

Evaluation of anxiety level in children and adolescents requesting orthodontic treatment

Ligia Vaida¹, Camelia Dalai², Raluca Dima³

Oradea, Romania

Abstract

Aim. This study tries to identify the level of anxiety as a state and as a feature in patients that request orthodontic treatment.

Methods. The experimental design contains: control group, experimental group. The first lot of subjects, patient lot, is composed by 41 children and adolescents which requested orthodontic treatment. The ages were from 7-18 year old, age average 12,31 standard deviation 2,99. The second lot, control lot, is made of 43 pupils attending a middle school and also a high school in Oradea. The ages were between 9-17 years, age average 12,36 and standard deviation 2,50.

The evaluating instruments used were: Stait-Trait Anxiety Inventory (STAI) elaborated by Spielberger in 1983 .

Results. The data have been processed using the SPSS-PC 11.0 (program). The analysis between the media for the samples studied has been made using Student t test. Analyzing the values obtained for the variables anxiety as a state for the two samples and comparing their medias, we observe that there are significant statistic differences in the values of anxiety as a state at the two samples at a significant threshold of $p < 0,01$. As for the anxiety as a feature, as expected, we see the absence of any statistical significant differences between the two samples.

Conclusions. This research arguments the fact that anxiety generated by the extern factor represented by the orthodontic treatment, must be seen as a complex process that implicates individual significance values, individual effort to dominate and reduce the anxiety generating situations and severe emotional and behavior consequences.

Key words: anxiety, anxiety as a state, anxiety as a feature

Introduction

The orthodontic science puts herself before other specialties of the dental medicine by the type of patients it refers to, children and adolescents. This research precedes from the clinic observation, that in most of the patients who have dento-alveolar abnormalities, the abnormality itself is a stress generating factor. The stress level is different, due to the degree it affects physiognomy and personal variables. To this primal stress factor we add the anxiety and distress gen-

erated by the medical act itself, as to “what’s going to happen to me”, children often confound the orthodontist to a pedodontist, the person who treats their cavities.

Another major stress generating factor is, at the beginning of the treatment, the patient’s cognitions concerning the aspect of the orthodontic device the difficulties of wearing it and especially with the social integration in the family and in society. Before and after the application of the orthodontic appliance, the social anxiety can occur, as well as the fear of rejection by the

¹ Lecturer, Department of Pedodontics and Orthodontics, Faculty of Medicine and Pharmacy, Oradea

² Lecturer, Department of Prosthetics, Faculty of Medicine and Pharmacy, Oradea

³ Assistent Professor, Department of Odontology, Faculty of Medicine and Pharmacy, Oradea

entourage, irrational thoughts, conflicts with the colleagues, adults, parents, teachers.

Before even defining anxiety, it is necessary to differentiate this notion from other similar to it such as fear, horror, uneasiness. Fear (being afraid) is a sensation of worry and tension lived in the presence of danger or at the thought of danger; a normal reaction to real danger, which disappears when the danger is surpassed [1]. The reaction of fear is founded on the weak estimation of one's inner force compared to the force of the danger itself [2]. Horror (thrill) is a strong and violent sensation due to a horrifying thing or a great danger [3]. Uneasiness signifies a state of agitation, restlessness, excitement [3].

Anxiety is an irrational fear without any known reason and unexplained by an actual psychiatric disease or other organic dysfunction. This mental state cannot be controlled by the subject and it can manifest either chronically, permanent or diffuse, either paroxysmal [4].

The fact that makes the difference between the emotions we defined earlier is the cognition, which is very important in case of fear, its importance is diminished in case of anxiety and almost has no importance in case of horror [5].

The anxiety disorders are considered the most frequent psychiatric disorders, having a 25% prevalence during lifetime [6]. Among patients identified as suffering of anxiety crisis, 25% are diagnosed and fairly treated [7].

D.S.M. – IV TR [8], 2003, edition includes at anxiety disorder section the following diseases: panic without agoraphobia, panic with agoraphobia, agoraphobia without any panic history, specific phobia, social phobia, obsessive-compulsive disorder, posttraumatic stress, acute stress, generalized anxiety, anxiety disorder due to a general medical condition, anxiety disorder induced by a medical (or non medical) substance and anxious disorder without any specification.

