Psychosocial aspects of dental and general fears in dental phobic patients

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Phobic reactions can often be a significant health problem for fearful dental patients. This is true in particular for individuals with long-time avoidance and elevated general psychological distress. The aim of this study was to investigate the expression of dental fear among 67 dental phobic individuals with a low versus high degree of general fear. Reported etiologic background factors, avoidance time, general psychological distress and psychosocial manifestations and consequences of dental phobia were studied. No significant difference in dental anxiety level between individuals with low versus high general fear was found, and both groups reported high frequencies of negative dental experiences. The low-fear group reported a longer (though not statistically significant) average avoidance time than the high-fear group. However, patients with a high level of general fear showed a significantly higher degree of psychological distress, and also reported stronger negative social consequences from their dental anxiety. These results indicate that the character of dental fear might be different between different groups of fearful patients, which makes the condition psychologically handicapping. Such aspects should be assessed in the diagnostic analysis of patients with severe dental anxiety. In particular, assessments of signs of general psychological distress are warranted. □ *dental anxiety; phobia; psychological distress; psychosocial consequences*

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Reports about the relationship between general and specific anxiety and fear among dental phobic individuals are contradictory. While previous research has indicated that fearful dental patients do not differ in level of general fear from non-fearful dental patients (1), most authors report the opposite (2–4). In one of our previous studies (2) we showed that 93% of dental phobic individuals reported at least one additional extreme fear besides dental phobia, and that 50% of the patients reported 5 or more severe fears. These results indicated that dental anxiety might represent not just a specific fear reaction, but also a condition where dental anxiety is one among several fears in a more complex anxiety syndrome.

Whether unifocal or multifocal, the most obvious consequence of a dental phobia is the avoidance of necessary dental care (5–7). Individuals with prolonged avoidance may report that their dental fear and avoidance causes feelings of shame and inferiority, with negative effects on their ability to work and in their social life (8). In addition, these individuals often report psychosomatic symptoms, e.g. headaches and stomach problems (5).

Frazer & Hampson (3) discussed the importance of individual differences in determining the strength of the anxiety response to dental treatment and concluded that fear and anxiety were positively and significantly correlated with neuroticism when investigated among individuals with phobic avoidance. Berggren & Carlsson (9) showed that the level of general anxiety and fear was significantly higher among dental phobic patients who were less successfully treated for dental fear than among those who were successfully treated. There was therefore a negatively interfering effect from multiple fears and phobias when treating a single state of fear. In a study of dental phobic patients, Kleinhauz et al. (10) showed that those who failed in behavior modification treatment were found to score significantly higher on a measure of psychological distress. These authors concluded that assessment of a patient's psychological distress might be valuable in the prediction of success or failure of behavior modification as a treatment for dental fear and avoidance. Thus, it is important to investigate these factors in conjunction with the examination of patients with severe dental fear.

The present study was designed to further investigate dental anxiety in relation to general fear, psychological distress, and also the resulting life quality consequences caused by these ailments for the individual. Thus, the aim was to compare dental phobic patients with a low versus high degree of general fear. Specifically, etiology and level of dental anxiety, avoidance time, general psychological distress, and social consequences of dental phobia were investigated.

Materials and methods

Subjects and procedure

The subjects of the present investigation were 67 adult patients applying for treatment for phobic dental anxiety at a specialized dental fear clinic at the Faculty of Odontology, Göteborg University. During a period of 10 months, 103 new patients applied for treatment. The study was performed under normal daily clinical-work circum-

Table 1. Background data from the investigated high-fear and low-fear groups separated according to the GFS median value

	Low fear		High fear		Total
Men	15		10		25
Women	18		24		42
	Mean	SD	Mean	SD	
Age	35.0	11.8	38.0	9.5	36.5
Avoidance time (years)	6.7	6.5	5.3	5.3	6.0

stances. Thirty-six patients were excluded because they failed to complete the questionnaire package in time. A few patients did not want to participate or had difficulty understanding the questionnaire because of language problems. The study group also excluded patients with known psychiatric diagnoses or with advanced psychosocial problems, such as drug problems. The study therefore comprised 67 patients (25 men and 42 women) grouped according to the Geer Fear Scale (GFS) median value of 54.5 into a low general fear group ($n = 33$) and a high general fear group ($n = 34$).

