

Dental phobic patients' view of dental anxiety and experiences in dental care: a qualitative study

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The aim of this study was to explore and describe dental phobic patients' perceptions of their dental fear and experiences in dental care. The study sample consisted of 18 participants (12 women), with a mean age of 39.4 years, selected consecutively from patients applying for treatment at a specialized dental fear clinic in Göteborg, Sweden. Dental fear, assessed by the Dental Anxiety Scale, showed score levels well over established levels for severe dental fear. The method for sampling and analysis was inspired by the constant comparative method for Grounded Theory (GT). The thematized in-depth interviews took place outside the clinic and lasted for 1–1.5 h. All the interviews were conducted by the first author (KHA), audiotaped and transcribed verbatim. Three higher-order categories were developed and labelled *existential threat*, *vulnerability* and *unsupportive dentist*. *Existential threat* was

identified as the core category, describing the central meaning of the subjects' experiences in dental care. The core category included two dimensions, labelled *threat of violation* and *threat of loss of autonomy and independence*. The core category and the descriptive categories are integrated in a model framing the process of dental fear, as described by the informants. In conclusion, the onset of dental fear was commonly related to individual vulnerability and to traumatic dental care experiences, where perceived negative dentist behaviour played a significant role. The patient was caught in a 'vicious circle' that was difficult to break, and where fear and anxiety were maintained by negative expectations about treatment and about patient's own ability to cope in dental care situations.

Keywords: dental fear, behavioural science, interview, qualitative method.

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Introduction

Dental fear is one of the most frequent common fears (1, 2) and Scandinavian epidemiological studies have shown that about 7–10% of the populations are highly anxious of dental care (3–5). Women are more likely to report high dental fear than men (3, 4, 6). As regards age of onset, dental anxiety is usually thought to originate in childhood (7), peak in early adulthood (8) and decline with age (9, 10). The aetiology of dental fear is discussed in terms of an individual predisposition to anxiety and fear in general, or as a response to specific stimuli. Wolpe (11) described two different basic

patterns for the development of fear and anxiety, classical conditioning and a process of indirect learning (referred to as cognitive learning). The conditioned reaction refers to negative experiences in dentistry (commonly pain or negative dentist behaviours), most often in childhood (12, 13). Cognitive aspects of dental fear have been described as the patient's tendency to think negatively about treatment and expected pain because of vicarious or indirect learning (14). Further, several studies have shown that there is an association between dental fear and general fears and anxiety, neuroticism and general psychological distress (15–17). Thus, the development of dental fear is often multifactorial where both conditioned stimuli and cognitive processes interact with personality and other concomitant factors (6, 18, 19). When dental fear is established, especially with a phobic avoidance behaviour, it may create oral health problems as well as psychosocial problems for the individual (20, 21). Fearful patients often fail to keep their

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appointments and may create occupational stress among dental staff. They take longer to treat and when oral status deteriorates treatment becomes more complicated (22–24). Further, it has been suggested that the patient–dentist relationship strongly affects the patient's feelings of control and safety in the dental care situation, and that perceived 'lack of control' is associated with dental anxiety (25, 26). Thus, communication between the patient and the dentist may also have an important effect on perceived stress and anxiety during treatment (27–29).

Fear and anxiety are in many aspects the same with regard to experience, physiological reactions and conceptions (30), and the terms are most often used interchangeably in the literature of dental fear. According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), severe dental fear could meet the criterion to be considered a specific phobia. This is defined as a clinically significant anxiety provoked by exposure to a specific feared object or situation, often leading to avoidance behaviour and/or significantly interfering with the person's normal routines and daily life (31).

Although dental fear and anxiety have been thoroughly investigated during the last decades, mainly with quantitative instruments, there is a lack of studies describing dental fear with the patients' own words and from their perspective. There is always a risk that valuable information is lost when using structured interviews and instruments. Thus, the aim of the present study was to explore and describe dental phobic patients' perceptions of their dental fear and experiences in dental care. Our purpose was to gain a deeper understanding of dental fear and to generate some new perspectives for the investigation of this multifaceted problem.

Method

Grounded Theory

The qualitative method chosen in the present study was inspired by the constant comparative method for Grounded Theory (GT) (32–35). The aim of a GT study is to focus on different qualities of a phenomenon, and to generate theory rather than to test a hypothesis based on already existing theories. The fundamental rules of GT are to look for social processes, to discover existing problems and to investigate how the people involved handle them. The inductive approach allows the subjects to characterize and describe their thoughts and actions in their own words. The method has frequently been used in public health research (36–38), and recently in a study of dentist–patient interactions (39).

