«Original Articles »

Mental health and stressful life events assessment in patients with periodontal diseases in comparison with normal group

Najmeh Hamid[1*], Mohamad Vatankhah[2], Bahman Zarezadegan[2]

1-Associate Professor of Clinical Psychology, Shahid Chamran University, Ahvaz, Iran
2-MSc Student of Clinical Psychology, Shahid Chamran University, Ahvaz, Iran.

Abstract

Background: The purpose of this study was to compare the mental health and daily stress in periodontal diseases and normal group.

Materials and methods: A causal comparative method was carried out. Using the screening sampling method, the sample subjects were selected from 20 patients with periodontal diseases and 20 attendants of patient as normal group. The two groups were matched from age, sex, social- educational status and lack of using psychiatric drugs. Goldberg general health questionnaire and Surafino daily stress scale were selected as research instruments. T-test and Pearson correlation statistical equations were applied to analyze the collected data.

Results: The results revealed that there was a significant difference between mental health and daily stresses in periodontal patients against normal subjects ($p<0.001$). The rate of mental health and its subclass in periodontal patients were significantly lower than normal subjects; however the findings came into view that the rate of daily stresses in periodontal patients was higher than normal subjects.

Conclusion: The results of this research showed that the rate of daily stresses in people with periodontal disease was significantly higher than normal subjects. In addition the rate of mental health and its subclass in patients were lower than normal subjects. It is worth to say that according to the present results taking into account the psychological factors are well thought-out in the prevention and treatment of periodontal diseases.

Keywords: Periodontal diseases, mental health, daily stresses.

⋆*Corresponding author:*
Hamid Najmeh; Department of Psychology, Shahid Chamran University, Ahvaz, Iran
Tel: 09161187586
Email: dr_najmehhamid@yahoo.com

►*Please cite this paper as:*
Hamid N,Vatankhah M, Zarezadegan B. Mental health and stressful life events assessment in patients with periodontal disease in comparison with normal group. Jentashapir J Health Res 2013;4(4): 277-282

Received: 15.05.2012 **Accepted: 29.10.2012**

Introduction

Periodontal disease is one of the most common infectious diseases that affect periodontium. Tissues around the teeth and gums are known as periodontium consisting periodontal, gums, smtom and alveola bone. Gum tissue disease put in danger the health of periodontium and would be created by local stimulators factors such as dental plaque and systemic factors such as diabetes, leukemia. Behavioral factors such as smoking and other potential risk factors such as heredity, stress, and anxiety are also triggers to create periodontal disease (1). Psychosocial factors such as lifestyle socioeconomic status, level of education can also be effective factors in periodontal diseases (2). This issue has been confirmed in many studies. Epidemiology and clinical observations have shown that experienced negative life events, especially events that occur with depression may be involved in the increased susceptibility to periodontal diseases (3). Previous studies have also shown that people who are stressed are more likely in danger of clinical failure attachment and alveolar bone destruction. Perhaps this problem could be produced due to increase in production of interleukin - 6 in response to environmental stresses. Another reason may be that people under stress responses weak reaction to gum' infection. In a study Dave & Vandyke (2005) have shown that in addition to known factors in periodontal disorders such as age, oral hygiene and smoking; loss of a spouse (widow) and certain personality traits such as the excessive external locus of control could increase the risk of these disorders (4). In another study conducted by Pruzzo *et al.* (2007) stated that chronic stress produces inter-related corruption causing tooth decay and gum disorders (5). In another study by Gesy and Li dy, China (2005) they showed that there was a significant difference between the control group and periodontal disorders for somatization, obsessive-compulsive symptoms, interpersonal sensitivity, depression, anxiety and aggression (6). A cross-sectional study conducted by Genco, Grossi, Dunford and Tedesco (1999); extracted results showed that it is predicted the psychological crisis which is mainly a manifestation of depression might be an important factor for periodontal diseases.The daily stress level was another variable that could be associated with periodontal disease. In connection with this point in one of the first studies examining the role of stress in periodontal disease, results showed that the hyperactivity hypothalamus-pituitary-adrenal association, leading to increase levels of cortizole which in turn can be correlated with the severity of periodontal diseases (7). In a survey Daiane *et al.* (2005) on rats showed that environmental stress significantly increases the rate of decay and gum disorders due to internal corruption factors (8). However, some studies found that there was no significant difference between psychological factors and periodontal disorders; for example, Solis, Lotufo and others (2004) conducted a study using a logistic regression and showed that psychiatric symptoms such as depression and hopelessness were not growth factors for periodontal diseases (9). The results from Banihashemi rad, Saghafi and Tabatabai studies, Iran, (2009) showed that there was no significant correlation between the severity of depression and periodontal disorders. However, in this study for plaque and bleeding indices there was a significant difference between control and experimental groups (10). Considering the conflicting results that have sometimes been obtained in this direction, it is needed to carry out more investigations making clear the relationship of stress, coping stress styles and gum diseases (11). Although periodontal disorders were determined by behavioral factors such as social and psychological factors, however, these factors have not seriously been studied from the point of view of psychological conditions and