At their first visit, the patients were informed about the project. The questionnaire package was given to all who gave their consent to participate. Due to missing values of separate items and questionnaires the frequency of analyzed assessments may vary (however, no less than 31 in any item in either of the groups).

Assessments

The questionnaire package investigated background data, dental anxiety, level of general fear, psychological distress and social consequences of dental phobia.

Background variables were gender, age, year since last dental visit, and perceived etiology of dental anxiety. The last-mentioned was assessed in 5 questions indicating well-known and often reported reasons for dental fear (Table 2). Each etiologic factor was answered on a 0 through 6 point Likert scale. A 6th open-ended alternative was given, but was so rarely used that the answers were not included in the analysis.

Dental anxiety was measured using two well-established scales, the Dental Anxiety Scale (DAS) (11) and the Dental Fear Survey (DFS) (12), both of which have been translated into Swedish at our clinic. Previous studies indicate good correspondence with American data (1, 13).

The DAS consists of 4 items describing imagined dental situations, including "appointment tomorrow", and three different treatment situations. Responses are scored from 1 (no anxiety) to 5 (extreme anxiety), giving total scores varying from 4 to 20. Average DAS scores of 8 to 9 in ordinary patients and 15 or above among dental phobic patients have been reported in several studies (9, 14).

The DFS consists of 20 items, each rating anxiety reactions from 1 (low intensity) to 5 (high intensity), giving a range of total score between 20 and 100. Severe dental fear patients have shown sums of scores >65. The DFS concerns different dimensions of dental fear and avoidance; autonomic arousal and fear of specific objects or situations have been identified (15).

General fear was assessed using the GFS, which was a shortened and modified version of the original Fear Survey Schedule-II (16, 17). The present version of the scale consists of 22 items referring to different situations or objects known to create fear. Each item is answered on a seven-point scale from score 1 "not the least afraid" to score 7 "totally terrified". Examples of questions are fear of injections, illness, snakes, blood, or other people. Severe fear reactions have earlier been described as the frequency of answers scored 6 and 7 (16, 17). The GFS sum-score was used as an indicator of general fear. Berggren et al. (16) reported the results of a factor analysis of the GFS scale which showed 5 fear dimensions—*illness and death, failures and embarrassment, social situations, physical injuries,* and *animals and natural phenomena.* The sum-scores of these factors were used in this study.

Psychological distress was assessed using the Symptom CheckList SCL-90-R (Revised) (18). The questionnaire consists of 90 items scored from 0 (not at all) to 4 (very much) and the symptoms relate to 9 different dimensions: *somatization, obsessive-compulsive, interpersonal sensivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation*, and *psychoticism.*

In addition to the 9 dimensions, global scores of the questionnaire are presented in a General Severity Index (GSI), which is the mean of all items and indicates the degree of overall psychological distress. In a study by Kleinhauz et al. (10) the GSIs for dental phobic patients in therapy for dental fear were reported at 0.78 and 0.98 among those treated successfully and non-successfully,

Table 2. Assessment of etiologic factors among high-fear and low-fear patients

	Low fear			High fear		
	N	Mean	SD	N	Mean	SD
Pain experiences	33	4.5	1.9	34	4.6	1.7
Always been afraid	32	3.8	2.2	33	4.4	2.1
Inconsiderate dentist	32	2.5	2.5	34	3.5	2.4
Negative medical experiences**	33	0.8	1.7	33	2.3	2.4
Other people frightened me	33	0.7	1.6	33	1.0	1.8

** $P < 0.01$.

Table 3. Reported levels of dental anxiety as indicated by the DAS and the DFS including subdimensions among high and low fear patients

	Low fear			High fear		
	N	Mean	SD	N	Mean	SD
DAS	33	15.3	2.5	34	16.1	3.0
DFS sum*	31	69.8	13.2	33	77.2	14.3
Anticipated anxiety	31	26.8	7.7	33	30.5	7.1
Physiological reactions*	31	15.1	3.9	33	17.5	3.8
Situational anxiety	31	27.8	4.9	33	29.2	5.4

*$P < 0.05$.

respectively. Berggren et al. (19) found similar levels on the SCL-90-R scores used for evaluating a screening procedure for psychological distress among dental phobic patients. Patients with higher levels of psychological distress also reported a more negative attitude to dentists and their performance of dentistry.

