

The relationship between periodontal disease severity and state-trait anxiety level

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Abstract

Objective: To determine the relationship between the paroxysm related to periodontal disease and the state-trait anxiety level in patients attending a periodontology clinic in Turkey.

Methods: The cross-sectional study involved 141 patients ≥ 18 years old attending the periodontology clinic at the Dental Faculty of Erciyes University, Turkey, between January and March 2009. A questionnaire developed by the researchers, the State-Trait Anxiety Inventory Index and the Community Periodontal Index were used for data collection. SPSS 15, chi square test and unpaired students' t test were used for statistical analysis.

Results: Gingivitis was present in 101 (71.6%) patients, while periodontitis was found in 40 (28.4%). The mean age of periodontal patients was significantly higher than those of gingivitis patients ($p < 0.05$). Graduates were less likely to develop periodontitis than those who had only primary education ($p < 0.05$). Gingivitis was seen to be significantly higher in patients having poor oral hygiene ($p < 0.05$). State-Trait Anxiety Inventory scores of periodontal patients was significantly higher than those of gingivitis patients ($p < 0.05$). Patients with high state anxiety scores were more likely to have periodontitis. The most important variables associated with periodontitis and gingivitis were age, State-Trait Anxiety Inventory, income level and needs for treatment, respectively.

Conclusion: Periodontal treatment will improve if anxiety is diagnosed and relieved by different methods.

Keywords: Anxiety level, Dental fear, Periodontal disease, Suffering. (JPMA 62: 1304; 2012)

Introduction

Fear is defined as a physical and emotional response which is a reaction to known outward dangers. However, anxiety is defined as a condition that has symptoms similar to fear, but its cause is unknown or subconscious.¹ Individual's behaviour is very important in the development and treatment of periodontal disease. Anxiety, as in all branches of medicine, is a serious problem for both dentists and patients. The manner of patient's contact with hospital, behaviour of staff, atmosphere of the clinic, dental equipment, treatment methods and related pain and fear are all counted among factors that may influence patients negatively. In addition, bad childhood experiences are among the factors which affect anxiety levels.² Dental fear, which is mainly a psychological problem, is a serious condition that also influences patients' physical health.³ People have a tendency to postpone their treatment when the dental anxiety levels increase.^{4,5} This confronts dentists with a negative state in the practice and interferes with the accomplishment of periodontal treatment. Dentists' understanding and information about patients' anxiety levels are factors that affect the treatment process and its accomplishments. Periodontal diseases are infections which can cause bacterial plaque to accumulate on the teeth.⁶ It is possible to prevent these diseases with proper oral hygiene. Periodical dental visits, implementing specific dental care programmes and providing sufficient motivation for these patients is obligatory in order to maintain an individual's oral hygiene.³ Previous studies have indicated that people with dental phobia also had poor oral health.^{1,7} The current study was undertaken to determine the relationship between the paroxysm related to periodontal disease and the state and trait anxiety level in patients attending a periodontology clinic in Turkey.

Patients and Method

The cross-sectional study was conducted at the periodontology clinic of the Dental Faculty, Erciyes University, Turkey, between January and March 2009. All patients ≥ 18 years of age were recruited at their first attendance at the periodontology clinic. Of the 173 patients who met the inclusion criterion, 141 (81.5%) agreed to participate in the study and represented the final sample size. A questionnaire developed by the researchers was used for data collection, including socio-demographic data (educational level, social and economical status, smoking habits) and dental data (frequency of dental visits, general oral evaluation, need for treatment, information level on oral hygiene, and frequency of practice). Besides, the State Trait Anxiety Inventory (STAI) and the Community Periodontal Index (CPI) were also used.

The STAI inventory's Turkish version⁸ was used in the

study. STAI 1 is a Likert-type scale having 20 items which are easy to apply by the patients on their own, and ranges from 1 to 4 points for each item. Inventories have direct or reverse statements. Both inventories have a total score ranging from 20 to 80 points, with high scores indicating high levels of anxiety.⁹ STAI 1 is a person's complex effusive reaction to a danger or threat emerging as a result of stress associated with environmental circumstances. STAI 2 is a person's tendency to perceive or comment on situations around him/her mostly under stress.¹⁰

The CPI¹¹ has been recommended by the World Health Organisation (WHO) for use in epidemiologic studies to assess the state of periodontal tissues. According to CPI evaluation; 0=healthy periodontal conditions; 1=gingival bleeding; 2=calculus and bleeding; 3=shallow periodontal pockets (4 to 5 millimetres) and 4=deep periodontal pockets (6 millimetres or more). Within this index, the mouth is divided into 6 sections and each section has the value of the tooth with the highest score. CPI values are evaluated as gingivitis (Code 1 and 2) and periodontitis (Code 3 and 4).