treated features (12). It should also be noted that the psychological factors associated with periodontal disease require an authoritative project because stress can be caused by a previous chronic disease. It is very helpful to find the relationship for prevention and treatment of oral disorders. A reviewed study was conducted by Pruzzo *et al.* (2007) concluded that the relationship between psychological factors and periodontal disease with a positive correlation of 57%, and a positive relationship of 28% between periodontal disease and other features while there was a negative relationship of 14.2% for other indices. Overall, despite the limitations of this regular study, many studies have shown that there was a positive relationship between psychological factors and periodontal disorders. However, further investigations are needed to evaluate risk factors for stress associated with gum disease (5). Considering the relationship between gum disease and psychological factors, this study aimed to compare mental health and daily stress events in patients with periodontal disease and normal people in order to determine the influence of psychological factors - mental health and daily stress on periodontal disorders.

Materials and methods

A causal - comparative study was conducted and the sample size included 20 subjects with periodontal disease who were referred to dental clinics. As well as 20 of their homogeneous companions in terms of age, sex, socioeconomic status, lack of prior use of Psychotropic drugs were selected by using an access sampling method. The mean age of participants was 45 years including 20 female and 20 male. This study was conducted assessing the mental health of contributors using 28 questions Goldberg's General Health Questionnaire (Goldberg). The questionnaire has been made by Goldberg and Hiller to screen non-psychotic mental disorders. The questionnaire contains four sub-scales (physical symptoms, symptoms of anxiety and insomnia, social dysfunction syndrome and depressive symptoms) and each scale contains seven questions. The individual scores were obtained by the sum of the four sub-scales. Taghavi (2002) have reported virtue of the instrument from 78% to 93% using Cronbach's alpha coefficient. Applying the bisection method he also determined the instrument reliability from 83% to 90% (13). As well as in this study, the daily stress questionnaire Surafino (1997) was applied. The questionnaire consists of 62 items and has five Likert scale options that measures the amount of a person's unhappiness for stressful events. Samari *et al.* (2009) achieved the questionnaire reliability coefficient of 84% to 89% (14). In other internal studies, the reliability coefficient and its validity have been demonstrated (15). In order to evaluate the research hypotheses, T-test student method was applied for independent groups. In this method after demonstrating pre-hypotheses the mean and variance of the two independent groups were determined using statistical parametric. In addition, SPSS software version 16 was applied surveying data analysis.

Results

In the present study 20 patients were selected with periodontal disease as subjects. It was also included 20 people who had come along with patients to the clinic as a comparison group. People in these groups were harmonized for age, sex, and socioeconomic level. The mean age of the sample was 45 years, 20 males and 20 females equally. There also were the number of 10 female and 10 male with periodontal disease opposite to 10 healthy females and 10 healthy males.

Comparison people with periodontal disease and normal cases in mental health variables

Table 1 shows descriptive statistics and independent T-test results of the two groups of patients with periodontal disease

and healthy group for mental health variable and its subscales.

Independent T-test results indicated that among healthy subjects and patients with periodontal disease, there was a significant difference ($p < 0.001$) for the total score of mental health conditions, anxiety problems, social and depression.