Social and emotional consequences were assessed as the influence of dental fear on daily activities, such as ability to work and to cope in social life situations, and also on emotional consequences caused by the fear, such as feelings of anger, depression, or shame. The participants answered 7 questions on a 0 through 6 point Likert scale (Table 6). This was part of a questionnaire used at the first visit to our clinic. Four questions assessed social consequences and 3 assessed different emotions related to dental fear. An analysis of internal consistencies among items of these two dimensions revealed Cronbach's alphas of 0.86 for social consequence items and 0.61 for emotional consequence items.

Statistical methods

Chi-square analyses and Fisher's exact test were used to test for differences between frequencies. The *t* test was used to compare group means. Two stepwise multiple linear regression analyses were performed with social and emotional consequences as dependent variables, respectively. The independent variables entered in the model were GFS, SCL-90-R GSI, DFS, gender, and age. The stepwise procedure included a cut-off score of $P < 0.05$ for entering and $P > 0.10$ for removal of a variable. SPSS 7.5 was used for data processing and analysis (20).

Results

Background data from the low-fear versus high-fear groups are given in Table 1. The mean ages were 35 and 38 years, respectively. No significant differences in sex distribution were found between the groups, although the proportion of men was higher in the low-fear group. The majority of individuals in both groups had completely avoided dental care for at least 2 years. Most patients, without significant differences between the groups, reported that they only attended dental care when it was absolutely necessary, because of acute symptoms, or not at all.

The impact of different etiologic factors of dental fear was generally greater in the high-fear group (Table 2). Painful experiences were estimated as most important in

Table 4. Mean scores and frequencies of extreme fears (scores 6 and 7) of the GFS and its subdimensions among the high-fear and low-fear groups

	Low fear			High fear		
	N	Mean	SD	N	Mean	SD
GFS sum***	33	41.2	8.8	34	67.1	12.3
Illness and death***	33	10.5	4.0	34	20.2	5.6
Failures and embarrassment***	33	6.6	3.0	34	10.6	4.2
Social situations***	33	5.5	1.2	34	7.8	3.7
Physical injury***	33	10.2	4.3	34	15.1	4.3
Animals and natural phenomena***	33	8.3	3.8	34	13.2	5.6
Frequencies of extreme fears						
GFS sum***	33	0.9	1.0	34	3.0	2.4
Illness and death***	33	0.2	0.5	34	1.3	1.3
Failures and embarrassment	33	0.1	0.2	34	0.2	0.5
Social situations	33	0.0	0.0	34	0.1	0.0
Physical injury**	33	0.3	0.7	34	0.9	1.1
Animals and natural phenomena	33	0.3	0.5	34	0.6	1.0

**$P < 0.01$; ***$P < 0.001$.

Table 5. Mean scores (SD) of the SCL-90-R General Severity Index (GSI) and subdimensions among the high-fear and low-fear patients

	Low fear			High fear		
	N	Mean	SD	N	Mean	SD
GSI***	33	0.42	0.35	34	0.80	0.46
Obsessive compulsive***	33	0.54	0.32	34	0.98	0.59
Interpersonal sensivity**	33	0.35	0.34	34	0.68	0.51
Somatization***	33	0.52	0.51	34	1.07	0.80
Depression***	33	0.48	0.49	34	0.95	0.64
Anxiety**	33	0.48	0.53	34	0.98	0.72
Phobic anxiety**	33	0.18	0.31	34	0.51	0.61
Psychoticism	33	0.15	0.26	34	0.30	0.38
Hostility	33	0.52	0.57	34	0.67	0.54
Paranoid ideation	33	0.30	0.44	34	0.48	0.54

