The fearful patient in routine dental care

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ABSTRACT

Background: Managing dental fear is a daily challenge in dental care. The overall aims of this thesis were to study the attitudes of dental health professionals to fearful dental patients, and their skills and strategies when treating these patients. A second overarching aim was to develop and evaluate a structured model for information and communication about dental fear in the treatment situation, the Jönköping Dental Fear Coping Model (DFCM), to the benefit of both the dental health professionals and their adult patients. The evaluation of the DFCM primarily focuses on outcomes pertaining to dental health professionals, but also on patient outcomes. Most dental fear treatment has focused on extreme dental fear; however, the DFCM is designed to work with the different levels of dental fear encountered in ordinary dental clinical work.

Material and Methods: The focus of the thesis is on dental health professionals treating all adult patients, with or without dental fear. In a web survey, the experience and preparedness of dentists in Sweden to treat fearful patients were investigated. The Jönköping Dental Fear Coping Model (DFCM) was then developed with the aim to reduce stress among dental health professionals when treating fearful patients, and to reduce dental fear among patients. An intervention study was performed to evaluate the DFCM, both from a staff and a patient perspective.

Results: In the web survey, 20% of the dentists reported that they experienced stress when treating fearful patients. Despite reporting relatively good skills and expressing mainly positive attitudes towards treating adult fearful patients, a need for training in dental fear was expressed by the dentists. Data from the intervention study did not support the main hypothesis that the DFCM strengthened the professionals' self-efficacy at treating fearful patients; however, it does indicate that using the DFCM facilitates the dental professionals' identification of dental fear and their communication with patients. Furthermore, it seems to reduce tension among fearful patients.

Conclusion: The Jönköping DFCM can be used to improve the rapport with patients during the dental examination, and a Dental Fear Summary provides important information to support the dental treatment. The Jönköping DFCM needs to be evaluated in other studies and in other contexts, such as in private dental care/management.

Keywords: Dental fear, Dental health professionals, Dentist, Patients, Stress, Attitudes, Experiences, Competence, Treatment strategies, Training, Treatment model, Communication, Pain, Discomfort, Tension, Patient satisfaction.

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SAMMANFATTNING PÅ SVENSKA

Bakgrund: Omhändertagande av patienter med tandvårdsrädsla är en utmaning för tandvården. Det övergripande syftet med denna avhandling var att studera tandvårdspersonalens attityder till arbetet med tandvårdsrädda patienter och deras kompetens och strategier vid detta arbete, samt att utveckla och utvärdera en strukturerad modell för att underlätta arbetet med rädda patienter, the Jönköping Dental Fear Coping Model (DFCM). Modellen är tänkt att gagna både personal och patienter. Utvärderingen av DFCM fokuserar i första hand på bedömningar och skattningar av tandvårdspersonalen, men också av patienternas reaktioner. Tidigare forskning om behandling av tandvårdsrädda patienter har mestadels fokuserat på extrem tandvårdsrädsla. DFCM är utformad för att fungera vid de olika nivåer av tandvårdsrädsla som uppträder vid vanligt kliniskt arbete.

Material och metod: Avhandlingen fokuserar på tandvårdspersonal som behandlar vuxna patienter, med eller utan tandvårdsrädsla. I en webbundersökning undersöktes svenska tandläkares erfarenhet och beredskap för att behandla tandvårdsrädda patienter. Jönköpingsmodellen (DFCM) utvecklades med målsättning att minska stress bland tandvårdspersonal vid behandling av rädda patienter och för att minska tandvårdsrädsla bland patienter. En interventionsstudie genomfördes för att utvärdera DFCM, både ur personal- och patientperspektiv.

Resultat: I webbundersökningen rapporterade 20% av tandläkarna att de upplevde stress vid behandling av tandvårdsrädda patienter. Trots att man rapporterade relativt god beredskap och främst positiva attityder till att behandla vuxna rädda patienter, uttryckte tandläkarna ett behov av utbildning i tandvårdsrädsla. Data från interventionsstudien stödde inte den huvudsakliga hypotesen att DFCM stärker personalens självskattade förmåga att behandla patienter med tandvårdsrädsla, men användning av DFCM tycks underlätta för tandvårdspersonalen att identifiera och kommunicera med tandvårdsrädda patienter, och anspänningen bland rädda patienter tycks minska.

Konklusion: Jönköpingsmodellen (DFCM) kan användas för att förbättra vårdgivarnas relation med patienterna vid undersökning och behandling, bland annat genom att behandlingsteamet genom DFCM får detaljerad information om patientens eventuella tandvårdsrädsla. DFCM behöver utvärderas i andra studier och i andra sammanhang, såsom inom privat tandvård.

LIST OF PAPERS

This thesis is based on the following studies, referred to in the text by their Roman numerals.

I. Brahm CO, Lundgren J, Carlson SG, Nilsson P, Corbeil J, Hägglin C. Dentists' views on treating fearful patients: Problems and promises. Swed Dent J. 2012;36(2):79-90.

II. Brahm CO, Lundgren J, Carlsson SG, Nilsson P, Hultqvist J, Hägglin C. Dentists' skills with fearful patients: education and treatment. Eur J Oral Sci. 2013;121(3 Pt 2):283-291.

III. Brahm CO, Lundgren J, Carlsson SG, Nilsson P, Hägglin C. Development and evaluation of the Jönköping Dental Fear Coping Model: A health professional perspective. Accepted for publication in Acta Odontol Scand.

IV. Brahm CO, Lundgren J, Carlsson SG, Nilsson P, Hägglin C. Evaluation of the Jönköping Dental Fear Coping Model: A patient perspective. Submitted.

CONTENT

1 INTRODUCTION

To most people, going to the dentist is associated with discomfort or expectations of discomfort. Even though modern dentistry applies many different analgesic techniques, dental health professionals are almost inevitably faced with more or less strong reactions that are sometimes difficult to understand and handle. The patients' more or less pronounced reactions often become a strain on the professionals; in extreme cases, they may affect the treatment result, but otherwise add to the stress that often accompanies exacting therapeutic interventions.

A great deal has been written about the phobic-like conditions of dental fear, but much less about the more modest forms of fear that account for the majority of the clinical challenges facing dental health professionals to a varying degree in their daily work. This thesis addresses the dental fear problem from a number of clinically relevant aspects: In general, how do dentists view the problem of dental fear? How well prepared are dental health professionals to handle patients with dental fear? Can a simple, structured treatment model with the focus on dental fear be introduced through relatively minor training interventions, in order to facilitate the management of these patients? If so, would it be possible to reduce dental fear among patients and the stress experienced by the staff in connection with treatment?

The introduction gives a brief account of the background of this thesis, with regard to dental fear, the fearful patient, the clinical management of dental fear, and the Swedish Dental Health-Care Service. In the thesis, dental fear and dental anxiety are used synonymously, since they are closely related emotions.

1.1 THE FEARFUL DENTAL PATIENT

1.1.1 EPIDEMIOLOGY

When assessing dental fear, the intensity is classified as 'none', 'low', 'moderate', or 'high/extreme' [1]. The prevalence of dental fear among adults in western countries varies between populations and depending on the assessment tools used [2, 3, 4]. A recently published Swedish cross-sectional study [5], reported the following distribution/prevalence: no fear, 81%; low fear, 10%; moderate fear, 5%; and extreme fear, 5%. The same study reported decreased dental fear in the population over a 50-year period, but other, similar studies showed that the prevalence of fear is stable over time [6, 7, 8]. The results from longitudinal studies have been subjected to a similar discussion,

but there are strong indications that there is a peak in dental fear in the age group of 20-30-year-olds, with a decreasing trend among 50-60-year-olds [9, 10, 11], although there are individual discrepancies. Women report more fear and are more wary of dental visits than men, but there is no convincing evidence of differences based on the patients' socioeconomic status [2, 4, 5].

