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Dental Fear Among Teenagers. Individual Anxiety Factors

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SUMMARY

The purpose of this study was to evaluate the spread of dental fear among teenagers in the city of Vilnius by means of CDAS, DFS and DBS, and to determine the relation between dental fears and general anxiety of respondents, which was assessed on the general anxiety scale. The study involved 557 schoolchildren aged 12 to 15. The poll of respondents who had dental experience was conducted at nine secondary schools.

Statistical analysis of correlation dependences leads to the conclusion that dental fear is related with numerous characteristics, including *timidity* (r=.165**), *exaggerated anxiety over inessential matters* (r=.287**) and essential dental stimuli, such as *fear of needle injected* (r=.200**), *fear of seeing the anaesthetic needle* (r=.196**). General level of anxiety as evidenced by the research results shows weak statistical relation with dental fear.

Key words: dental fear, general anxiety, general fears, adolescence.

INTRODUCTION

Dental fear is one of the most frequent common fears, which is classified as a specific fear according to Diagnostics and Statistics of Psychic Disorders DSM-IV [1]. Dental phobia leads to avoidance of treatment, which, in effect, results in deterioration of oral health. The 2003 study conducted by Norwegian scientists revealed that subjects with major dental fear had statistically more decayed, lost or dysfunctional teeth than patients without dental anxiety [2].

Anxious mood prior to frightening situation may affect a person's capacity for work (longer period of inability to work) and social activity, and may boost the usage of medicines [3,4]. People with dental fears tend to address the dentist in cases of neglected dental problems and acute pain, which prolong and aggravate the dentist's work; moreover, such patients are usually less satisfied with the quality of medical help [5].

The aetiology of dental fear has been discussed in various aspects, including a general subject's inclination for anxiety and fears, and a response to certain specific stimulus. The majority of patients tend to associate dental fears with painful experience in childhood [3,4,6] and negative staff behaviour [7]; however, previous surveys have proved that negative experience in childhood does not necessarily lead to dental fear and avoidance of appointments in future. Avoidance is largely the result of *forgetfulness (20 % in the case of Norwegian study, where the subjects did not address the dentist in last five years),* which is seen as a socially accepted behaviour in the society [8]. Even a single negative case may lead to avoidance of dental procedures [9].

The correlation between dental fear and general fears in literature is rather controversial. As early as in 1984, Bergrren U and Carlsson SG [10] stated that the level of general fears among patients with dental fear did not differ from the level among those without dental anxiety, however, in 1992 the same authors [11] proved that as much as 93% of patients with dental fear had at least one additional strong fear of something, and for 50% of respondents the number of additional fears ranged to five or even more. "Constant fear of something" or "fear of painful treatment" was a more typical quality of subjects with dental fear [12].

The studies conducted by Roy- Byrne (1994) evidence that dental fear fall into the heterogeneous category. These patients might be diagnosed with agoraphobia (fear of public places), general syndrome of fear, depressive, paranoid personal disorders, etc. [13].

The trial of subjects with major dental fear at Bergen University in 2002 (by means of Dental Anxiety Scale CDAS 16,4 (the scores ranged from 4 to 20)) revealed that 19 % of subjects had been diagnosed with more than one psychic disorder [14].

The abovementioned data may lead to a supposition that dental fear is an expression of general anxiety syndrome instead of independent specific reaction of fear.

However, the study conducted by K. J. Abrahamsson and U. Berggren failed to established any differences in dental fear among the subjects with high and low levels of general fears, yet, both groups of patients recalled negative dental experience (pain, inattentive dentist)[12].

The question is what are the aetiological factors that arouse the dental fear, which lead to avoidance of treatment and deterioration in oral health?

A decline in dental fear with age [15] highlights the need to establish what factors and when might be decisive for the continuing prevalence of dental fear problem and avoidance of dental treatment. It is also necessary to find out whether dental fear is characteristic of a specific group of individuals with general syndrome of anxiety or dental fear might bee developed by any individual who get dental treatment.

Previous studies have revealed an interesting phenomenon that prevalence of caries in childhood has no impact on the development of dental fear in adolescence; where as the caries condition of teeth among teenagers aged 15 is rather significant for the value of dental fear among 18-year olds [16].