** $P < 0.01$; *** $P < 0.001$.

both groups; secondly, the fear was present already prior to the first contact with dental care ("I have always been afraid"); and, thirdly, an inconsiderate dentist caused the fear. Less importance was given to negative medical experiences and especially to being frightened by other people. The high-fear group assessed all the etiologic factors higher than those with low general fear did. This was especially evident for "always been afraid", "inconsiderate dentist", and fear due to negative medical experiences. The last-mentioned showed a statistically significant higher assessment in the high-fear group ($t = 2.88$; $P < 0.01$).

Table 3 gives the dental anxiety levels among the two groups. Dental anxiety was not significantly higher among patients with a high general fear level (DAS mean score = 16.1) compared to the low-fear group (DAS mean score = 15.3). The DFS total score was significantly higher among high-fear patients with a mean of 77.2 compared to 69.8 among low-fear patients ($t = 2.18$; $P < 0.05$). Both groups reported a similar degree of specific situational dental anxiety. Individuals with high general fear reported a higher degree of anticipatory anxiety ($t = 1.98$; $P = 0.051$) and a significantly higher degree of physiological reactions ($t = 2.42$; $P < 0.05$) compared to the low-fear group.

With the separation of patients according to the GFS median value it was shown that the GFS mean score for the low-fear group was 41.2 (SD 8.8) and for the high-fear group 67.1 (SD 12.3). The total GFS mean was 54.3 (SD 16.8). The groups differed significantly on average scores of all 5 subdimensions (Table 4). Patients with a low degree of general fear on average had less than one intense fear. Most intense fears in this group were found among the fear dimensions *physical injuries* and *animals and natural phenomena*. Patients with high general fear had on average three intense fears, which mainly belonged to the dimension *illness and death*, but also to *physical injuries* and *animals and natural phenomena*. The individual *t* test showed *t* values of 8.17 for *illness and death*, 4.39 for *failures and embarrassment*, 3.45 for *social situations*, 4.71 for *physical injuries*, and 4.16 for *animal and natural phenomena* (all $P < 0.001$), as seen in Table 4. Among individual items on the physical injuries dimension it was shown that extreme fear of "dental injection" was reported by 7 (21%) individuals in the low-fear group and by 9 (26%) in the high-fear group. Intense fear of "sharp objects" was only

Table 6. Assessment scores of social and emotional consequences of dental fear among individuals with low versus high general fear

	Low fear			High fear		
	N	Mean	SD	N	Mean	SD
Social consequences						
Dental anxiety interfere with my:						
Work	32	1.2	1.9	30	1.7	2.3
Relation to family**	33	1.1	1.9	32	2.8	2.3
Relation to opposite sex*	32	1.1	1.9	32	2.3	2.3
Relation to friends*	33	0.9	1.8	32	2.1	2.3
Emotional consequences						
Dental anxiety makes me:						
Feel depressed*	33	2.1	2.5	33	3.5	2.5
Angry	33	2.8	2.3	34	3.0	2.1
Feel ashamed	33	2.6	2.4	34	3.2	2.1

* $P < 0.05$; ** $P < 0.01$.

Table 7. The final models of multiple linear regression analyses with a forward stepwise procedure estimating the effect of the independent variables; general fear (GFS), psychological distress (SCL-90-R GSI), dental anxiety (DFS), gender and age on social (model 1) and emotional (model 2) consequences

Variable	B	SE	Beta	*T* value	*P*-value
Model 1—social consequences					
Constant	1.9	1.3		1.4	0.154
SCL-90-R	6.6	1.8	0.5	3.7	0.000
Model 2—emotional consequences					
Constant	−5.0	3.0		−1.7	0.102
DFS	0.2	0.0	0.4	3.9	0.000
SCL-90-R	3.1	1.3	0.3	2.4	0.022

Model 1—n = 57; $R^2 = 0.20$; Adjusted $R^2 = 0.19$.
Model 2—n = 63; $R^2 = 0.30$; Adjusted $R^2 = 0.28$.

reported by 1 (3%) patient in the low-fear group compared to 8 (24%) in the high-fear group. Fear of blood was not admitted by anybody in the low-fear group, but was reported by 9 (26%) individuals in the high-fear group.