1.1.2 AETIOLOGY

Current aetiological models are based on phobic dental fear. It is reasonable to assume that similar processes also apply to lower levels of dental fear.

The aetiology of dental fear is multifactorial and complex and includes predisposing factors, external factors, social factors and dental factors [12]. Examples of predisposing factors are: age, level of maturity, neuroticism, mental disorders, or neuropsychiatric disorders, *e.g.,* attention deficit hyperactivity disorder (ADHD). External factors (indirect learning) include 'modelling' and 'negative information' [13, 14]. An example of modelling is when parents transfer their dental fear to their children, while 'negative information' is the information about dental care disseminated through the media and popular culture, or by family members. Social factors include socioeconomic status and cultural background. Dental factors (direct learning) [13, 14] may consist of painful or unpleasant dental treatment [15, 16] and experiences of stimuli that cannot be controlled or predicted [17]. Furthermore, traumatic dental care experience, such as pain, poor reception by staff and lack of control, becomes traumatic only if the patient experiences it as such and is thus influenced by predisposing factors [18, 19].

1.1.3 SYMPTOMS, CHARACTERISTICS AND CONSEQUENCES

Dental treatment involves situations and instruments that the patient may perceive as threats. The threats may activate the sympathetic branch of the autonomous nervous system and put the patient in a state of heightened activity ('fight or flight'), characterised by increased heart activity, pulse rate and muscle tension [20, 21].

Dental fear may prevent individuals from seeking dental care. Some individuals completely avoid going to the dentist, and others only seek dental care in emergency situations. One group of individuals, the so-called 'goers but haters', will see the dentist although they dislike it [22]. Individuals with avoidance behaviour risk ending up in 'the vicious circle' [23, 24], which may lead to impaired oral health. Mainly caries, but also periodontitis, make the individual aware of the consequences of dental fear for oral health. Inability to cope with dental treatment in that kind of situation may create feelings of

inferiority, shame and embarrassment, which may lead to social problems for the individual in the long term, in his/her contacts with other people.

Individuals with dental fear often report poor oral health [25, 26], more specifically toothache, gingivitis and pain on chewing [27], which corresponds to the results from clinical studies. Dental fear is significantly correlated with more decayed tooth surfaces/fewer filled surfaces, more decayed teeth/fewer filled teeth, and more missing teeth/fewer functional surfaces [28]. Other studies show significant associations between the degree of dental fear and oral health; the greater the dental fear, the poorer the oral health [29, 30]. Poor oral health seems to be highly associated with avoidance of dental care and is seldom seen among the more common 'goers but haters' [31].

Other consequences of dental fear have been studied in cross-sectional studies. The results show relationships between increased use of medication and abuse of alcohol and tranquilisers, poor self-esteem and self-confidence, psychosomatic disorders and increased sickness absenteeism [32, 33]. A Swedish study [34] showed that individuals who had avoided dental care for many years (> 10 years) experienced more negative social consequences in everyday life, compared with those who had avoided dental care for shorter periods. Feelings of isolation, being easily upset and of losing patience were more common among fearful individuals with irregular than regular attendance [34]. Negative emotional and social consequences, such as anger, shame and depression, have been noted in studies of patients with extreme dental fear [33].

1.1.4 DIAGNOSTICS

There are two current international diagnostic systems for mental disorders, the Diagnostic and Statistical Manual of Mental disorders (DSM), and the International Classification of Disorders (ICD-10). The DSM system predominates in the diagnostics of dental phobia, which is classified as a 'specific phobia' in the DSM-IV [35]. The DSM system was not used in this thesis, as it cannot be used to describe individuals with sub-clinical levels of distress.

The most common methods used for the assessment of all levels of dental fear are psychometric methods; i.e., questionnaires that have been shown to measure the degree and/or type of dental fear safely and correctly through systematic investigation. Some examples of the most frequently used psychometric diagnostic methods used in dental care are presented below.

The simplest of all methods to assess the degree of dental fear consists of a single question: 'Are you afraid of going to the dentist?' with the response options: 'No', 'A little', 'Yes', and 'Yes, very afraid' [36]. This question has been shown to provide a surprisingly accurate measure of the degree of dental fear [37]. The method is used in the last two studies of this thesis.

The Dental Anxiety Scale (DAS) [38], also available in a revised form (DAS-R; Ronis, 1994) [39], consists of four questions that assess anticipatory anxiety and situational dental fear before a dental visit, with five response options indicating different degrees of fear. The instrument has been translated and the Swedish version has been validated [40]. Humphris has developed a modified version of the DAS (MDAS), which includes a fifth question on the experience of oral local anaesthetics [41].

The Dental Fear Survey (DFS) [42] consists of twenty questions, each with five response options, assessing avoidance behaviour, possible physiological reactions that patients experience when visiting the dentist, and dental fear in relation to different dental care situations. The instrument has been translated and the Swedish version has been validated [43, 44].

The Index of Dental Anxiety and Fear (IDAF-4C+) [45] includes questions measuring the cognitive, emotional, physiological and behavioural components of dental fear. The instruments correspond well to other psychometric instruments, is adapted to the DSM-IV diagnostic criteria, and is considered flexible enough to be used in dental fear screening and to identify other feelings of discomfort of importance in this context [37]. The instrument has been translated and the Swedish version has been validated [46]. The IDAF-4C+ is used in the last two studies of this thesis.

1.1.5 CATEGORISATION OF DENTAL FEAR

Systematic approaches to dental fear have been made to enable dental personnel to understand and treat patients with dental fear. One of only a few categorisations of dental fear is based on the origin of the fear; exogenous or endogenous fear [47, 48, 49]. Exogenous dental fear develops as a result of direct or indirect conditioning, whereas endogenous fear develops as a result of an increased constitutional vulnerability to developing anxiety. In addition to dental fear, patients belonging to the latter group more often have concurrent anxiety or affective disorders [47, 50]. The Seattle system was developed as another way of systematising dental fear [22]. The system describes clinical features/characteristics based on four categories of dental fear: *fear of specific stimuli* (drilling, needles, odours, etc.), *distrust of dental personnel* (low levels of trust and self-esteem), *generalised anxiety* (other concurrent fears/worries),

and *fear of (medical) catastrophe* (panic attacks, fainting, etc.). The ability of the Seattle system to diagnose patients with dental fear and dental phobia has been validated. No correlation was found between psychiatric diagnostic systems and the Seattle system [51]. From a psychological point of view it was valid and identified subgroups of the dentally fearful population [52]. A web-based instrument, *Ditt valg* (Appendix 1), is derived from the Seattle system and has been developed to stimulate change in different health-related behaviours [53, 54], in our case, negative reactions to dental care. The patient communicates his/her relation to dental care by choosing among a number of statements, representing the types of negative reactions included in the Seattle system.

1.2 MANAGEMENT OF FEARFUL DENTAL PATIENTS

1.2.1 DENTISTS' ATTITUDES TO PATIENTS WITH DENTAL FEAR

The attitudes of dentists to treating adult patients with dental fear have been investigated in quantitative [55, 56, 57, 58, 59] and qualitative studies [60, 61, 62]. The studies present background data: the dentists' age, gender and years in the profession, but only three of them present analyses at group level [56, 57, 58]. No similar studies have been found of the perceptions of fearful patients among dental hygienists and dental assistants.