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Thus, the period of adolescence may play a rather significant role trying to find answers to numerous questions concerning the dental fear and might become a key to the establishment of preventive measures required to solve this essential problem.

This research is the first ever Lithuania-based study focused on the period of adolescence and fear of dental care.

MATERIAL AND METHODS

The study involved 557 pupils in the age group between 12 and 15 years. Surveys were collected at ten secondary schools of Vilnius chosen by means of random selection (one school refused to participate in the study). The respondents were sixth- to ninth- form pupils, who had undergone dental treatment at least once. The class was chosen as a unit of cluster selection.

Some 260 boys and 297 girls, with their average age reaching 13.43 +/- 1.23, filled in anonymous questionnaires.

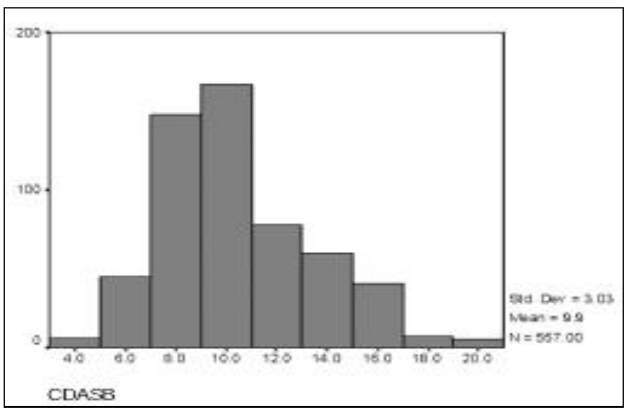
Pupils completed the questionnaires during lessons under the supervision of a researcher, who explained the purpose of the survey and ensured confidentiality before the procedure. Pupils were expected not to consult each other and keep silent. The project was co-ordinated with Vilnius University, the Department of Education of Vilnius city as well as with each school, its pupils and their parents.

Measurements

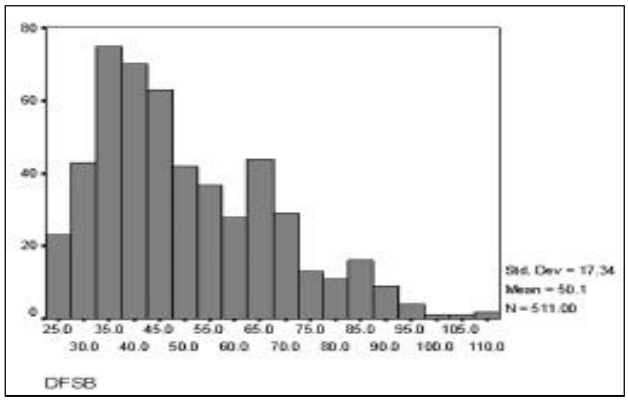
Dental anxiety data was collected by means of Dental Anxiety Scale (DAS; Corah, 1969) as a part of self-completed health questionnaire. The DAS contains four multi-

Table 1. General Anxiety scale.

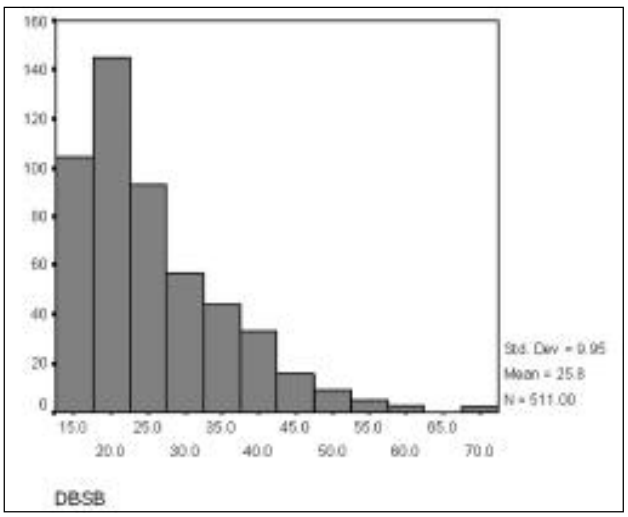
I feel calm
I feel safe
I feel strained
I feel tired
I feel free and unrestrained
I am distressed
I am afraid I will fail
I am frightened
I feel self-confident
I am nervous
I am irritated
I feel indecisive
I am relaxed
I am concerned
I am upset
I feel tough
I lose heart if I fail to do something very well
I fall under somebody's influence easily
I feel cool
I feel nervous, uneasy
I feel like a loser
I am timid
I feel that problems are hilling up, but I cannot overcome them
I am too anxious of things that are not too important
I am treated like a pawn and being mocked up by others
I lack self-confidence
I make decisions easily
I feel uncomfortable
I hold my own firm opinion
I am a steady person