The concepts of anxiety as a mental state and as a mental feature, have been first proposed by Cattell [9] in 1966, in the theory of personality factors context. The author who imposed in the psychological research the two concepts, was Spielberg, in the '70 years, by elaborating and using the STAI inventory – STAIT – Trait Anxiety Inventory, largely used as much in the clinical evaluations as in the psychology practice in general. *Anxiety as a mental state* is defined by Spielberg [10] as an emotional negative tension

before a situation perceived as a challenging and menacing one. This represents an anxiety state at a certain moment in a person, correlated with the total absence of anxiety outside that moment, being a cvasicotidian observation. Anxiety as a mental feature shows the existence of some stable ways to emotionally react.

In children, anxiety can be expressed by exclamations, choleric accesses, stupefaction or the urge of hanging on to something. Often, children do not admit that their fear is excessive and unjustified and they rarely relate their phobias. A major risk factor for anxious disorders development in children is physical or sexual abuse. Faravelli et al. [11] found during their research that 2/3 of the patients suffering from panic attacks and agoraphobia, had suffered a traumatic event before age of 16, while only 22% of subjects who had panic attacks without agoraphobia, had such events during their youth.

A retrospective study over families of subjects who developed social phobias often discovers, shy over protecting parents but, at the same time, affectionless, which decreases the child's autonomization processes and his social competence [5]. There has also been developed the hypothesis that, in biologically vulnerable individuals, severe stress will trigger alarm reactions, which prepare the individual to promptly react.

In children and adolescents having generalized anxiety, the internal tension is subjectively felt like an undefined waiting of a danger that can occur any moment, these children are conscious and are permanently preoccupied to bestly fulfill all the tasks they are given and constantly need to get encouragement, they also associate somatic symptoms without any known organic reasons [8].

In families that excessively value intellectual performances and/or physical ones (as a compensation to their own failures, or of the problems among partners) determine the appearance of performance anxiety and it amplifies the child's social anxiety [12].

The anxiety in orthodontic science should probably be analyzed beginning with patient's fear of the dentist which [13] is translated mainly by fear of pain or only its anticipation. Although no pain is involved during orthodontic treatment acute, pain can be felt as a tension in the dental tissue and in the alveolar bone, its intensity depends on the individual security and on the doctor's ability to remove fear and stress inherent

to any treatment [14]. The threshold of reaction to pain is different from an individual to another and also during different moments in time, at the same individual. On the other hand, there are times when the pain has no lesional reason, being of psychogenic etiology [15]. According to Pinkham [16], the main factors that influence the threshold of pain are anxiety, stress, fatigue and, in children, previous experiences and parents pre-conditioning.

After an observational clinic study we consider that the most important stress generating sources, before, as well as, after the application of the orthodontic devices, are patient's negative thoughts concerning the social integration and also the family integration, the attitude of the entourage as in "what are my colleagues going to say when they they'll see me wearing it" the difficulties during speech or eating, the duration of the treatment (2-3 years average) also the need of check-ups and activating sessions.

Taking into consideration all these research and theoretic facts, the study tries to identify the level of anxiety as a mental state and as a mental feature in patients that request orthodontic treatment.

Material and methods

The experimental design contains the elements typical to an experimental study; control group, experimental group, independent variable, dependent variable [17].

The first lot of subjects, patient lot, is composed by 41 children and adolescents which requested orthodontic treatment during a time period from May 2005 to October 2005 ($N_1=41$). The male subjects represent 41,46% of the sample and the female 58,54%. The ages were from 7-18 year old, age average 12,31 standard deviation 2,99, most subjects 68,3 bordered between 10-15 years old.

The second lot, control lot, is made of 43 ($N_2=43$) pupils attending a middle school and also a high school in Oradea. The male subjects represented 46,52% and the female 53,48%. The ages were between 9-17 years, age average 12,36 and standard deviation 2,50.