Comparison of patients with periodontal disease and healthy individuals in daily stress variable

Table 2 shows descriptive statistics and independent T-test results of the two groups of patients with periodontal disease and healthy controls for daily stress variable.

As Table 2 shows among people with gum disease and healthy individual T values for daily stress variable was 12.91which is at a significant level ($P < 0.001$).

Table1: Findings and the description T-test of the two groups in terms of mental health and sub-scale variables

Variables	Gum disease		Healthy		Score T	Level of significance
	Average	Standard Deviation	Average	Standard Deviation		
Total mental health score	44.76	14.31	23	21.9	6.521	P <0.001
Somaticcondition	10.87	4.08	6.5	23.8	4.21	P <0.001
Anxiety	12.96	3.97	6.15	4.01	6.921	P <0.001
Social Problems	9.75	4.16	7.13	3.96	9.23	P <0.092
Depression	14.36	3.65	5.12	3.12	7.23	P <0.001

Table2: Results of the T-test to compare two independent daily stress in healthy individuals and patients with periodontal disease

Variables	Gum disease		Healthy		Score T	Significant
	Average	Standard Deviation	Average	Standard Deviation		
Daily stress	253	12.81	125.33	8.14	12.91	P <0.001

Discussion and conclusions

The present study aimed to compare mental health and stress in patients with periodontal disease opposite to normal individual to determine the influence of psychological factors on periodontal disorders. The extracted results from the present study showed that between psychological variables, the scale and range of daily stress there was a significant different for people with periodontal disease and healthy individuals ($p < 0.001$). The relationship between stress and periodontal disease in this field has been confirmed in a wide range of researches. For example, Dayan *et al.* (2008) came to the conclusion that stress can be associated with tooth decay and gum disease (8). Vandyke and Dave (2005) have also demonstrated that despite limitations in this context, in most researches in the field of periodontal disease and stress there was a positive relationship between the two variables. The reason for this could be due to the increased production of IL-6 in response to environmental stress leading to a weak immune system in this people making them prone to gum disorders (4). It should also be noted that the environmental

effects of psychological stress not only can be produced through changes in behavioral habits but through direct effects on the immune system (16). The current results revealed that people with gum disease have less mental health which was consistent with other studies in this area. For example, in a study conducted by Solis *et al.* (2004) important factor in the prediction of periodontal disease was the anxiety and depression. Solis showed that this impact takes place not only does by changing habits and behavior, but also through a direct effect on the immune system (9). Also, in a study by Johnnsen (2006) in hemodialysis patients a significant relationship was found between depression and periodontal disease (17). This relationship has also been found in other studies (1). Genco (1999) revealed that there was a relationship between psychological-social stresses with periodontal disease (11). Periodontal disease could also be related to psychosocial factors such as unemployment and job seekers being, low marital quality, negative life events and physical chronic diseases (18). Among the negative experiences of life, especially those with depression symptoms shown to be associated with periodontal disease. In a research by Bensley & Van VanEenwyk (2011) the results showed that the stress caused the weaken the immune system and this agent itself prone people to periodontal disease (19). However, it can also be considered as another way that a person who experienced stress in life and he suffers from mental illness which in turn prone him to periodontal diseases. After all, the effects of psychosomatic disorders on the control of harmful organic tissues are known to affect both through the periodontal and oral cavity; 1 - by creating habits that are destructive periodontal 2 - through a direct effect of the nervous system on physiological tissue balance. Reasonable justification for the relationship between periodontal diseases and psychological factors relies on the principle that psychological states such as depression and response to stressors can affect the immune system which in turn cause individual to be more susceptible in relation to periodontal disease and put his general health in crisis (11). The mechanism that causes negative emotions such as depression impacted on periodontal diseases is yet less well known dental area. The recent debate about the lack of neuro-endocrine regulation in the brain which cause dental plaque could be a part of the answer**.** Furthermore, it is assumed that other risk factors for periodontal diseases such as genetics, age, excessive smoking, and insulin deficiency may be attributed to the increase of individual susceptibility for brain disorders based on the same mechanism (3). Psychological factors, neuronal system, the endocrine and immune systems have a two-way correlation and in terms of response to bacterial challenge which is regulated by the brain it is something that is well thought out by the many authors. Finally, considering the results of the present research and the role of psychological factors such as daily stress and mental health in periodontal disease it is suggested that special attention should be paid to the role of psychological factors for prevention and treatment of periodontal disorders.