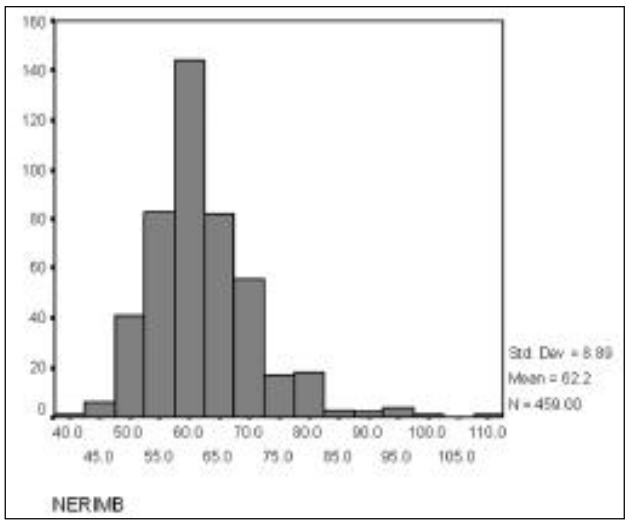
Histogram 1. Corah Dental Anxiety Scale.



Histogram 2. Dental Fear Survey.



Histogram 3. Dental Beliefs Scale.



Histogram 4. General Anxiety.

Table 2. Correlation between general anxiety and strong dental stimuli.

	To see an anaesthetic needle	To feel the sting	To feel the drill's vibration	Fear of dental work caused to cancel or not to appear for an appointment
General anxiety	P=.000 r=196**	P=.000 r=200**	P=.003 r=.137**	P=.000 r=.163**

Table 3. Correlation between CDAS, DFS, DBS and anxious personal qualities.

	Nervous	Indecisive	Confused	I feel distressed whenever I fail	Uneasy	I feel like a loser	Timid	Exaggerated concerns	Lack of self-confidence
CDAS	r=.145** P=.001	r=.132** P=.002	r=.134** P=.002	r=.133** P=.002	r=.237** P=.000	r=.146** P=.001	r=.165** P=.000	r=.287** P=.000	r=.177** P=.000
DFS	r=.140** P=/002	r=.195** P=.000	r=.164** P=.000	r=.184** P=.000	r=.287** P=.000	r=.103* P=.021	r=.129** P=.004	r=.284** P=.000	r=.159** P=.000
DBS	r=.158** P=.000	r=.250** P=.000	r=.156** P=.000	r=.201** P=.000	r=.201** P=.000	r=.136** P=.002	r=.170** P=.000	r=.196** P=.000	r=.162** P=.000

ple choice items dealing with the patient's subjective reactions to the dental situation: a) anticipating a visit to a dental clinic, b) waiting in the dentist's office for treatment, c) drilling of teeth, and d) scaling of teeth. Five possible answers in an ascending order from 1 to 5 are provided, each question thus carrying a possible maximum score of 5, with a total possible maximum score of 20 for the entire scale [17]. In the current analysis, the case definition for "high" dental anxiety was a DAS score of 13 or more.

Another dental fear scale Dental Fear Survey (DFS), which gives 24 items with the scores ranging from 1 (none) to 5 (extreme), may be separated into 3 sub-dimensions. The first is related to patterns of dental avoidance and anticipatory anxiety (behavioural: *dental fear caused me to put off making an appointment*), the second concerns felt physiological arousal during dental treatment (arousal: *my muscles become tense, my heart beats faster*), the third is related to fear associated with specific dental stimuli (situation: *smell, seeing the anaesthetic needle, feeling the vibration of the drill*) [18]. Scores range from 24 to 120.