Subjects

In order to form a heterogeneous group of individuals with severe dental fear, participants were strategically selected

among consecutive patients applying for treatment at a specialized dental fear clinic. At their first visit to the clinic all patients were requested to fill in some questionnaires about background factors, including dental anxiety. Dental anxiety was assessed by Corah's Dental Anxiety Scale (DAS) (40, 41). The DAS measures reactions to four imagined dental treatment situations. For each situation there is a scale from calm (1) to terrified (5) giving total scores from 4 to 20. Population normative mean scores have been reported as 8–9, and a DAS score of 13 or higher is judged to indicate dental fear (40–42). All informants had dental fear score levels (DAS) well over established cut-off scores for dental fear (mean 18.0; SD 2.4) and refused conventional dental care (because of dental fear), at the time of the study. Thus, the study sample consisted of 18 dental phobic patients, 12 women (their age ranged from 22 to 61 years, mean = 39.5) and six men (aged 29–55 years, mean = 39.2). The participants' educational background varied: four had compulsory education only; nine had been to upper secondary school; and five had higher education. The mean avoidance time of regular dental care was 6.8 years (SD 4.5). Two informants reported that they had never managed regular dental care.

In-depth interviews

Audio-taped, open-ended interviews were conducted by the first author (KHA). Each interview focused on the subjects' own descriptions of their dental fear and experiences in dental care, and on thoughts, feelings and actions in situations described. An interview guide with a wide coverage of interest was used (debut of dental fear, family, experiences in dental care). The interviews also focused on coping strategies and consequences of dental fear (to be reported separately). Related subject matters were often brought up spontaneously by the subjects or were introduced by the interviewer in an informal and conversational way. The third author (LH) has extensive experience of medical in-depth interviewing and acted as a consultant throughout the study. The interviews took place outside the clinic and lasted for 50 min–1.5 h. All interviews were transcribed verbatim by a project-secretary. Each interview was analysed before the next informant was selected.

Ethical considerations

The project was approved by the Ethics Committee of Göteborg University. Patients with language difficulties were excluded, as were patients with psychiatric diagnoses. Patients received information about the study verbally and in written form and it was stressed that participation was voluntary. Before the interview all patients were informed about full confidentiality and about their right to break off participation at any time. They were also asked to sign a written agreement for participation in the study. All

approached subjects accepted to participate, except one who refused because of 'lack of time'. All included participants fulfilled the study.

Analysis of data

Analysis of data was carried out in two principal ways: overview analyses to develop 'theoretical sensitivity' and line-by-line coding for identifying concepts and verifying conceptual relationships between concepts. The line-by-line coding procedure started with open coding in order to identify descriptions of thoughts and ideas related to the interview questions. Concepts reflecting the substance of the data were identified. Concepts with similar content were grouped together to form more abstract categories. In the next step, axial coding, connections between categories were sought. In the final step, selective coding, the central phenomenon and the core categories were systematically identified. Data analysis and data collection were simultaneous processes and proceeded until 'saturation' of information was reached, i.e. additional data did not give new information (34, 35).

Reliability and validity

Reliability and validity in qualitative research are discussed in terms of 'adequacy of evidence', and credibility or 'trustworthiness'. Reliability or 'adequacy of evidence' is reached when similar relationships between phenomena frequently emerge from the data. Validation or 'trustworthiness' of the developing theory is based on constant comparison (34). In other words, a theoretical model is valid when identified concepts and categories emerge repeatedly and are validated in additional interviews.

Results

A grounded theory of the process of dental fear

In the analysis three higher-order categories were developed and were labelled *existential threat*, *vulnerability* and *unsupportive dentist*. *Existential threat* was identified as the core category, describing the central meaning of the subjects' experiences in dental care. The core category included two dimensions: *threat of violation* and *threat of loss of autonomy and independence*. Each dimension of the core category was composed of a number of concepts, grounded in the interview data, e.g. fear of unpredictable events, feelings of powerlessness, feelings of being deserted and vulnerable, fear of dying, suffocating or losing control (Table 1). The higher-order category, *vulnerability*, was related to three descriptive categories labelled *traumatic life history*, *anxiety-prone personality* and *negative preconceptions about dental care*. Three descriptive categories, labelled

Table 1 Description of categories and subcategories/concepts related to the dental care situation, depicting the core category 'existential threat' and the dimensions 'threat of violation' and 'threat of loss of autonomy and independence'