Non-cooperative patients, late cancellations and non-appearance are factors that cause stress among dentists [55, 56, 57, 58, 59, 60, 61, 62]. Patients with dental fear are considered to be difficult and unreliable and to complain excessively [56, 57, 60, 61, 62]. Treatment of fearful patients may create irritation, frustration and anger [57, 61]. The treatment is often time-consuming and yields poor revenues [57, 58, 59, 61]. Even though the treatment of patients with dental fear is associated with many negative factors, these patients still receive treatment, possibly because treating them gives satisfaction to the dentists [59, 61, 62] or is seen as an investment for the future [58].

1.2.2 COMPETENCE AMONG DENTISTS TO TREATING ADULT PATIENTS WITH DENTAL FEAR

The competence of dentists, current treatment strategies and the need for further training in order to treat patients with dental fear are described in only a few studies. A British questionnaire study including 550 dentists [59] showed that psychological, pharmacological or hypnosis methods are sparingly used when treating patients with dental fear, due to lack of time or confidence in the

methods. Another reason may be that the British National Health Service (NHS) does not reimburse treatment with anxiety-reducing techniques [59]. The authors concluded that dentists need further training in the field of dental fear. In a similar American questionnaire study including 153 dentists, less than 50% reported that they had a clear understanding of the aetiology and nature of dental fear [57]. Just over half of the dentists used some form of anxiety-reducing techniques. Less than 50% reported that they had participated in courses in behavioural science, with the exception of the younger dentists whose undergraduate training included this subject. The authors suggested that there is a need for training in dental fear. According to an Australian study, increased competence/training in patient communication is an important approach, along with other methods, to prevent the development of avoidance behaviour in patients with dental fear [17].

1.2.3 TREATMENT METHODS

There is a risk in routine dental care that the fearful patient does not achieve appropriate treatment for the dental fear itself. Despite knowledge about the patient's fear of the dental situation, dental health professionals may be too eager to start with the dental treatment and do not pay attention to the dental fear before initiating treatment. A number of, different dental fear treatment methods are presented below.

Psychological treatment methods

The management of patients with dental fear is dependent on the severity of the fear. If the fear is strong enough to make dental care difficult, or even impossible, the treatment has sometimes been administered under general anaesthesia—a method that hardly cures the patient's fear. Several psychological treatment methods, developed for the treatment of phobias, among other conditions, have been shown to be applicable in severe dental fear with good results. If the fear is more manageable, there are a number of clinical treatment methods that can be used in the dental care situation. These methods have sometimes been developed on the basis of psychological methods and theory.

Systematic desensitisation is a variety of exposure, combined with relaxation. The first step involves analysis and ranking of what the patient experiences as unpleasant, and in the next step, the patient is gradually exposed to these stimuli while relaxing [40].

Cognitive behavioural therapy (CBT) is a psychological treatment method that has been found to be useful in severe dental fear [63]. The method consists of an investigation and assessment phase and a treatment phase. CBT is based on learning theory and cognitive theory and focuses on breaking up maintaining behaviour used to avoid situations (such as dental care) that the individual perceives as unpleasant, threatening and anxiety-inducing [64]. CBT is a behaviour-oriented psychological treatment method that includes different interventions with empirical support adapted to the patient's needs [64]. The interventions may be in the form of exposure, relaxation, cognitive restructuring, psychoeducation, applied tension, self-assertion training and information about dental care. Special training in CBT treatment is required. CBT and relaxation are considered to give a better prognosis in dental fear than sedation with nitrous oxide [65].

Coping has been defined as the cognitive and behavioural efforts made to master, tolerate or reduce the external and internal demands and conflicts created by stressful situations [66]. In the present thesis, coping is interesting from two perspectives: that of the dental health professional and their fearful patients, respectively. From the professional point of view, little is known about coping. However, as mentioned above, the behaviour of fearful patients may also cause stress among the dental staff, and thus, strategies to reduce anxiety in fearful patients may also reduce stress in the dental health professionals. As a consequence, successful use of anxiety-reducing techniques, such as distraction, relaxation, and hypnosis—so-called "coping strategies"—in fearful dental patients, [67] may hypothetically indirectly increase the professionals' ability to cope. As an example, the coping strategy 'optimistic thinking' used by dental patients has been shown to predict lower levels of dental fear, lower levels of general anxiety, and regular dental care attendance [49].

Complementary methods when treating patients with dental fear

In the management of patients with dental fear, the treatment focus of the patient may differ from that of the dental health professionals. One of the parties may wish to initiate treatment (filling, cleaning) as quickly as possible, while the other party may wish to address the problem of dental fear first. It is important to clarify and decide on priorities together, on the basis of the prevailing needs and premises, before proceeding with the treatment.

General principles for the treatment of dental fear are based on establishing trust and confidence between the patient and the dental health professionals, who should strive to ensure a calm and positive atmosphere right from the start and show that they are prepared to listen and have the ability to understand the

patient's problems. Patients who are afraid of going to the dentist may benefit from talking to the dental health professionals about their fear. In a British study, it was shown that dental fear was reduced when the professionals were informed beforehand about and the patient's fear and took this into account [68]. Communication with the patient is crucial for the successful treatment of dental fear. The probability that patients experience that they are in control and can participate actively during the treatment and take responsibility for their own oral health is improved if the communication works.

A frequently used treatment method that includes specific communication techniques is Motivational Interviewing/MI, developed in psychiatry by Miller and Rollnick (1991) [69] to change health behaviour among substance abusers. MI has been shown to be effective also in other fields, such as dental care, in order to increase treatment acceptance [70]. MI consists of a communication technique/strategy based on Open-ended questions, Affirmation, Reflective listening, and Summaries (OARS). This technique is useful, for example, when taking a patient's history in dental care, and fits in well with the general treatment principles mentioned in the previous paragraph.

Tell-show-do is a method developed to get children with dental fear or with treatment difficulties to cooperate during dental treatment. The method consists of information (tell), model learning (show) and gradual exposure (do) [71]. The child is encouraged to develop desirable/desired behaviour through positive reinforcement, while undesirable behaviour is ignored. The method is also used with adult patients.

Another technique is distraction, which involves directing the patient's attention to thoughts and behaviour considered incompatible with feelings related to dental fear. The likelihood of achieving a positive effect increases with the degree of attention/distraction [67]. Distraction can be achieved by focusing on breathing, using images, music, problem solution, etc.

The easiest way to give patients a sense of control is to provide them with information during the treatment session about what will happen and what is currently happening [67]. Patients can also be given the opportunity to stop the treatment mid-session, for example, by raising a hand to indicate discomfort or lack of control. The signal can also be used in the reverse manner, to show that the patient is mentally prepared and willing to start the treatment [72]. Another way for the patient to perceive control is to look in a mirror to follow what is happening in the mouth during the treatment session.

The aim of using relaxation is to counteract tension (and fear) [67]. Normally, relaxation is achieved through the patient focusing on her/his breathing in a

calm environment. This is a simple method that can be used without in-depth experience of coping strategies in dental fear. When treating phobic dental fear, other relaxation techniques can be used, such as 'Progressive muscular relaxation' [73, 74] or 'Applied Relaxation', treatments intended for General Anxiety Disorder (GAD) [75]. However, these techniques are not described here.

Hypnosis is a cognitive method based on profound concentration. The method can be combined with relaxation. The clinical benefit of hypnosis therapy has been questioned and patients may develop a dependence on the dental health professional. When comparing treatment with cognitive methods, it has been noted that continued dental treatment is performed to a lesser extent after hypnosis treatment than after other cognitive methods [76, 77].

Pharmacological treatment methods

The anxiety-reducing methods described above work well and can be used successfully when treating patients with low to moderate dental fear. If the patient's need for dental treatment is acute or extensive, these psychological methods may be insufficient and pharmacological methods, such as sedation or general anaesthesia, may be required to avoid exacerbating the fear.