Dental Beliefs Scale (DBS) evaluated patient beliefs about security, intimidation and social functioning in relating with dentists. Scores ranged from 14 (high trust) to 60 (low trust) [19].

General anxiety among respondents was evaluated on a scale worked out on the basis of Ch. D. Spielberg's anxiety scale[20]. Statistical analysis in a separate study, which was carried out via the polling of schoolchildren aged 12-15 who did not take part in the principal study, led to the compilation of questionnaire, which was used to assess the general level of anxiety (see Table 1). Each statement was assessed on a four-point scale (general anxiety scores range between 30 and 120 points).

RESULTS AND DISCUSSION

The study involved 557 pupils aged 12 to 15, including 145 twelve-year olds, 146 thirteen-year olds, 138 fourteen-year olds and 128 fifteen-years olds, attending nine different schools in Vilnius. Some 260 of respondents were male and 297 female.

CDAS (Corah Dental Anxiety Scale), DFS (Dental Fear Survey), DBS (Dental Beliefs Scale), general anxiety results are shown in respective histograms No. 1, No. 2, No. 3 and No. 4.

Grouping of results (CDAS: low level of dental fear - 4-8 points, medium level of dental fear - 9-12 points, and high-level dental fear - 13-20 points; respective groups under DFS: 24- 55 points (low fear), 56-88 points (medium fear) and 89-120 points (high fear)) has revealed that the largest group by CDAS covers the subjects with medium fear, at 54.4 %. In terms of DFS, the largest group represented subjects with dental fear, at 67.3%, while the largest group by DBS covered the subjects with the greatest trust in the dentist, at 78.1%.

The differences in the results lead to a hypothesis that dental fear is the result of certain major stimulus instead of general personal qualities.

The study also involved the analysis of general anxiety of study subjects and its relationship with dental fear. As mentioned above, some researchers tend to attribute dental fear to the general syndrome of anxiety, whereas others see a link with negative experience of dental care. In effect, the literature does not provide any specific data concerning the scale and the nature of impact that the general anxiety of an individual may produce on a problem of dental fear. The results of analysis of correlations between the fear scales used in the study (CDAS, DFS, DBS) and general anxiety scales prove the following dependences between the interrelations:

CDAS and general anxiety (P=.027, r=.103*) – low statistical validity;

DFS and general anxiety (P=.000, r=.151**) – sufficient statistical relationship.

As the results showed a more reliable statistical relationship between DFS and general anxiety level, we examined a correlation between the dental avoidance care and specific strong stimuli, which the subjects tended to enumerate among the most frightful factors(see Table N.2).

Correlation between certain personal qualities, which led to the establishment of general level of anxiety, and the fear scales reveals the following statistical interrelations(see Table N.3).

The study data leads to the conclusion that the major statistical validity is manifested by a relationship between dental fear and a number of conditions, including the *feeling of nervousness, tenseness* and *exaggerated concerns over things that are not too important.* Indecisiveness, timidity have shown a statistical validity as well; however, the results have revealed that indecisiveness manifested a

stronger link with DFS, while timidity was largely related with CDAS. Finally, the stimulus that may stir pain (*feeling of injection, seeing of anaesthetic needle*) show a statistically reliable relationship with general anxiety.

According to previously published data [21], 50.4% of schoolchildren in the study recalled negative dental experience, which correlates with CDAS (r=-.345**, P=.000), DFS (r=-.368**, P=.000), and DBS (r=-.205**, P=.000), but shows no statistical relationship with general anxiety (r=-.064, P=.174).

CONCLUSIONS

1. Dental fear is not an exclusive characteristic of group of subjects with higher level of anxiety.
2. Painful irritants and confidence in dentist are the most significant factors behind the dental fear.
3. Timid subjects and patients with exaggerated concerns tend to demonstrate dental fear more often.
4. Greater attention should be drawn to psychological treatment of dental patients.

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