Existential Threat	
Threat of violation	
Fear of unpredictable events	
Pain	
Distrust of anaesthesia	
Catastrophizing	
Feelings of powerlessness	
Total lack of control about what happens	
The dentist has the power	
Feelings of being deserted and vulnerable	
Trembling	
Feeling weak	
Sadness	
Feeling pitiable	
Feelings of shame for being childish or behaving badly	
Threat of loss of autonomy and independence	
Fear of dying	
Does my heart beat or does it not?	
Fear of suffocating	
I cannot breath with all the things/water in my mouth	
Fear of losing control	
Panic	
Black-out	

perceived lack of empathy and respect, *doubt about dentists' skills* and *perceived lack of support from dental team* were related to the subjects' experiences of the *unsupportive dentist* (Table 2). All categories are integrated into a preliminary model framing the process of dental fear, as described by the informants (Fig. 1).

Existential threat

Threat of violation. The subjects described strong fears of unpredictable events where pain was central, but also fear about something awful happening, for example, that the dentist would slip with the syringe or the drill:

I'm tense the whole time (I'm afraid of) it hurting so much that I might clench my teeth, or of him (the dentist) slipping or jerking and that kind of thing (IP17)

The patients expressed feelings of powerlessness in the situation and feelings that the treatment was going on whether they liked it or not:

You really can't control anything...it's the dentist who actually decides everything (IP16)

Most subjects described feelings of being deserted and vulnerable:

It's nearly over, we go on...then they always said, 'You've been really fantastic', although I was crying like anything. You felt as though you'd been in the

Table 2 Description of the higher order categories 'vulnerability' and 'unsupportive dentist' and examples of related subcategories

<p>Vulnerability</p> <ul style="list-style-type: none"> Traumatic life history <ul style="list-style-type: none"> Troubled family situations Interpersonal problems at school and with friends Traumatic experience outside dental care Own illness or severe illness/death among close relatives Anxiety-prone personality <ul style="list-style-type: none"> Anxiety or panic attacks Other specific fears and phobias High demands on self and a strong need for control Negative preconceptions of dental care <ul style="list-style-type: none"> Dental fear in family Negative information about dentistry <p>Unsupportive dentist</p> <ul style="list-style-type: none"> Perceived lack of empathy and respect <ul style="list-style-type: none"> The dentist did not listen to my signals The dentist did not care about me as a person The dentist did not understand my fear The dentist only wants to get the job done as quickly as possible Doubts about dentists' skills <ul style="list-style-type: none"> Distrust <ul style="list-style-type: none"> The dentist did not seem to know what to do Perceived lack of support from dental team <ul style="list-style-type: none"> The assistant has no power to act on her own The assistant tried to calm the dentist down The assistant was kind and gentle but it does not help

tumble drier...when you were little you'd almost feel used in some way...yes, it didn't feel as though they listened at all or anything (IP16)

Several informants described that they had feelings of anger both towards the dentist and dental staff and

towards themselves. Feelings of shame for being childish or behaving badly during treatment were also expressed.

Threat of loss of autonomy and independence. Most of the informants described a rising fear as the day for the appointment approached which culminated with treatment. Several informants expressed sleeping problems or nightmares about painful treatment or feared situations. Some informants expressed such strong feelings that they could not plan their everyday life after treatment because they felt that life would stop there:

It feels as though it's a red day in your diary...I can't plan anything after that... as though it's the last days in your life (IP9)

Several informants described that their fear was so strong that they felt worried about dying during dental treatment:

I'm going to die this time...I won't survive this... (IP2)

Most informants said that they found it very unpleasant to have 'a lot of things in their mouth' and also that the water during treatment was extremely unpleasant. Some informants expressed these feelings in terms of a fear of suffocating during treatment:

I get in a panic when I'm sitting there in the dentist's chair. I think I'll suffocate or drown in the water when I can't breathe... (IP1)

Fear about losing control was expressed in terms of feelings of panic and loss of autonomy and independence:

Everything just becomes impossible for me...I can't handle it.. I almost blackout...it goes through my whole self...don't touch me I'll fix this myself... I don't want anyone to touch me... I lose control over everything... you can't explain it, it's difficult... (IP8)