Sedation involves the patient being awake, but enables (temporary/reversible) reduction in anxiety and muscular tension, and may provide partial amnesia. The depth of sedation is dose-dependent; conscious/superficial or deep sedation. Benzodiazepines, administered orally or rectally, and nitrous oxide (N_2O, laughing gas) are the most frequently used pharmacological anxiety-reducing techniques in Swedish dental care. Intravenous sedation is used when deep sedation is required, in cooperation with trained anaesthetic staff who will monitor the patient's saturation and pulse. In cases of extreme treatment need and/or fear, even sedation may be insufficient and it may be necessary to treat the patient under general anaesthesia. It is important to underline that neither of these methods have a long-term effect on the dental fear *per se* [65, 67, 78].

1.2.4 SUGGESTED TREATMENT IN RELATION TO THE SEATTLE SYSTEM

Armfield and Heaton (2013) give examples of treatment recommendations for the four patient categories in the Seattle system in an article [37]. In patients with *fear of specific stimuli*, such as the drill (sound, sight), the syringe, or painful treatment, systematic desensitisation, involving gradual exposure and relaxation, is recommended. The treatment prognosis is often good and the dental fear can be cured [37].

Distrust of and strong disbelief in the staff are characteristic of the patient group with *distrust of dental personnel.* The reason may be previous negative experiences from contacts with dental health professionals that have led to impaired self-esteem. These patients often feel neglected and misunderstood and worry about how the staff will perceive them. One way for the patient to maintain control may be to express aggression, sarcasm, veiled threats or insults. The treatment should then focus on information about the procedure at different stages of the treatment and the dental health professionals should ask for the patient's consent to perform the interventions. The information should be exhaustive, and conveyed both verbally and in writing, primarily through therapy discussions where all aspects of the treatment are addressed. Before treatment decisions are taken, patients must feel that their decisions are respected. If these aspects are considered, the treatment prognosis is relatively good [37].

Patients who experience anticipatory anxiety before a dental visit and who have problems describing exactly what they are afraid of belong to the patient group with *generalised anxiety.* They worry about the treatment as such, about how they will behave and whether they will be able to manage their fear during the treatment, and about how they will be perceived by the dental staff because of their fear. Encouragement, praise, positive feedback and reassurance in connection with the treatment reduce the anxiety. Establishing partial goals that the patient can relate to and allowing the patient to focus on them, rather than on a seemingly unattainable final goal, is a useful technique. The different treatment objectives may be ranked and the treatment started with the ones the patient finds it easiest to manage (gradual exposure). The treatment prognosis is less positive, as the patient's fear is never entirely eliminated. The combination of gradual exposure and relaxation may create a feeling of control of the fear in patients in this group [37].

The fear of an emergency situation occurring during treatment (such as fainting, suffocation, heart attack) is described in the Seattle system as a *fear of (medical) catastrophe*. The faster heartbeat resulting from an anaesthetic with adrenaline being administered may be erroneously interpreted by the patient as an allergic reaction to local anaesthetics, whereas it is actually an autonomous reaction (shortness of breath, increased heart rate) caused by fear of injections. The patient may feel forced to undergo dental treatment without local anaesthesia, which causes unnecessary pain and suffering. When using a rubber dam or many instruments in the mouth at the same time, the patient may experience difficulty breathing and fear of suffocation. The treatment consists of thorough history-taking, education and gradual exposure. Patients in this group need to be educated in bodily reactions to fear and informed that the autonomous reactions that may occur in a fearful situation are usually caused

by increased release of adrenaline. If patients experience increased heart rate, the treatment can be combined with relaxation exercises. The same approach can be used for patients who are afraid of suffocation. The treatment prognosis is good and improves with the patient learning to control the autonomous reactions [37].

1.3 THE SWEDISH DENTAL HEALTH-CARE SERVICE

The major actors in the Swedish Dental Health Service are the Public Dental Service (PDS) and private dental practitioners. In 2014, there were a total of 7777 dentists working in the Swedish Dental Health Service, 53% of whom worked in the PDS and 47% in private practice [79]. Of the dentists, 55% were females and 51% were 50-69 years old. The corresponding numbers for dental hygienists were 4177 in total, 58% of whom worked in the Public Dental Service and the rest in private dental care. The majority (97%) of the dental hygienists were females and 40% were 50-69 years old. According to the Swedish Association of Dental Assistants, there were 12 000 dental assistants in 2010/2011 [80]. In 2016, there were 6498 dental assistants working in the PDS [81]. The vast majority were females and 56% were ≥ 50 years of age. According to their website [82], the PDS treated proportionally more patients who were children and youths (95-98%), and 40% of all Swedish adult dental patients in 2014, compared with private dental care (2-5% and 60%, respectively).

The majority of Swedish dentists are trained in Sweden, but due to strict admission requirements to Swedish dental training schools, many Swedish citizens train in other EU countries. Sweden also has labour immigration by dentists who were born and trained abroad. Although trained in one cultural context, these dentists are supposed to adapt to and work in another. The Swedish National Board of Health and Welfare (NBHW) has published a report entitled ‘Statistics of healthcare professionals, 2014’ [83]. Of the total number of licenses granted in 2014 (dentists, n = 416; dental hygienists, n = 187), 41% of the dentists and 3% of the dental hygienists were trained abroad. Among these dental health professionals, 125 of the dentists and 4 of the dental hygienists were trained in an EU country. In 2014, 346 Swedish citizens were enrolled in dentist training abroad.

According to the Statistics Sweden [84], 68% (n = 5 306 000) of the Swedish population, aged 16 – 84 years, visited the dental health service in 2016. Eight per cent avoided dental care despite a need for treatment and this was equally common among men and females.

2 OVERALL AIMS

The overall aims of this thesis were to study the attitudes of dental health professionals to fearful dental patients, and their skills and strategies when treating these patients. A second overarching aim was to develop and evaluate a structured model for information and communication about dental fear in the treatment situation, the Jönköping Dental Fear Coping Model (DFCM), to the benefit of both the dental health professionals and their adult patients.

The evaluation of the DFCM primarily focuses on outcomes pertaining to dental health professionals, but also on patient outcomes. Most dental fear treatment has focused on extreme dental fear; however, the DFCM is designed to work with the different levels of dental fear encountered in ordinary clinical dental work.

Specific aims

1. To investigate attitudes, feelings and experiences among dentists regarding dental fear (Study I).
2. To investigate dentists' strategies when treating adult patients with dental fear (Study II).
3. To investigate dentists' undergraduate training, further education and need of professional development in caring for patients with dental fear (Study II).
4. To develop, implement and study a structured treatment model for the management of patients with dental fear from a dental team perspective (Study III).
5. To study the same model from a patient perspective (Study IV).

3 MATERIAL AND METHODS

The methods are described separately for Studies I and II, and for Studies III and IV. Studies I and II are based on replies to questionnaires from a cross-sectional, web survey study, and Studies III and IV on an intervention study referred to as the Dental Fear Coping Model (DFCM) study.

3.1 THE WEB SURVEY STUDY (I, II)

3.1.1 STUDY DESIGN

The study population of studies I and II was made up of members of the Association of Public Health Dentists (APHD) in Sweden, who were asked in 2009 to respond to a web-based questionnaire about dental fear. The Association for Private Dental Care Providers in Sweden was also invited to participate in the study but declined for reasons of confidentiality. A pilot study with replies to questionnaires and comments from ten dentists preceded the study. An external web survey company sent invitations to participate, together with the questionnaires, by e-mail. Non-responders were reminded twice, at an interval of one week, in order to maximise the number of participants. Demographic data (age and gender) for all APHD members were collected, in order to assess the representativity of the respondents. In the working file used by the researchers, e-mail addresses and other personal data had been removed by the web survey company.