Acknowledgment

The authors sincerely thank all the patients and their families who contributed to this study.

References

1-Soleimani E, Shayeste Y, Khoshkhoo N. The assessment of relation between lipids metabolism disorder and periodontal diseases in cardiovascular patients. Tehran Univ Med Sci 2005; 67.-75.[In Persian]
2- Gundala R, Chava VK. Effect of lifestyle, education and socioeconomic status on periodontal health. Contemp Clin Dent 2010;1(1):23-6.
3-Hugoson A, Ljungquist B, Breivi k. The relationship of some negative events and psychological factors to periodontal disease in an adult Swedish population 50 to 80 years of age. J Clin Periodontol 2002;29(3):247–53.
4-Van Dyke TE, Sheilesh D. Risk factor for periodontitis. J Int Acad Periodontol 2005;7(1):3–7.
5- Peruzzo DC, Benatti BB, Ambrosano GM, Nogueira-Filho GR, Sallum EA, Casati MZ, et al. A systematic review of stress and psychological factors possible risk factors for periodontal disease. J Periodontol 2007;78(8):1491-504.
6-Ge Sy, Li Dy. [Clinical survey of the association between stress and periodontitis]. Shanghai Kou Qiang Yi Xue 2005;14(6):582-5. [In Chinese]
7-Hilgert JB, Hugo FN, Bandeira RB, Bozzetti MC. Stress, cortisol, and periodontitis population aged 50years and over. J Dent Res 2006;85(4):324-28.
8-Peruzzo DC, Benatti BB, Antunes IB, Andersen ML, Sallum EA, Casati MZ, et al. Chronic stress may modulate periodontal disease: a study in rats. J Periodontol 2008;79(4):697-704.
.9-Solis AC, Lotufo RF, Pannuti CM, Brunheiro EC, Marques AH, Lotufo-Neto F. Association of periodontal disease to anxiety, depression symptoms and psychosocial stress factors. J Clin Periodontol 2004;31(8):633–8.
10-Banihashemirad SA, Saghafi S, Tabatabai M. [Evaluation of periodontal parameters in patients with depressive disorders]. J Mashhad Dent School 2009;32(3):189-94. [In Persian]
11-Genco RJ, Ho AW, Grossi SG, Dunford RG, Tedesco LA. Relationship of stress, distress, and inadequate coping behaviors to periodontal disease. J periodontol 1999;70(7):711-23.
12- Sheiham A, Nicolau B. Evaluation of social and psychological factors in periodontal disease. Periodontol 2000 2005;39:118–31.
13-Taghavi MH. Investigation of validity and reliability of general health questionnaire. J Psychol 2002;382-98 [In Persian].
14-Samari AA, Lalikar A. Expressing sub daily stress in base of coping styles and social support perception. J Psychol Sci 2009;25;71-56 [In Persian].
15-AghaMohammadian HR, Oladi F, NoorMohammadi L. Comparing factors of daily stressors and style of coping with them in girl and boy students. J Psychol Sci 2000; 53, 89-97 [In Persian].
16-Elter JR, White BA, Gaynes BN, Bader JD. Relationship of clinical depression to periodontal treatment outcome. J periodontol 2002;73(4):441-9.
17-Johannsen A. Anxiety, exhaustion and depression in relation to periodontal diseases. City: Karolinska Institute Publishing; 2006. P. 21-9.
18-Waschul B, Herforth A, Stiller-Winkler R, Idel H, Granrath N, Deinzer R. Effects of plaque, psychological stress and gender on reticular Il-1beta and Il-1ra secretion. J Clin Periodontol 2003;30(3):238–48.
19-Bensley L, VanEenwyk J, Ossiander EM. Associations of self-reported periodontal disease with metabolic syndrome and number of self-reported chronic conditions. Prev Chronic Dis 2011;8(3):34-43.