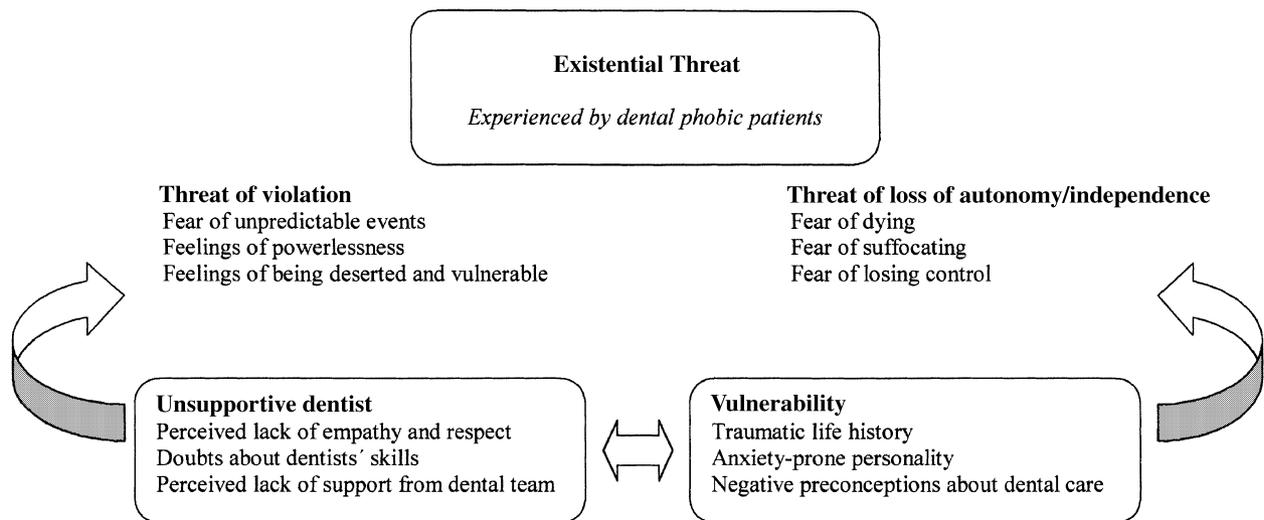


Figure 1 A preliminary model framing the process of dental fear. Three higher-order categories were related to the dental care situation, to individual vulnerability and to the unsupportive dentist. The core category 'existential threat' and its dimensions 'threat of violation' and 'threat of loss of autonomy and independence' describe the central meaning of the dental phobic patients' experiences in dental care.

Vulnerability

This higher-order category, describing the dental phobic patient's life history and possible predisposition to anxiety and fear, was related to three descriptive categories (Table 2).

Traumatic life history. Many of the subjects described a contemporary or earlier traumatic life history and believed that these experiences, most often in childhood, may be related to the onset of dental fear. Troubled family situations in childhood were described by several informants, such as parents' alcohol abuse or other addiction problems, parents' difficult divorce proceedings or lack of love from parents:

I don't remember so much from that time. I grew up in an alcoholic home, but it's probably true that I only remember the fun things. The only memory I have of going to the dentist is...I think I was in the first class at school and I went to a dentist who was a bit older and who had shaky hands. who smelt of booze...I can't remember if I met that dentist again, only that it was very nasty to go there... (IP12)

Interpersonal problems at school and with friends, were described by some subjects as something which may have influenced the onset of dental fear:

It was quite a difficult period. Our family moved around a lot to different places... changed school and everything, so that wasn't good at all. There was a lot of bullying and everything in the schools...the worry I had the whole time was about going to school, plus the dentist, plus I had a teacher who bullied you. So I've had a lot of that kind of shit... (IP15)

Traumatic experiences outside dental care were related to the onset of dental fear. These traumatic experiences were described in terms of a strong emotional upset and were expressed in feelings of threat and panic. These feelings seemed to be awakened and strengthened in dental care:

I wasn't so frightened of the dentist when I was at school. It was afterwards when I was in my twenties. I was going to the dentist because I had had my first boy. It was a very difficult delivery, I was completely out of it. It was the same feeling at the dentist's. The dentist was going to pull out a tooth and I got an injection. I wasn't so frightened in the beginning, but then my heart started beating and I went all strange in the head. A doctor came and they stroked my cheek so that I would wake up. I tried going to the dentist again and it was the same thing. Since then I've never been back. That was 40 years ago... (IP13)

Several informants thought that their own illness or the severe illness or death of relatives might have influenced the onset and expression of dental fear. One woman

reported that she had frequent ear pain as a child and believed that her fear of syringes and dental anxiety had started with that. Another woman reported that she developed an eating disorder in her teens and that she felt the same feelings of panic about eating as she did in the dental care setting. Another informant said that a family member had died after an asthma attack and that she felt very anxious after that about having something in her mouth and in the dental care situation in particular. One woman thought that her dental fear had started as an adult during a period when she had severe headaches, which were later diagnosed as being caused by a brain tumour:

It didn't have anything to do with going to the dentist really. My fear of going to the dentist has come in recent year. I had a brain tumour and after that I have an incredibly low threshold for pain. I had a constant headache for one and a half year without anyone knowing what it was. I remember that during that time I was going to go to the dentist. I got an inflammation in a tooth, it was then it started because I felt that I just couldn't cope... headache and toothache...I felt sort of dizzy... (IP11)

Anxiety-prone personality. Some of the informants described a history of general anxiety or panic attacks, or other specific strong fears, e.g. fear of childbirth, worries about death and illness, and fears that bad things would happen to their families:

I've got more anxious as I've got older. It started with me being worried about going to the dentist. My anxiety has wrecked my life. And then there's the dentist in the middle of everything else. when I have to go to the dentist its sheer hell... maybe its connected. I can't tell the one thing from the other you see. (IP2)

Some of the younger women said that they worried a lot about their performance at school, and that they always wanted to be 'good girls'. Further, several informants said that they thought they made high demands on themselves and had a strong need for control. They were clearly disturbed by not being able to control their fear and go through with dental treatment:

I hate it (not being able to control my fear). It's bad for my self-esteem... I think what kind of a damned old woman am I really? It's childish to think like that but...why can't I cope with this? (IP18)

Negative preconceptions about dental care. This category reflected dental fear in the family. Also negative information about dentistry was reported. Some patients explained that someone close was afraid of the dentist. However, most informants said that they were not aware of fear among family members when their own dental fear started:

My Dad is afraid...but that was nothing that we spoke about then. Mum was the one who wasn't afraid and she always went to the dentist with me. My big sister is also afraid so I don't know, that could have affected me...although I didn't know it. I only knew that she didn't go to the dentist... (IP1)

Some informants said that they had heard 'horror stories' about dental treatment, which they were very frightened by. They believed that this might have influenced their own dental fear:

When I was a little girl my mother went to the dentist and had all her teeth pulled out. They didn't show feelings those days you know...but I remember that my father helped her and that there was a lot of blood everywhere (IP3).

Unsupportive dentist

This higher-order category was composed of three descriptive categories (Table 2).

Perceived lack of empathy and respect. Many of the informants felt that their dentists lacked empathy and respect, and saw this as one of the most significant factors behind their dental fear. The patients perceived the dentist as rough. They felt that the dentist did not bother to listen to their signals or care about whether they were in pain. Moreover, many felt that the dentist did not care about them as a person and did not take their fear seriously:

The dentist was quite a tough woman who didn't think that injections were so important...she pulled and dragged and jerked and I said, OK take it a bit easy now, but she went on at the same pace. I felt as though there was a gap there, a lack of respect for the fact that I thought it was unpleasant. In fact she ignored my signals. She's one of those people who doesn't like fuss-pots...she almost gets nastier then if she sees that your're...maybe she gets stressed up herself and just wants to get things over with as quickly as possible... (IP5)

These experiences of the 'awful' dentist were vividly remembered and expressed in terms of feelings of being completely disregarded or even violated. Once this negative picture of dentists was established it seemed to be quite stable and could easily be transferred to new dentists, even if they were more respectful and empathic. One informant described:

It's got worse and worse...I absolutely didn't like my dentist when I was little you see, but after that they've been quite good...it's not their fault, they do as best they can...but it's equally horrible anyway... (IP4)

Several informants stated that they had changed dentists repeatedly while still at school and that they experienced insecurity with every new dentist:

I never had the same dentist...if I had had confidence and felt that, that one I could trust...it would have made a big difference... (IP18)

Doubt about dentists' skills. This category was composed of descriptions of distrust and feelings that the dentist did not seem to know what to do. Most of the informants said that they assumed that dentists were 'professional' and that they must believe in this as they could not judge the dentists' professional competence themselves. However, several informants stated that they had doubts about treatment and information from dentists:

It didn't get better when I changed dentists and then she (the dentist) talked over my head like they always do about everyone...and then there was something about a filling that he, that horrible dentist, had done, so she said that he ought to be had up. Then you really lose confidence even in what they know. Anyway, then I started wondering how I could be sure that they really know what they are doing... (IP1).