3.1.2 STUDY POPULATION

The study population consisted of members of the Swedish Association of Public Health Dentists (APHD) with a valid e-mail address in the register of members of the Swedish Dental Association.

Exclusion criteria:

- Dentists > 69 years of age;
- Dentists working only with paediatric dental care.

Of a total of 3934 APHD members (about 96% of the dentists in the Swedish Public Dental Service), e-mail addresses were available for 1556 members (40%) in the register. Of these, 253 dentists were excluded due to stating age ≥ 70 years or treating children only. In addition, another ten dentists were lost due to holiday, sickness, parental leave, etc., according to ‘out-of-office’ e-

mail replies. Of the remaining 1293 dentists, 889 responded to the questionnaire (69%). The loss due to non-response (31%) is difficult to assess, as no acknowledgement of receipt was requested. One possible reason for some of the non-responses was that e-mail addresses were out of date, but it is difficult to estimate the exact proportion. There were no gender differences in the different age groups between all APHD members and the dentists who were included in the study (Table 1).

Table 1. Gender distribution in different age groups among APHD members (n = 3994), and among dentists (n = 889) included in the study.

	APHD (%)		Included (%)			
Age	Men	Women	Men	Women	Chi-2	*p*-value
24–30	26	74	21	79	1.8	0.176
31–40	30	70	31	69	0.05	0.823
41–50	28	72	29	71	0.08	0.772
51–69	44	56	46	54	0.5	0.529

3.1.3 THE QUESTIONNAIRE

The questions from the web-based survey used in the present study included seven questions on background data, five questions on dentists' attitudes to patients with dental fear, four questions on dental fear training, and five questions addressing different aspects of the treatment of patients with dental fear. The full questionnaire with questions (Q) and response options is enclosed as Appendix 2.

Seven questions addressed background data, such as age (Q. 19), gender (Q. 20), place or country of training (Q. 24), years of practice (Q. 25), estimated proportion of fearful patients (Q. 22), working hours (Q. 21), and presence of own dental fear (Q. 18).

In some cases, the response alternatives were grouped or dichotomised. The response alternatives for own dental fear were dichotomised in tables and analyses as, 'Yes', in the sense 'I don't like it', or 'I think it's rather unpleasant'; 'I am very frightened or I think it's very unpleasant'; and 'I am terrified'; or 'No', meaning 'I don't care at all'. Dentists in the affirmative group reported both discomfort and fear/anxiety, concepts that are not equivalent but that both express negative emotions regarding dental treatment.

The correlation between age and years of practice was strong ($r_s = 0.89$). In the youngest age group (24-30 yrs.), 94% had 0-5 years of practice, and in the oldest age group (> 15 yrs.), 99% had more than 15 years of practice. In the analyses, 'years of practice' explained more of the variance than age, and was therefore used as a background factor in all presented results, except those presented in Table 1.

Five questions in the web survey dealt with the dentists' attitudes, experiences, and feelings regarding treatment of patients with dental fear. The question, 'Do you feel stress before treating a patient that you know has dental fear?' (Q. 7), was answered on a five-point Likert scale (Appendix 2).

The question concerning attitudes, 'How do you feel/think about treating an adult patient with dental fear?', was responded to with seven given options, and/or an own option in the form of a qualitative remark (Q. 14). One to three of the given response alternatives could be ticked. In one analysis, the response alternatives were categorised and analysed as principally 'positive' ('positive challenge', 'exciting', and 'making a contribution'), or principally 'negative' ('stressful', 'difficult', and 'with reluctance'). The response alternative, 'poor economics' expressed a factor of organisational matters rather than a feeling, and was omitted in the analysis.

One of the questions in the survey referred to the dentists' self-perception of their ability to treat fearful patients (self-efficacy) (Q. 15): 'Do you find yourself good at treating adult patients with dental fear?' The response alternatives were: 'Yes, very good', 'Yes, fairly good', 'No, not so good', or 'Not good at all'. The last two alternatives were merged, as only one dentist replied 'Not good at all'. This question was referred to as self-efficacy, which is commonly defined as belief in one's own ability to achieve a goal or an outcome [85]. Specifically, the answer to the question is considered to reflect self-rated competence in handling treatment problems with fearful patients. The dentists were also asked to estimate the proportion of their patients suffering from dental fear on a scale from 0 to 100% (Q. 23).

Dentists' skills and possible need for training in the treatment of patients with dental fear (II) were addressed in five questions. The response alternatives to the question (Q. 2), 'What is your opinion today of your undergraduate dental training regarding dental fear?', were dichotomised in some analyses into 'wanted more' ('I wish I had more') and 'enough' ('It was just enough' and 'I wish I had had less'). The answer, 'I had none', was not included in the analyses. The response alternatives to the question (Q. 3), 'Have you attended any postgraduate courses in the field of dental fear/care delivery after graduating?', were dichotomised in some analyses into 'Yes' ('Yes, a few',

and ‘Yes, several’) and ‘No’. The same dichotomisation was used in the logistic regression analyses performed with self-efficacy as the covariate factor. There were also two questions (Q. 4, 5) that concerned dental fear and “information seeking” (Appendix 2).

Furthermore, five of the questions in the survey referred to the dentists’ clinical skills and management of patients with dental fear. Three of these questions were: ‘Do you allow extra time for the examination and treatment of an adult patient who you know suffers from dental fear?’ (Q. 8); ‘Do you adjust the treatment plan to the patient’s dental fear?’ (Q. 9); and ‘Do you refer patients with dental fear to dental treatment under general anaesthesia?’ (Q. 13). Two questions concerned pharmacological and psychological techniques (Q. 11, 12) (Appendix 2).

3.2 THE JÖNKÖPING DENTAL FEAR COPING MODEL (DFCM) STUDY (III, IV)

3.2.1 DEVELOPMENT OF THE DFCM

The Jönköping Dental Fear Coping Model (DFCM) was developed and studied in order to improve the conditions for successful dental fear treatment and dental treatment.

The DFCM is based on the Seattle system [22], on *Ditt valg* [53, 54], an assessment method based on the core elements of the Seattle system, and on the communication method of Motivational interviewing (MI) [69]. The Seattle system was developed for the purpose of categorising patient dental fear, and, by doing that, choosing appropriate management techniques. It is a clinical tool rather than a psychological or psychiatric instrument. There are four patient categories: *fear of specific stimuli*, *distrust of dental personnel*, *generalised anxiety*, and *fear of (medical) catastrophe*. In the present study, a fifth category, *no fear*, was added to the DFCM, in order to facilitate evaluation of the model/DFCM. The second component of the DFCM, *Ditt valg* (Appendix 1), was developed from the Seattle system and provides information that the dental health professionals can use when taking the patient’s medical history. *Ditt valg* was developed at the University of Oslo, the Faculty of Dentistry, Department of Paediatric Dentistry and Behavioural Science, by Erik Skaret and Ivar Espelid, in association with Jesper Lundgren, University of Gothenburg. By picking ready-made statements/cards or making own comments and handing them over to the dentist or the dental hygienist, the patient conveys information about his/her previous experiences of dental care,

hopes, fears and expectations, and about urgent matters regarding dental treatment. The third component of the DFCM is a communication technique from the MI method that professionals can use to guide/when guiding the patient through the medical history, examination, and dental treatment. It serves as a 'glue', merging the three (different) components of the DFCM into one unit and allowing the professionals to receive relevant information about the patient's dental fear. The basics of the MI communication technique consist of using 'open-ended questions', 'affirmation', 'reflective listening' and 'summaries' of what the patient is telling you, making the patient 'reflect' on their dental fear, and how to cope with it. Here, coping is used in its global meaning [66]. Thus, the MI communication technique is an important component of the DFCM.