Patients with a high general fear had a significantly higher SCL-90-R GSI value than individuals with low general fear ($t = 3.72$; $P < 0.001$). The high-fear group also showed higher mean values among all individual SCL-90-R dimensions. With the exception of *psychoticism, hostility*, and *paranoid ideation* the dimensions differed significantly between groups (Table 5). The largest discrepancy between the groups was assessed for *somatization* ($t = 3.37$; $P < 0.001$). In addition, the statistical analysis revealed that *obsessive-compulsive ideation* ($t = 3.86$; $P < 0.001$), *interpersonal sensitivity* ($t = 3.13$; $P < 0.01$), *depression* ($t = 3.38$; $P < 0.001$), *general anxiety* ($t = 3.21$; $P < 0.01$), and *phobic anxiety* ($t = 2.86$; $P < 0.01$), were significantly higher among high-fear individuals.

Patients with high general fear reported more negative social and emotional consequences of their dental anxiety compared to patients with low general fear (Table 6). The negative impact on work and work ability was experienced on a similar level in both groups, while the high-fear individuals reported significantly higher negative impact on close contacts with family and other people (relations to family ($t = 3.13$; $P < 0.01$), to the opposite sex ($t = 2.23$; $P < 0.05$), and to friends ($t = 2.46$; $P < 0.05$)). With regard to emotional consequences, having a depressed mood was assessed on a significantly higher level among high-fear patients ($t = 2.29$; $P < 0.05$). Feelings of anger and shame related to dental anxiety were rated on about the same level in both groups.

Two multiple linear regression analyses (forward stepwise) were performed in order to estimate the effect on social and emotional consequences from general fear (GFS) and psychological distress (SCL-90-R GSI), dental fear (DFS), gender and age (Table 7). The regression analyses showed that general psychological distress significantly predicted negative social consequences ($P < 0.001$). Negative emotional consequences were significantly predicted by dental fear (DFS; $P < 001$) and by general psychological distress (SCL-90-R GSI; $P < 0.05$).

Discussion

Regardless of whether dental fear is seen as a specific phobic reaction as opposed to being one fear among others in a complex anxiety syndrome, it still often creates significant health problems among individuals with avoidance behavior (8). Complicating negative influence from general psychological distress and other fears has also been shown (3, 9, 10). Thus, following the contention by Kent (21) we investigated dental phobic patients high and low in general fear with regard to influence on dental fear and its concomitant general psychological distress and reported negative life consequences.

The DAS and the DFS were used to measure specific dental fear. The high-fear individuals showed a higher degree of anticipated anxiety as well as a significantly higher awareness of physiological reactions. As suggested by Pauli et al. (22), the physiological reaction seems to confirm and strengthen the fear as real, which leads to a negative cycle making it difficult to break the pattern. When a phobia has developed it has a tendency to stay or even get worse, because of the individual focus on the feared object or situation, but also on his or her emotional and bodily reactions in the situation. Thus, anxious individuals express occurrences in a negative perspective, and fear and anxiety is maintained through negative cognitive biases (23).

The importance of such negative cycles in developing and maintaining fears has previously mainly been used to explain avoidance behaviors (23, 24). In this study it was indicated that both cognitive (DFS anticipated anxiety) and bodily (DFS physiological) reactions play a part in this process and that these reactions are more significant among fear-prone individuals. This may have implications for therapy, as shown by us and others. Berggren & Carlsson (9) reported that high general fear was more common among patients who did not respond to psychological treatment for dental fear. This was also elaborated by Kleinhauz et al. (10), who showed that patients who failed in behavioral treatment had higher levels of psychological distress.