Perceived lack of support from dental team. Although several patients said that they had been shown support and empathy by members of the dental team, it was more common to perceive a lack of support. Most informants described that they were so frightened that they were mainly focused on the dentist and not other members of the dental team. The assistant was, no matter how kind and gentle, in most cases perceived as acting in collaboration with the dentist, or as having no power to influence the situation:

I know that he (the dentist) changed nurses a couple of times. He didn't get on so well with them either. She was probably ashamed, because one got that impression that she tried to calm him down. Somehow I think that I'm afraid of everything that has to do with the dentist. I didn't get any support at all at the dentist's so I simply didn't go to the dentist's... (IP14)

Discussion

This qualitative study was based on 18 in-depth interviews with dental phobic patients investigating the subjects' views of dental fear and experiences in dental care. The study sample represented a selected group of severely fearful individuals seeking treatment at a specialized dental fear clinic at the Faculty of Odontology, Göteborg University. Our study revealed categories related to the dental care situation, to the individual and to the dentist. *Existential threat* was identified as the core category, with two dimensions labelled *threat of violation* and *loss of autonomy and independence*. These categories describe the central meaning of the subjects' experiences in dental care. Our

results strengthen the argument that the expression of dental fear must be seen as a complex problem where several factors interact (6, 12, 19).

The study sample reflects the majority of women among patients at our clinic. Women are more likely to report dental fear (3) as well as seeking treatment for their dental fear, than men (43). It could be assumed that it is more socially permissible for women to report dental fear, which may explain some of these sex differences. However, in this sample of dental phobic patients both men and women expressed their fear and their experiences in dental care in a similar way. Thus, the variation in their experiences seems to be more related to the individuals than to gender differences.

Although dental fear has often been described as a conditioned reaction to a traumatic dental experience (12, 13, 19), individual predisposition to anxiety disorders has also been discussed (44). The latter perspective suggests that there are individual differences in how people react to dental care or other fearful stimuli or situations (17). In our study most informants stated that their dental fear had started in childhood with a negative experience in dentistry. This was commonly expressed as a painful event and meeting a rough dentist. However, several informants described a parallel traumatic life situation with difficulties in the family and/or interpersonal problems at school and with friends. Negative preconceptions of dental care have also been proposed as a causal factor for dental fear, especially for the early onset of dental fear. These negative preconceptions of dental care may be caused by dental fear in the family or by negative information about dental care (14, 45, 46). Although some of the informants described dental fear in the family, most informants were not aware of fear among close relations when dental fear started. However, some of the informants described negative information about dental treatment and thought that this might have influenced their own dental fear. A few informants said that their dental fear had started in adulthood and associated it with a traumatic experience outside dental care. In addition, some informants expressed a history of general anxiety or panic attacks, or other specific strong fears. Thus, our results are congruent with previously reported aetiological factors for dental fear (47). However, most subjects in this study displayed a psychological vulnerability associated with the onset of dental fear.

Most of the patients expressed that they perceived lack of empathy and respect from the dentist as one of the most significant factors behind their dental fear. Our findings support the idea that perceived dentist behaviour is, for many patients, an important factor in the expression and development of dental fear (27, 45, 48). The informants described a strong situational phobic fear reaction *existential threat*, where *threat of violation* and *threat of loss of autonomy and independence* dominated the experience.

Threat of violation was described as a strong fear about unpredictable events, such as pain, as well as thoughts of catastrophe and feelings of being vulnerable and completely powerless in the situation. The subjects expressed *threat of loss of autonomy and independence* in terms of fear of dying, suffocating and losing control. From this description it seems that perceived 'lack of control' is central for the dental phobic patients' experience in the dental care situation. According to Kent (26) it appears that the experience of anxiety is closely allied to feelings of control, or loss of control in dental care. Further it has been suggested that the dentist-patient relationship is strongly related to patients' feelings of safety and control during dental treatment (25, 26). According to Corah (25) patients rank the dentist's empathy and communicativeness as important factors for patient satisfaction. In addition, the dentist's explicit effort to predict pain, and friendly, calm and supporting behaviour from the auxiliary were ranked as important factors for anxiety reduction (25). In the present study several informants stated that they had been shown empathy and support by other members of the dental team. However, it was more common to experience a lack of support. The patients' descriptions suggest that their attitude to the assistant is highly dependent on the patient-dentist relation.

In conclusion, among patients in this study the onset of dental fear seems to be related to an individual vulnerability and most often a traumatic dental care experience, where perceived negative dentist behaviour seems to be significant. It must therefore be important to prevent dental fear by creating a good relationship between the patient and the caregiver. Furthermore, the fearful patient seems to be caught in a 'vicious circle', that is difficult to break, with negative expectations about treatment and increasing fear and anxiety (18). According to Kent (49) it would be helpful in understanding high levels of anxiety and phobia to consider them within the relationship between patient and dentist, where both the behaviour of the caregiver and the anxiety of the patient could be considered as equally important. Further knowledge about different coping-strategies/personal resources for coping among our patients, as well as insight into significant factors in the behaviour of the caregiver is needed for the prevention and treatment of dental fear.

