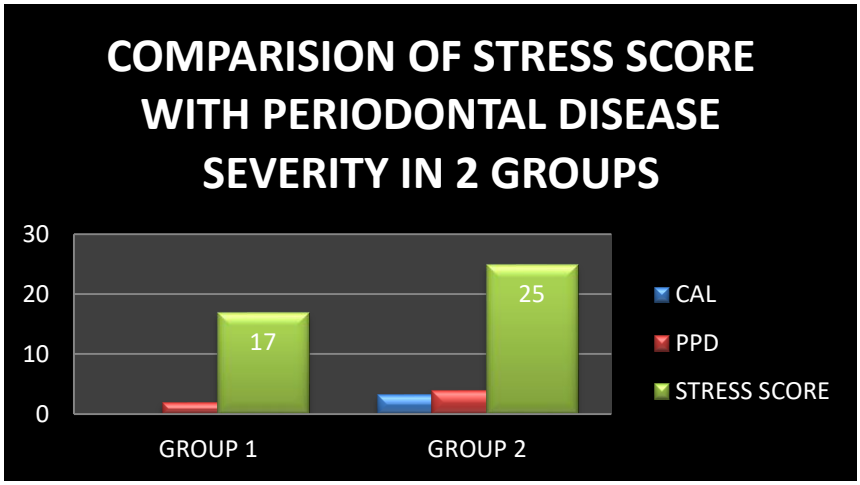

Fig-2: Showing the comparison of stress score with periodontal disease severity in the two groups which is statistically significant

DISCUSSION

The present study showed statistically significant association between psychological stress levels and the severity of chronic periodontitis. This could be due to deregulation of the immune system. The psychological stress will increase the concentration of cortisol from the adrenal cortex in the circulation leading to suppression of the inflammatory response, modeling cytokines profile and so increase level of destruction of the periodontium and clinical attachment loss. This result is in agreement with (Breivik) who concluded that stress maybe contributing factor in

periodontal disease [11]. On the other hand, our present study is in disagreement with (Mengel) who didn't find association between psychological stress and periodontal status[12]. This could be due to a very small sample size in (Mengel) study 30 subjects only.

CONCLUSION AND RECOMMENDATIONS

The inconsistent results between studies can also be attributed to the fact that, all groups worked with small sample sizes for which the results likely could not be generalized for the population at large .With these small sample sizes the results become more unreliable and thus the evidence is weaker. In the future some of these limitations could be avoiding by applying the following changes :

- Making use of stronger study designs, such as prospective longitudinal studies in which stress and periodontal status can be monitored alongside.
- Determination of a biological marker that correlates well with levels of stress and serves as an appropriate experimental measure of stress .
- Using larger sample sizes .
- Using longer periods of time over which to conduct the studies .

REFERENCES

1. Genco RJ; Current view of risk factors for periodontal diseases. J Periodontol, 1996; 67(10): 1041-1049.
2. Moss ME, Beck JD, Kaplan BH, Offenbacher S, Weintraub JA, Koch GG, Tedesco LA; Exploratory case-control analysis of psychosocial factors and adult periodontitis. Journal of periodontology, 1996; 67(10s): 1060-1069.
3. Monteiro da Silva AM, Oakley DA, Newman HN, Nohl FS, Lloyd HM; Psychosocial factors and adult onset rapidly progressing periodontitis. J ClinPeriodontol, 1996; 23(8): 789-94.
4. Croucher R, Marcenes WS, Torres MC, Hughes F, Sheiham A; The relationship between life events and periodontitits: a case control study. J ClinPeriodontol, 1997; 24(1): 39.
5. LeResche L, Dworkin SF; The role of stress in inflammatory disease, including periodontal disease: review of concepts and current findings. J ClinPeriodontol 2000;30(1): 91-103.
6. Cohen S, Kamarck T, Mermelstein R; The PSS Scale is reprinted with permission of the American Sociological Association, A global measure of perceived stress. Journal of Health and Social Behavior, 1983; 24: 386-396.
7. Ramfjord S; Indices for prevalence and incidence of periodontal disease. J Periodontol, 1959; 30(1): 51-59.
8. Löe H, Silness J; Periodontal disease in pregnancyI. Acta Odontol Scand, 1963; 21(12): 533-551.
9. Silness J, Loe H; Periodontal disease in pregnancyII. Acta Odontol Scand, 1964; 22(2):121-135.
10. Glavind L, Loe H; Errors in the clinical assessment of periodontal destruction. J Periodontol Res, 1967; 2(3): 180-184.
11. Breivik T, Thrane PS, Murison R, Gjermo P; Emotional stress effects on immunity, gingivitis and periodontitis. Eur J Oral Sci, 1996; 104(4): 327-334.
12. Mengel R, Bacher M, Flores-De-Jacoby L; Interactions between stress, Il-1b, Il-6 and cortisol in periodontaly diseased patients. J ClinPeriodontol, 2002; 29: 1012-1022.