The control lot has been studied during a time period when they hadn't been given any assignment in school.

The two lots of children and adolescents have been requested that, by the answers they gave to the questionnaire, to state their position concerning the statements we proposed. The evaluating instruments used were: Anxiety as a State and Anxiety as a Feature inventory, State-Trait Anxiety Inventory (STAI) elaborated by Spielberger in 1983 to investigate anxiety at sane patients.

The inventory consists of two questionnaires which have the same format. Each one consists of 20 questionnaires concerning the state of the subjects at that time or, in general. In the questionnaire that evaluates the anxiety as a state of mind STAI- X_1 , the possible answers are none (1) – little (2) – enough (3) - very much (4). In the questionnaire that evaluates the anxiety as a mental feature STAI- X_2 the possible answers are: almost never (1), sometime (2), often (3), almost all the time (4). As required, the subjects are asked to answer every item by encircling the variant that suits their opinion, on a scale from 1 to 4.

The instrument has been elaborated to evaluate the tension, nervousness, worry, preoccupation. The authors state that the inventory can be used either as a clinical instrument for measuring the anxiety as a feature, or as an instrument for measuring the level of anxiety at a certain moment. Some of the fields that the authors indicate as being suitable to evaluate using STAI are: certain medical situations which need an evaluation of the anxiety as a reaction to an illness or as an accompanying symptom of the clinical status; pre operator stress and certain other medical conditions associated with anxiety as a symptom.

We can also use the STAI feature anxiety evaluation on healthy subjects, when it can measure the level of stress in certain situations associated with high anxiety levels.

Results

The data have been processed using the SPSS-PC 11.0 (program). The analysis between the media for the samples studied (patient lot and control lot) has been made using Student t test. For examining the relationship between variables, the Pearson linear correlation coefficients have been used.

The variables obtained using statistic t are presented in table 1.

Table 1. The statistics for the age media, standard deviation and their comparison in the two sample

Sample	Age media	Standard deviation	t	p
Patient lot	12,317	2,995	- 0.77	.939
Control lot	12,365	2,507		

We determined next the statistical values of the variables that measure anxiety in the two samples studied, patient lot and control lot, the results are presented in the tables 2 and 3.

Table 2. The statistical values of variables that measure the anxiety of orthodontic patients (N=41)

Scale	Values		Media	D.S.
	Min	Max		
Anxiety as a state	26	69	51,146	11,076
Anxiety as a feature	24	62	37,073	8,512

Table 3. The statistical values of variables that measure anxiety at control lot (N=43)

Scale	Values		Media	D.S.
	Min	Max		
Anxiety as a state	23	53	38,682	7,869
Anxiety as a feature	23	59	36,707	6,860

Next, we compared the medium scores of variables that measure anxiety for the two samples studied, results are presented in table 4.

Table 4. T test for the variables anxiety as a state (STAI-X₁), and as a feature (STAI-X₂) for the two samples

Scale	Sample	Media	D.S.	t	p
STAI-X ₁	Experimental lot	51,146	11,076	6.166	.000
	Control lot	38,682	7,869		
STAI-X ₂	Experimental lot	37,073	8,512	.213	.832
	Control lot	36,707	6,860		

Next, we made an analysis of the correlation between the variables that define anxiety as a state and as a feature for the sample of patients studied, the results are presented in table 5.

Table 5. The correlation between the variables anxiety as a state STAI - X₁ and as a feature STAI- X₂ in orthodontic patients (experimental lot).

Scale	STAI – X ₁	STAI – X ₂
STAI – X ₁	1,000	.550 ^{xx}
STAI – X ₂		1,000

^{xx}p<.01

Discussions

The analysis between the age media and the standard deviation for the two samples didn't show statistical significant differences.

Analyzing the values obtained for the variables anxiety as a state (STAI – X₁) for the two samples and comparing their medias, we observe that there are significant statistic differences in the values of anxiety as a state at the two samples experimental and control lot, at a significant threshold of p<0,01. We interpreted that fact as a consequence of the patients confrontation with the anxiety generating situation of presenting themselves in the orthodontic department.