3.2.2 DFCM TRAINING

The DFCM training was planned and executed together with a clinical psychologist, working at Ryhov County Hospital, who has considerable experience of treating phobic dental patients. The content of the training was carefully selected to be accommodated within the given time frame (three hours). The training was conducted at the PDS clinics in Region Jönköping County. In the introduction to the DFCM, parts of the evaluation—the study design, the questionnaires, and the distribution of the Dental Fear Summaries—were explained.

The model includes a DFCM training session, where the theoretical background of the model is explained using lectures and film sequences, combined with practical training.

Content of the DFCM training:

- The aetiology and epidemiology of dental fear, including the Seattle system;
- Basics in communication according to MI;
- Practical training in the DFCM.

The aetiology and epidemiology, including the Seattle system

An introduction describing the aetiology and prevalence of dental fear was followed by a description of the different dental fear categories according to the Seattle system: *fear of specific stimuli*, *distrust of dental personnel*, *generalised anxiety*, and *fear of (medical) catastrophe*. Appropriate treatment strategies related to each category were discussed, as suggested by Armfield

and Heaton (2013) [37], and their use was demonstrated using fictive (patient) cases. In the DFCM, the Dental Fear Summary provides the dental health professionals with information about the patient's fear type (including non-fearful patients).

Basics in communication according to MI

The second part of the training involved strategies for patient communication according to MI (Open-ended questions, Affirmation, Reflective listening, Summaries), as an important part of the DFCM, aimed at two-way communication. Using nine video sequences (total playing time about 30 minutes), examples were shown of how to communicate with the patient on the basis of the patient information in the Dental Fear Summary (Figure 1).

Eight film sequences, based on the dental fear categories, *fear of specific stimuli, distrust of dental personnel, generalised anxiety, and fear of a (medical) catastrophe,* were used to illustrate patient-dental health professional interaction/communication. For each category, one good and one bad example of approaching the patient were given. Another film sequence showed a good example of interaction between a non-fearful patient and the dental health professional. The film sequences demonstrated different treatment considerations according to the dental fear categories; for example, in the category *fear of specific stimuli*: *'You say it is the pain from the needle that worries you. I understand that this is a real problem for you. However, I believe that you can overcome your fear. May I talk to you about relaxation?'* After each sequence, the patient-dental health professional interaction/communication was discussed: *'Could the dentist have expressed him/herself or behaved in another way?'*

Practical training—the role-play session

The role-play session was based on fictive dental fear cases and was executed in small groups. The aims of the session were to be acquainted with the Jönköping DFCM, to practise taking the patient's medical history using the patient information printed from the web survey together with the communication technique from MI, and to evaluate each other's ability to use the model. Before the role-play session, the participants were asked to respond to the web survey as if they were fearful. The "patient information" (Dental Fear Summary) (Figure 1) was printed and used in the session. During the role-play session, one participant was chosen to act as a fearful patient, another as a dental health professional, and the rest as listeners. Once the role-play was finished, the group evaluated each effort. The roles were then changed around so that each participant was given the opportunity to act both as a patient and

as a dental health professional during the role-play session.

Staff that could not participate in the training (n = 3) watched a video recording of the training session on a later occasion and practised using the model through role-playing with the author (COB).

3.2.3 THE DFCM IN THE CLINICAL SITUATION

The model requires all new patients to respond to an electronic *Pre-treatment questionnaire* about dental fear (Appendix 4), including one global question, 'Are you afraid of going to the dentist?' [36], and a dental fear index, *The Index of Dental Anxiety and Fear* (IDAF-4C+) [45, 46]. Patients responding in the affirmative to the global question or to any of the questions in the first module of the IDAF-4C+ proceeded to the Phobia and Stimuli modules, and to *Ditt valg* (Appendix 1), while the non-fearful did not. The questionnaire is completed in the waiting room prior to the dental examination. An algorithm then summarises the responses in a Dental Fear Summary (Figure 1), which is given to the dental health professionals before they see the patient. The Dental Fear Summary provides the dental health professionals with information about (1) the patient's level of dental fear (none to extreme); (2) the fearful patient's experiences and expectations of the dental treatment (retrieved from *Ditt valg*) [53, 54]; and (3) which dental fear category or categories according to the Seattle system the fearful patient belongs to [22]. Hence, the dental health professionals are prepared and can use the information about the patient during the appointment.

In the following text, an example is shown to illustrate the management of an adult patient according to the Jönköping DFCM. Once the patient arrives at the dental clinic for his/her first visit, the web *Pre-treatment questionnaire* (Appendix 4) about dental fear is completed in the waiting room. Besides the global dental fear question and the IDAF-4C+, the questionnaire includes *Ditt valg* (Appendix 1). The latter is only responded to by patients who indicate any level of dental fear. The summarised information from the survey is handed to the dental health professionals before they meet the patient.

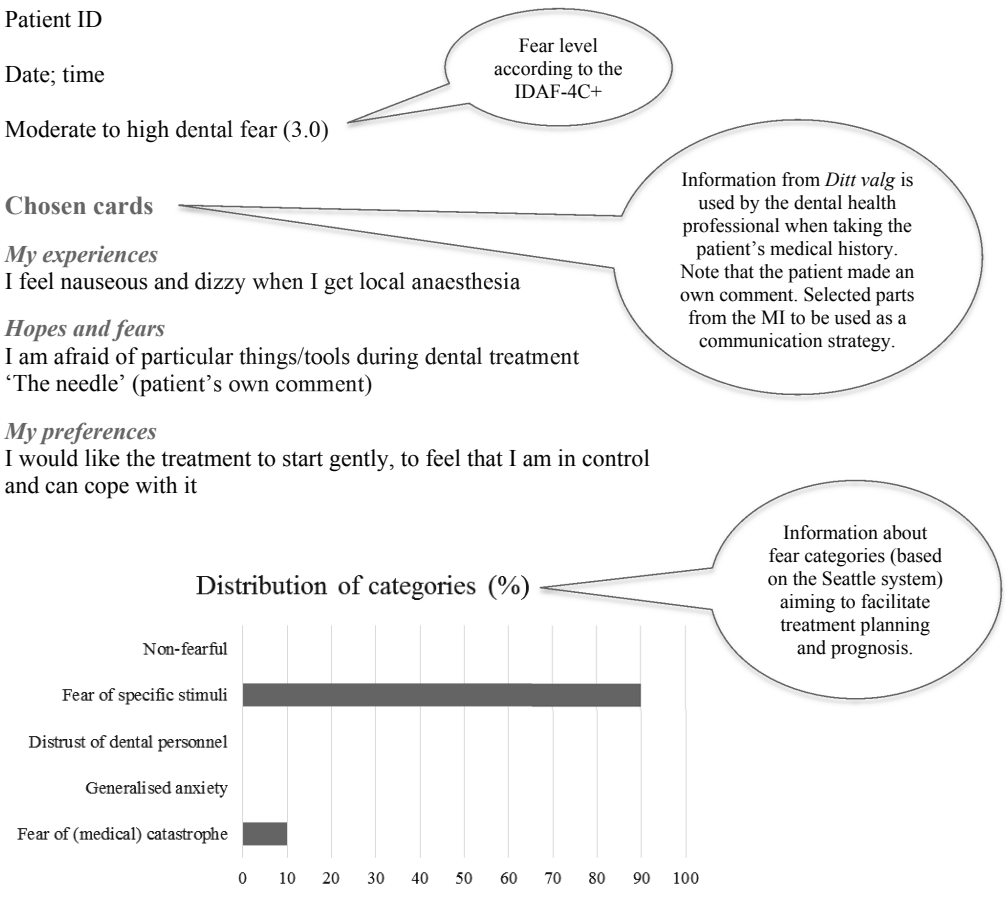

Figure 1. This is an example of the Dental Fear Summary after a patient has responded to the web survey in the waiting room. Data are transferred from the web survey (computed by an algorithm) to the Dental Fear Summary and given to the dental health professionals before they meet the patient. The speech balloons are not normally included in the Dental Fear Summary but are included here to explain how the IDAF-4C+, Ditt valg, and the Seattle categories are shown to the dental professionals in the summary.