After the subjects had filled in the STAI and questionnaire completely in the waiting rooms, CPI assessment was done in clinic prior to the periodontal treatment.

Statistical analysis was performed with SPSS version 15.0. Differences between sectional variables were compared by using a chi-square test, while an unpaired Student's t test was used to compare regular variables. Univariate and multiple-binary logistic regression (backward stepwise procedure) were used to investigate the risk factors affecting CPI scores. A two-tailed p-value of <0.05 was considered to be statistically significant.

Results

Among the patients, 82 (58.2%) were women; 46 (32.6%) were high school graduates; 56 (39.7%) had a moderate income level (701-1500 TL); the mean age was 34.51 ± 11.6 years; and 36 (25.5%) were current smokers. Of the patients, 120 (85.1%) had visited a dentist in case of complaints; 84 (59.6%) had a moderate general oral health; 83 (58.9%) were in urgent need of treatment; 72 (51.1%) were informed on the oral hygiene; and 96 (68.1%) used to brush their teeth daily. The prevalence of gingivitis and periodontitis was 94 (71.6%) and 47 (28.4%), respectively. The mean age of the periodontal patients was higher than that of gingivitis patients ($p < 0.05$). According to the logistic regression analysis (LRA), the older subjects were more likely to develop periodontitis. Developing periodontitis probability was lower among secondary school and high school graduates than primary school graduates ($p < 0.05$).

The STAI scores of periodontal patients were significantly higher than those of the gingivitis patients.

Table: Univariate and multivariate logistic regression (Backward Wald Method) analyses.

Variables	Periodontal diseases		P	Univariational logistic regression OR (95% CI)	P	Multi-Logistic Regression OR (95% CI)	P
	Periodontitis n=40(28.4%)	Gingivitis n=101(71.6%)					
Mean Age	39.10±10.0	32.71±11.7	0.003	1.05 (1.02-1.09)	0.004	1.06 (1.02-1.10)	0.003
Mean State Anxiety Level	44.77±4.8	42.84±5.23	0.045	1.08 (1.01-1.16)	0.047	1.08 (1.01-1.16)	0.019
Mean Trait Anxiety Level	42.00±6.17	43.86±7.82	0.18	0.97 (0.92-1.02)	0.18	-	-
Variations	Periodontitis n=40(28.4%)	Gingivitis n=101(71.6%)	P	OR (95% CI)	P	-	-
Gender							
(Men)*	18 (30.5)	41 (69.5)	0.773	1			
Women	22 (26.8)	60 (73.2)		0.84 (0.39-1.75)	0.633	-	-
Educational Level							
(Primary)*	15 (41.7)	21 (58.3)		1			
Secondary	5 (29.4)	12 (70.6)		0.58 (0.17-2.00)	0.583		
High School	12 (26.1)	34 (73.9)	0.168	0.49 (0.19-1.26)	0.494	-	-
University	8 (19.0)	34 (81.0)		0.33 (0.12-0.91)	0.032		
Income Level							
(Poor)*	21 (44.7)	26 (55.3)		1		1	
Moderate	9 (16.1)	47 (83.9)	0.006	0.24 (0.09-0.59)	0.002	0.18 (0.06-0.49)	0.001
Fair	10 (26.3)	28 (73.7)		0.44 (0.17-1.11)	0.083	0.33 (0.11-0.94)	0.039
Smoking habits							
(Yes)*	13 (36.1)	23 (63.9)		1			
No	27 (25.7)	78 (74.3)	0.285	0.61 (0.27-1.38)	0.235	-	-
Frequency of dental visits							
(once every 6 months)*	1 (14.3)	6 (85.7)		1			
Once annually	1 (7.1)	13 (92.9)	0.109	0.46 (0.03-8.69)	0.606	-	-
In case of complaint	38 (31.7)	82 (68.3)		2.78 (0.32-23.91)	0.352		
Evaluation of general oral health							
(Fair)*	-	9 (100.0)					
Moderate	18 (21.4)	66 (78.6)	0.002	**	-	-	-
Poor	22 (45.8)	26 (54.2)					
Need for treatment							
(Much)*	31 (37.3)	52 (62.7)		1		1	
Little	9 (15.5)	49 (84.5)	0.005	0.31 (0.13-0.71)	0.006	0.37 (0.15-0.94)	0.035
Information on oral hygiene							
(Yes)*	19 (26.4)	53 (73.6)		1			
No	21 (30.4)	48 (69.6)	0.709	1.22 (0.59-2.54)	0.594	-	-
Frequency of teeth brushing							
(Daily)	28 (29.2)	68 (70.8)		1			
Occasionally	12 (26.7)	33 (73.3)	0.843	0.88 (0.39-1.95)	0.759	-	-

OR: Odds Ratio. CI: Confidence Interval. *Reference values. **Incalculable.