As for the anxiety as a feature (STAI – X₁), as expected, we see the absence of any statistical significant differences between the two samples.

The correlations presented in table 5, allow us to appreciate the fact that between the anxiety as a state and as feature, in subjects that presented to the orthodontic department, there are relation-

ships of direct covariance, at a statistic significant trust threshold (^{xx}p<.01).

Conclusions

This research arguments the fact that anxiety generated by the extern factor represented by the orthodontic treatment, must be seen as a complex process that involves individual significance values, individual effort to dominate and reduce the anxiety generating situations and severe emotional and behavior consequences.

The high level of anxiety seen in patients requesting orthodontic treatment, should argue about the introducing of the ameliorating measures in order to enhance the compliance of treatment and a better doctor - patient relationship.

The reduction of anxiety level is mandatory at the beginning of orthodontic treatment, therefore a basic set of child psychology knowledge should increase the competence and professionalism of the orthodontist.

References:

1. Sillamy, N., Larousse. Dicționar de psihologie, Editura Univers Enciclopedic, București, 2000, 175-8;
2. Cocărlă, E., Stomatologie pediatrică, Editura Medicală Universitară "Iuliu Hațieganu", Cluj-Napoca, 2000, p. 84-91;
3. DEX - Dicționarul explicativ al limbii române, Academia Română - Institutul de lingvistică "Iorgu Iordan", Editura Univers Enciclopedic, București, 1998, p. 436, 684;
4. Georgescu, M., Psihiatric, Editura Național, 2004; p. 57-9;
5. Micluția, I., Anxietatea, Editura Medicală Universitară "Iuliu Hațieganu", Cluj-Napoca, 2000; p.15-9;
6. Kessler R.C., et all., Posttraumatic Stress Disorders in the National Comorbidity Survey. Archives of General Psychiatry, 1995, No. 52, p. 10-2;
7. Overbeck T., Vermetten E., Griez E.J.L., Epidemiology of Anxiety Disorders in Anxiety Disorders, Ed. Griez E.J.L., 2001, p. 5-9;
8. DSM-IV-TRTM, American Psychiatric Association, Manual de diagnostic și statistică a tulburărilor mentale, Ediția a patra revizuită, Editura Asociației Psihiatrilor Liberi din România, 2003, p.429-85;
9. Cattell R.B., Handbook of Multivariate

Experimental Psychology, Chicago, Rand McNally, 1966; p. 141-69;

10. Spielberger C.D., Preliminary manual for the State-Trait Anxiety Inventory for Children, Paolo Alto, California: Consulting Psychology Press, 1970; p.162-95;

11. Faravelli C., Paterniti S., Scarpato A., 5-year prospective naturalistic follow-up study of panic disorder, Compr. Psychiatry, 1995, 36, p.271-7;

12. Câmpean D.L., Drăghiciu L., Nistor A., Stilul cognitiv-comportamental al familiei - influențe posibile asupra patologiei fobic-anxioase sau obsesiv-compulsive a copilului în Cogniție, creier, comportament, Asociația de Științe cognitive din România, vol.5, 4, 2001, p.421-28;

13. Chapman H.R., Dental Fear in Children - a proposed model, Community Dental Health Officer, 1999, p. 21-3;

14. Zetu I., Păcurar M., Ortodonție - tehnica arcului drept, Editura Lyra, Târgu-Mureș, 2000, p. 193-4;

15. Rotaru A. (coord.), Implicații multidisciplinare în durerea orală și cranio-facială, Editura Clusium, Cluj-Napoca, 2001; p. 131-72;

16. Pinkham J.R., Pediatric Dentistry-infancy through adolescence, W.B.Saunders Company, 1988; p. 484-592;

17. Radu I. și colab., Metodologie psihologică și analiza datelor, Editura Sincron, Cluj-Napoca, 1993; p. 37-85.

Correspondance to: Ligia Vaida, Oradea, str. Henri Coanda nr. 3, cod 410228, Bl. PB 29, Ap 6, tel. 0742 997511, e-mail: ligia_vaida@yahoo.com