The GFS total-sum showed high values in the high-fear group. In particular, the differences between the groups were evident for the fear dimensions *illness and death* and *physical injuries*. These dimensions include many of the healthcare-related fears. Extreme fears of "blood" or "sharp objects" were frequent among the high-fear individuals, but never reported by the low-fear group. In contrast, extreme fear of "dental injections" was frequently seen in both groups. Potentially conditioning etiologic factors were also reported in negative medical experiences (significantly more often among high-fear patients) and inconsiderate dentist (non-significantly higher). Thus, it seems that patients with high general fear also more often reacted to conditioning experiences in dental and medical care. It is also possible that their assessments reflect a tendency to report such negative experiences on a higher level.

The high-fear individuals reported a significantly higher degree of psychological distress as assessed by the SCL-90-R, than the low-fear group. The largest difference between the groups was assessed for the degree of *somatization*, but high-fear individuals also reported significantly more *obsessive-compulsive symptoms*, *depression*, *anxiety*, *phobic anxiety* as well as *interpersonal sensivity*. The SCL-90-R dimensions tapping more profound psychopathology (*psychoticism, hostility, paranoid ideation*) did not differ significantly between the groups. These results were probably explained by the exclusion from the study of patients with known drug and alcohol problems (25% at our clinic) and major psychiatric problems.

The high-fear group also reported more negative social consequences from dental fear than the low-fear group did. These differences were significant with regard to family relation, to the opposite sex, as well as to relations to friends. High-fear individuals also reported to a greater extent that they felt depressed when thinking of their dental fear, and that they tried to avoid thinking about it. Possibly, individuals who avoid thinking of the problem differ from others in how they behave or cope with their problem. Muris et al. (25) studied different coping styles among dental phobic individuals and found that high "monitors" (i.e. the extent to which a person seeks out threat-relevant information) thought that they were less able to control cognitions about an expected treatment than low "monitors". The authors concluded that individuals with a high monitoring coping style perceive a decreased ability to control cognitions about dental treatment compared to low "monitors".

Berggren (8) has previously shown that fearful dental avoiders report widespread negative effects in their work relations, working ability, and other negative social life effects. Berggren also found that the negative effects on emotions, social and everyday life were related to general fear rather than to specific dental fear. These results are congruent with the results from the present study, where no relation was found between specific dental fear and negative social life effects. The multiple linear regression analyses showed that dental fear (DFS) contributed mainly to the expression of negative emotional consequences, while both negative social and emotional consequences were predicted by psychological distress (SCL-90-R). These results emphasize the complexity of dental anxiety and elucidate the need for a better knowledge of dental patients, especially with regard to general psychological aspects.

The results indicate that dental fear patients with a higher degree of general fear differ in several ways from patients with less frequent and widespread fears. These differences concern dental fear reactions and related emotions, as well as general psychological dimensions. The high-fear group revealed a higher degree of anticipated anxiety, physiological reactions and considerably more extreme fears in relation to illness, death, injuries, etc. The high-fear group also reported considerably more psychological distress, especially significant on the *somatization* dimension. The high-fear patients felt more depressed and reported more negative effects on their social life. Taken together, these results indicate an overall more negative and complex situation among the high-fear individuals with regard to their life situation, as well as to both dental and medical care.

Our results suggest that dental phobia should be considered in a wide psychological perspective. The International Classification of Impairments, Disabilities and Handicaps (ICIDH) of the World Health Organization (26) classifies the consequences of different diseases and the impact on individual life consequences. According to the ICIDH, *Impairments* include anxiety conditions such as phobic anxiety; *Disability* is the behavioral pattern caused by this anxiety and *Handicap* relates to the social consequences for the individual. Individuals with phobic anxiety or high general anxiety often report widespread negative life consequences and may, with this classification, be seen as carrying a handicap.

These aspects need further research and should be included in therapy investigations, too. Kent (21) suggests that new treatment programs, based on cognitive–behavioral approaches and which target negative cognitions, may be of special benefit for a substantial proportion of dental phobic patients showing these general symptoms of fear and distress.

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