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References

- 1 Agras S, Sylvester D, Oliveau D. The epidemiology of common fears and phobia. *Comp Psychiatry* 1969; 10: 151–6.
- 2 Fiset L, Milgrom P, Weinstein P, Melnick S. Common fears and their relationship to dental fear and utilization of the dentist. *Anesth Prog* 1989; 36: 258–64.
- 3 Hakeberg M, Berggren U, Carlsson SG. Prevalence of dental anxiety in an adult population in a major urban area in Sweden. *Community Dent Oral Epidemiol* 1992; 20: 97–101.
- 4 Moore R, Birn H, Kirkegaard E, Brodsgaard I, Scheutz F. Prevalence and characteristics of dental anxiety in Danish adults. *Community Dent Oral Epidemiol* 1993; 21: 292–6.
- 5 Vassend O. Anxiety, pain and discomfort associated with dental treatment. *Behav Res Ther* 1993; 31: 659–66.
- 6 Milgrom P, Weinstein P, Kleinknecht R, Getz T. *Treating Fearful Dental Patients: A Clinical Handbook*. Reston Publishing Co, Reston, 1985.
- 7 Öst LG. Age of onset in different phobias. *J Abnorm Psychol* 1987; 96: 223–9.
- 8 Thomson WM, Locker D, Poulton R. Incidence of dental anxiety in young adults in relation to dental treatment experience. *Community Dent Oral Epidemiol* 2000; 28: 289–94.
- 9 Hägglin. *Dental Anxiety in a Swedish City Population of Women. A Cross-sectional and Longitudinal Study of Prevalence, Dental Care Utilisation and Oral And Mental Factors*, Thesis. Göteborg University, Sweden, 2000.
- 10 Liddell A, Locker D. Dental anxiety in the elderly. *Psychol Health* 1993; 8: 175–83.
- 11 Wolpe J. The dichotomy between classical conditioned and cognitively learned anxiety. *J Behav Ther Exp Psychiatry* 1981; 12: 35–42.
- 12 Berggren U. *Dental Fear and Avoidance. A study of Etiology, Consequences and Treatment*, Thesis. Göteborg University, Sweden, 1984.
- 13 Klingberg G. *Dental Fear and Behavior Management Problems in Children. A Study of Measurement, Prevalence, Concomitant Factors, and Clinical Effects*, Thesis. Göteborg University, Sweden, 1995.
- 14 Rachman S. The conditioning theory of fear-acquisition: a critical examination. *Behav Res Ther* 1977; 15: 375–87.
- 15 Abrahamsson HK, Berggren U, Carlsson SG. Psychosocial aspects of dental and general fears in dental phobic patients. *Acta Odontol Scand* 2000; 58: 37–43.
- 16 Berggren U. General and specific fears in referred and self-referred adult patients with extreme dental anxiety. *Behav Res Ther* 1992; 30: 395–401.
- 17 Frazer M, Hampson S. Some personality factors related to dental anxiety and fear of pain. *Br Dent J* 1988; 165: 436–9.
- 18 Kent G. Cognitive aspects of the maintenance and treatment of dental anxiety: a review. *J Cogn Psychother* 1989; 3: 201–21.
- 19 Moore R, Brodsgaard I, Birn H. Manifestations, acquisition and diagnostic categories of dental fear in a self-referred population. *Behav Res Ther* 1991; 29: 51–60.
- 20 Berggren U. Psychosocial effects associated with dental fear in adult dental patients with avoidance behaviours. *Psychol Health* 1993; 8: 185–96.
- 21 Hakeberg M, Berggren U, Gröndahl HG. A radiographic study of dental health in adult patients with dental anxiety. *Community Dent Oral Epidemiol* 1993; 21: 27–30.
- 22 Corah NL, O'Shea RM, Skeels DK. Dentists' perceptions of problem behaviors in patients. *J Am Dent Assoc* 1982; 104: 829–33.
- 23 Kleinknecht RA, Bernstein DA. The assessment of dental fear. *Behav Ther* 1978; 9: 626–34.
- 24 Skaret E, Raadal M, Kvale G, Berg E. Factors related to missed and cancelled dental appointments among adolescents in Norway. *Eur J Oral Sci* 2000; 108: 175–83.
- 25 Corah NL, O'Shea RM, Bissell GD, Thines TJ, Mendola P. The dentist-patient relationship: perceived dentist behaviors that reduce patient anxiety and increase satisfaction. *J Am Dent Assoc* 1988; 116: 73–6.
- 26 Kent G. Self-efficacious control over reported psychological, cognitive and behavioural symptoms of dental anxiety. *Behav Res Ther* 1987; 25: 341–7.
- 27 Bernstein DA, Kleinknecht RA, Alexander LD. Antecedents of dental fear. *J Public Health Dent* 1979; 39: 113–24.
- 28 Hakeberg M, Klingberg G, Noren JG, Berggren U. Swedish dentists' perceptions of their patients. *Acta Odontol Scand* 1992; 50: 245–52.
- 29 Rouse RA, Hamilton MA. Dentists' technical competence, communication, and personality as predictors of dental patient anxiety. *J Behav Med* 1990; 13: 307–19.
- 30 Öhman A. *Rädsla. Ängest, Fobi*. Scandinavian University Press, Stockholm, 1994.
- 31 DSMIV. *Diagnostic and Statistical Manual of Mental Disorders*, 4th edn. American Psychiatric Association, Washington, DC, 1994.
- 32 Annells M. Grounded theory method, Part I. Within the five moments of qualitative research. *Nurs Inq* 1997; 4: 120–9.
- 33 Glaser B, Strauss A. *The Discovery of Grounded Theory. Strategies for Qualitative Research*. Aldine, Chicago, 1967.
- 34 Strauss A, Corbin J. *Basics of Qualitative Research. Grounded Theory Procedures And Techniques*. Sage Publications, CA, USA, 1990.
- 35 Strauss A, Corbin J. *Basics of Qualitative Research. Techniques and Procedures for Developing Grounded Theory*, 2nd edn. Sage Publications, CA, USA, 1998.
- 36 Hallberg LR, Carlsson SG. A qualitative study of strategies for managing a hearing impairment. *Br J Audiol* 1991; 25: 201–11.
- 37 Hallberg LR, Carlsson SG. Psychosocial vulnerability and maintaining forces related to fibromyalgia. In-depth interviews with twenty-two female patients. *Scand J Caring Sci* 1998; 12: 95–103.
- 38 Wårdh IHL, Berggren U, Andersson L, Sörensen S. Oral health care: a low priority in nursing. *Scand J Caring Sci* 2000; 14: 137–42.
- 39 Kulich KR, Berggren U, Hallberg LR. Model of the dentist-patient consultation in a clinic specializing in the treatment of dental phobic patients: a qualitative study. *Acta Odontol Scand* 2000; 58: 63–71.
- 40 Corah N. Development of a dental anxiety scale. *J Dent Res* 1969; 48: 596.
- 41 Corah N, Gale E, Illig S. Assessment of a dental anxiety scale. *J Am Dent Assoc* 1978; 97: 816–9.
- 42 Berggren U, Carlsson SG. Psychometric measures of dental fear. *Community Dent Oral Epidemiol* 1984; 12: 319–24.