The information reveals a dental fear level according to the IDAF-4C and a dental fear profile according to *Ditt valg*. For instance, a patient has *fear of specific stimuli,* more specifically fear of pain related to injections, and the fear level is low to moderate, meaning that the patient will most likely be able to receive local anaesthesia after information, exposure therapy, and training in a relaxation technique. After completing the medical history, the dentist uses the information in combination with her/his communication skills according to MI to obtain as much knowledge as possible about the patient. The dentist may tell the patient, *'I see that you are afraid of injections – would you like to tell us more about it? What is it about it that makes you feel discomfort?'* The increased knowledge allows the dental health professionals to see to the patient's specific needs and wishes, which may also create a feeling of trust. In the above example, the dental health professionals introduce exposure therapy (syringe) in combination with a relaxation technique before proceeding with the dental treatment. The procedure may initially take some extra time, but probably makes both the patient and the dental health professionals feel safe and prepared, making it a good investment for future treatment.

3.2.4 EVALUATION OF THE JÖNKÖPING DFCM

STUDY DESIGN

A prospective intervention study was performed at the Public Dental Service (PDS) in Region Jönköping County to evaluate the DFCM from the perspectives of dental health professionals and patients. Figure 2 provides information about the DFCM study with its two periods. Standard care was carried out in Period I (pre-intervention period), and intervention according to the DFCM in Period II (intervention period). Data from the two periods were compared.

The data collection in Periods I and II lasted from March 2014 to April 2016. All heads of the PDS clinics had given prior consent to participating in the project, which facilitated the selection of study clinics. The nine PDS clinics in Figure 2 were carefully chosen to be representative of the PDS in Region Jönköping County, according to the variables shown in Table 2. Initially, eight clinics were matched in similar pairs with regard to location; countryside', 'town', or 'city district with high and low socioeconomic status', using the Small Areas of Market Statistics (SAMS – for more information see Table 2) [86]. The study clinics were informed about the study and that the *Pre-period I questionnaires* for dental health professionals were being administered.

Table 2. The study clinics in relation to demographic data on people living in the municipality or city district where the dental clinic was located (2013).

	Staff[1] D/DH/DA (n)	Municipality subgroup	Inhabitants (n)	Levels of education[3]	Income levels[4]
Clinic A[2]	4/4/6	Countryside	4 920	2-4	2-4
Clinic B[2]	9/2/17	Town	18 696	1-5	1-5
Clinic C[2]	6/2/12	City district, high SES	4 958	3-4	3-4
Clinic D	5/2/7	City district, low SES	5 362	3	2
Clinic E	4/3/4	Countryside	3 367	2-3	2-3
Clinic F	9/5/20	Town	16 678	1-4	1-5
Clinic G[2]	4/3/8	City district, low SES	4 996	3-5	1-3
Clinic H	9/4/12	City district, high SES	2 703	4	3
Clinic I	6/5/10	Town	14 197	2-4	2-4

[1] D = *Dentist*, DH = *Dental hygienist,* DA = *Dental assistant*; [2] Intervention group.
SAMS: Information about levels of education[3] and income[4] was derived from the Small Areas of Market Statistics, Statistics Sweden. Socioeconomic groups 1-5 based on cut-offs for education (upper secondary school, three years or longer) and income (disposable income above the 75th percentile) were used for socioeconomic status (SES). Group 1 included the SAMS areas with the largest proportions of individuals with the lowest education and income, respectively, and accounted for 10% of the areas; group 2 consisted of 20%; group 3 of 40%; and group 4 of 20%. Group 5 consisted of the 10% with the largest proportions of individuals with the highest education and income.

Table 2 shows demographic data for the study clinics. A ninth clinic (Clinic I) was included in the 'town' group, to compensate for a possibly high dropout rate. After completion of Period I, the dental health professionals responded to the *Post-period I questionnaire* (Appendix 4).

Between Periods I and II, four of the nine PDS clinics were randomised to continue to Period II (intervention/DFCM). Since 'Clinic I' was a complement to the original four pairs, it was excluded from the randomisation process. The procedure (lottery) was performed by the author and a co-supervisor (PN). The outcome decided which one of the two clinics in each of the four matched pairs would proceed to Period II.

Since the dental health professionals in the intervention group were included in Period I, they were now their own controls. The non-intervention group (5 PDS clinics) had no study patients in Period II, and acted as controls for the intervention group. Finally, all dental health professionals in the non-intervention and intervention groups responded to the *Post-period II questionnaire* after completing Period II (Appendix 5). Figure 2 shows a flow chart illustrating the DFCM study.

In each period (I and II), dentists and dental hygienists were instructed to recruit at least 50 patients. All but one dental health professional in the intervention group achieved the goal of 50 patients in Period I (Period I: mean 53 patients, range 36 – 63; Period II: mean 52 patients, range 34 – 58). Immediately after meeting the patient, the dental health professionals used the *Post-treatment care provider rating* to assess each patient's level of tension and cooperation (Appendix 6).

The dental patients participating in the study were chosen irrespective of dental fear level, and irrespective of the nature of their appointment; *i.e.*, dental examination or dental treatment. They only participated once, meaning that there were different patients in Period I and Period II. The research administration staff informed and included patients in the study consecutively, as they came to the clinic.