According to LRA, the patients with higher scores were more likely to develop periodontitis. STAI scores were similar between periodontal and gingivitis patients ($p>0.05$). The probability of developing periodontitis in those with moderate income was less than in those with poor income ($p<0.05$).

The incidence of gingivitis was higher in patients having a poor oral hygiene ($p<0.05$). The frequency of gingivitis was significant in patients who stated that they needed only limited treatment. According to LRA, the probability of developing periodontitis in patients who believed that they required only limited treatment was less than those who said they needed more treatment.

There were no significant differences for gender, smoking habits, frequency of dental visits, being informed

on oral hygiene or the frequency of brushing teeth between periodontal and gingival patients ($p<0.05$). In accordance with multi-logistic regression analysis, the most important variables affecting the development of periodontitis and gingivitis were age, state anxiety level, income level and the need for treatment, respectively (Table).

Discussion

The most important factors in providing and maintaining oral health are timing and frequency of dentist-patient meetings. As periodontal diseases require more complicated and time-consuming treatments, if treatment starts late, early diagnosis and regular checks are that much more important. One of the factors preventing visits to

periodontologists is dental fear. Dentist-patient meetings will be made easier by improving strategies for determining and coping with state-trait anxiety levels of patients. The factors affecting the anxiety levels have not been completely understood. Various and detailed scales are needed to explore these factors.

Dental originated anxiety affects daily life and social activities and it may also lead to problems in family relations.² On the other hand, dental anxiety and/or fear related physiological, mental and behavioural alterations may have significant effects on either oral health or general health.¹²

Dental phobia is also increased due to people being afraid of dental visits and postponing them.^{13,14} Thus, delayed treatment requires more painful interventions.^{15,16} This vicious circle may be broken if dentists are aware of the problem and explain it to the patients that interventions are likely to be less painful and disturbing because of new dental techniques. In the current study, the STAI scores of periodontal patients were significantly higher than those in gingivitis patients, and the higher the state anxiety level scores, the more likely patients were to develop periodontitis.

Throughout our study, there were no significant differences between STAI scores of periodontal and gingivitis patients ($p>0.05$). Dental phobia cannot be treated with anything other than behavioural therapy,^{1,17} and pharmacological methods like sedation¹⁸ were effective in facilitating dental procedures and related anxiety. It is crucial for dentists to treat patients with a high STAI level with more care to ensure their cooperation.

The study detected the incidence of gingivitis and periodontitis to be 71.6% and 28.4%, respectively. Earlier studies have¹⁹ stated the frequency of periodontal disease as 45.8 % for 15-year-old children, and 84.4 % in 35-44-year-old adults.¹⁹ In the current study, the mean age of periodontal patients was significantly higher than that of the gingival ones. The frequency of paroxysm associated with periodontal diseases increased with age.^{20,21} Results indicated that as the patient gets older, the inner mouth pathology and the likelihood of oral hygiene awareness increased.

The study indicated that the probability of patients with a moderate income developed less periodontitis compared to patients with a low income ($p<0.05$). Social and economic status are among the underlying causes of periodontal diseases.²² Economic status has positive contributions to oral and dental care and treatment and awareness of the importance of oral hygiene. These are among the leading factors.

The incidence of gingivitis was significantly higher in patients having a poor oral hygiene ($p<0.05$). This can be evaluated within the cause-effect relationship. i.e. while

poor oral hygiene encourages the development of gingivitis, the existence of gingivitis causes poor oral hygiene.

The incidence of gingivitis was significantly higher in patients who stated that they needed only limited treatment and, thus, the probability of patients who needed only limited treatment, developing periodontitis was less than in those who needed more treatment. This indicated a parallelism that a decrease in the need for treatment revealed a tendency to gingivitis and an increase in periodontitis.

The probability of any school graduates developing periodontitis was significantly lower than in those who were primary school graduates ($p<0.05$). Some studies have indicated a positive relationship between education level and oral dental health.^{23,24} As education status decreases, the number of patients in need of treatment increases.²⁵ With an increase in education status, an increase is also expected in people taking precautions and seeking medical help in case of health problems.

Conclusion

The most important factors in developing periodontitis and gingivitis in our study were age, state anxiety level, income level and a need for treatment. Patients' state anxiety level is an important factor in the development of periodontal diseases. The determination of anxiety level and the increased awareness will have a positive impact on the success of periodontal treatment. High state anxiety scores are a sign of general anxiety in patients visiting dentists. Dental phobia is also likely to increase in cases of drastic oral interventions.

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