- 43 Milgrom P, Weinstein P, Getz T. *Treating Fearful Dental Patients: A Patient Management Handbook*, 2nd edn. Continuing Dental Education, University of Washington, Seattle, 1995.
- 44 Kendler KS, Neale MC, Kessler RC, Heath AC, Eaves LJ. The genetic epidemiology of phobias in women. The interrelationship of agoraphobia, social phobia, situational phobia, and simple phobia. *Arch Gen Psychiatry* 1992; 49: 273–81.
- 45 Berggren U, Meynert G. Dental fear and avoidance: causes, symptoms, and consequences. *J Am Dent Assoc* 1984; 109: 247–51.
- 46 Klingberg G, Berggren U, Noren JG. Dental fear in an urban Swedish child population: prevalence and concomitant factors. *Community Dent Health* 1994; 11: 208–14.
- 47 Locker D, Liddell A, Dempster L, Shapiro D. Age of onset of dental anxiety. *J Dent Res* 1999; 78: 790–6.
- 48 Eli I, Uziel N, Baht R, Kleinhauz M. Antecedents of dental anxiety: learned responses versus personality traits. *Community Dent Oral Epidemiol* 1997; 25: 233–7.
- 49 Kent G. Dental phobias. In: *Phobias. A Handbook of Theory, Research and Treatment* (Davey G ed.), 1997, Wiley & Sons Ltd, Chichester, 107–27.