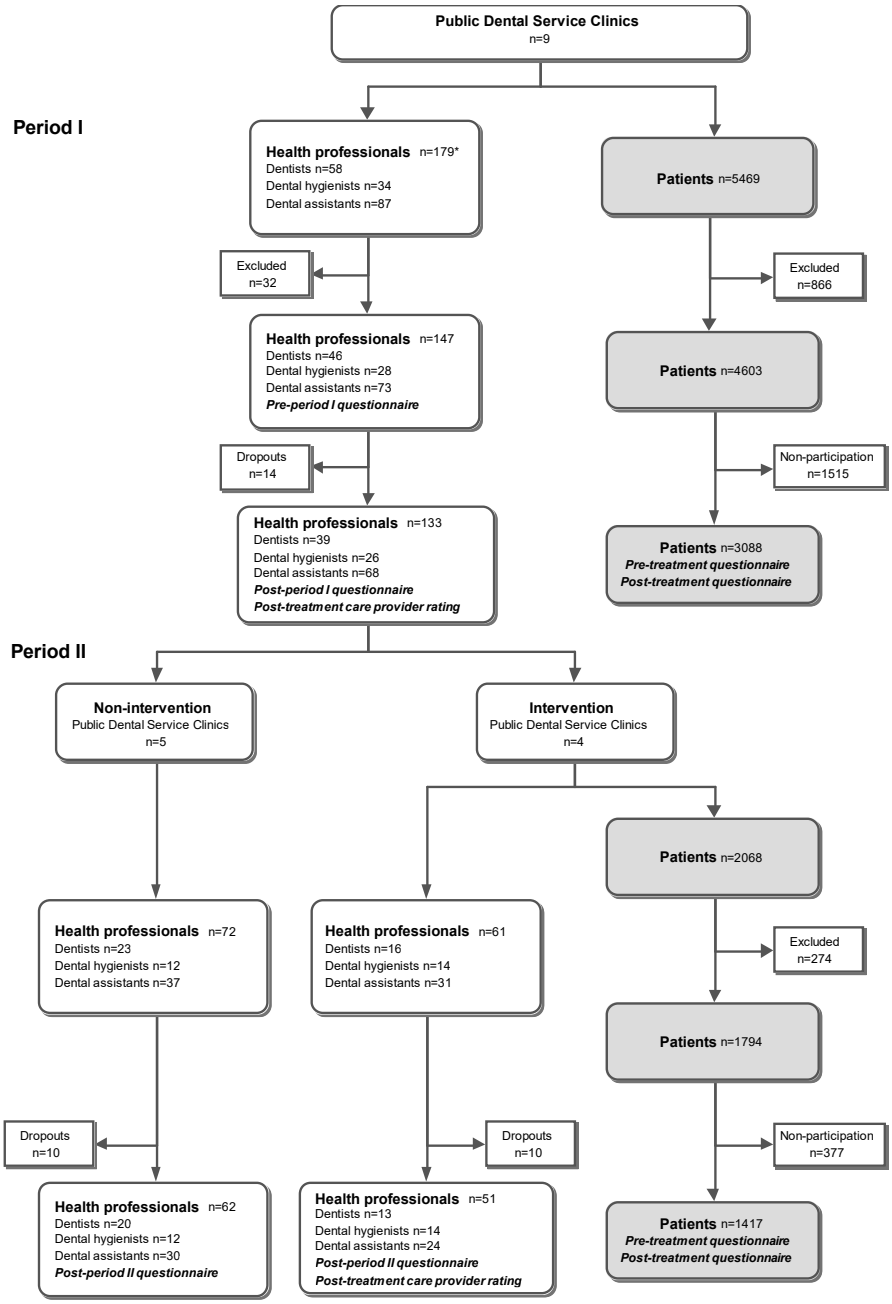

Figure 2. Flow chart illustrating the intervention study.

*[Footnote] * Eight dental health professionals did not participate in Period I (2 dentists, 1 dental hygienist, 5 dental assistants). Before Period II, these health professionals were included in the study, responded to the Post-period I questionnaire, and participated in the DFCM training. In order to make the flow chart readable, those eight individuals were included in Period I, but did not participate until Period II (intervention group).*

In the waiting room, the patients responded to a *Pre-treatment questionnaire* containing questions about age, gender, reason for the appointment, and dental fear (IDAF-4C+) (Appendix 7), and a *Post-treatment questionnaire* containing questions about perceived pain, other discomfort, tension during the appointment, and questions about patient satisfaction (Appendix 8). In Period I, the responses were handled confidentially by the research study personnel and could not be assessed by the dental health professionals. In Period II, the *Patient's pre-treatment questionnaire* was computerised to enable immediate delivery of a compilation/dental fear summary of the information to the treatment team expecting the patient. The Dental Fear Summary was given to the dental health professionals before they saw the patient to facilitate communication and treatment (Figure 1).

The research study personnel supported and motivated the PDS clinics during the study. They were also responsible for the inclusion of patients in the study, and managed all the questionnaires completed by both dental health professionals and patients.

STUDY POPULATION

Dental health professionals

The intervention part of the DFCM study was performed at four Public Dental Clinics in Region Jönköping County, with the same 13 dentists and 14 dental hygienists participating in Period I and II. The following exclusion criteria were applied to the dental health professionals: working with children only, unable to collect sufficient data due to part-time work, and sickness or parental leave before the start of the study. Figure 2 shows the numbers per occupation of the professionals participating in the study. The total exclusion rate was 18% (n = 32), and the total dropout rate was 23% (n = 34) for the two periods. The reasons for dropping out were sickness, parental leave, leaving employment, unable to collect sufficient data during the on-going study, or not responding to the *Post-period I or II questionnaires*. There were no statistically significant differences between the dental health professionals who participated and those who dropped out with regard to gender, professional subgroup, postgraduate training, perceived competence in treating fearful patients, attitudes to treating adult patients with dental fear, and estimated proportion of adult fearful patients.

Patients

The number of patients in the intervention group participating in Periods I and II is shown in Figure 3. The following exclusion criteria were applied to patients: 'Has already participated in the study', 'severely impaired vision', 'severely impaired hearing', 'difficulty reading and speaking Swedish', 'impaired autonomy' (*i.e.,* dementia/major cognitive disability, severe mental disability). Of 2390 patients who were registered at the four clinics during Period I, 409 were excluded; of the remaining 1981 patients, 630 declined to participate. During Period II, when the DFCM treatment model was applied, 2068 patients were registered; 274 were excluded, and of the remaining 1794, 377 declined to participate. Some reasons given for non-participation were lack of time, reluctance to be enrolled, or not responding to the *Post-treatment questionnaire*. Consequently, the number of patients entering the study was 1351 in Period I, and 1417 in the following Period II (Figure 3). The participation rate was 68% in Period I, and 79% in Period II.

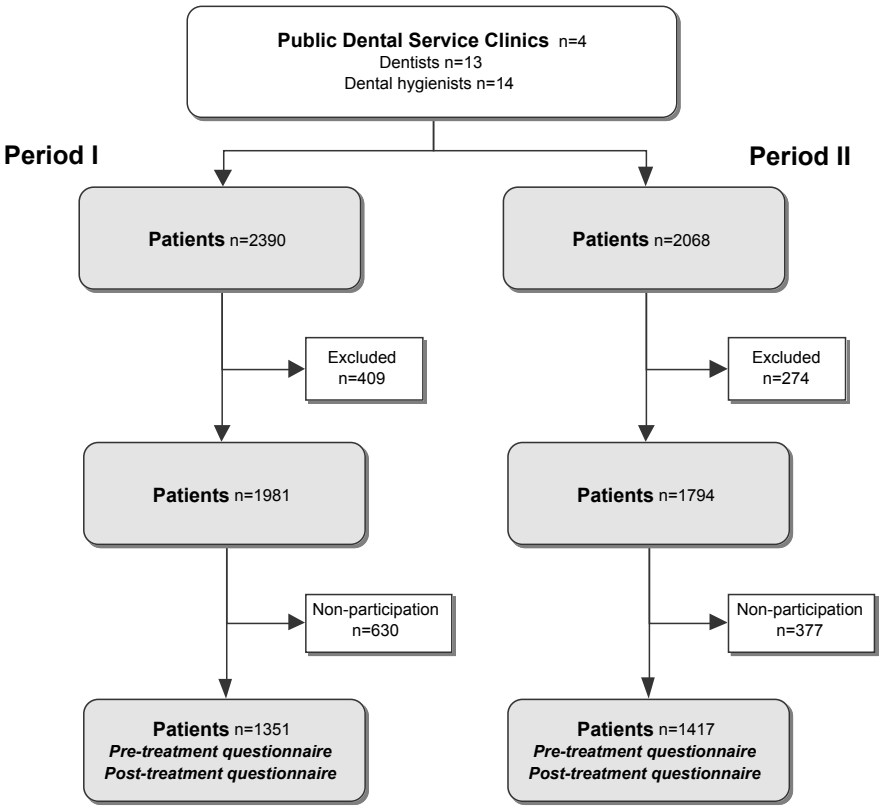

Figure 3. Flow chart illustrating the patients in the intervention group in Periods I and II. The non-intervention group (PDS clinics, n = 5) not included.

QUESTIONNAIRES

Some of the questions from the web survey study were redrafted before being entered in the questionnaires in the DFCM study (Appendixes 3-5).

The question, 'Do you find yourself good at treating adult patients with dental fear?' (I, II), was redrafted to 'How do you assess your skills in treating adult patients with dental fear?' ('Very poor'; 'Quite poor'; 'Fairly good'; 'Very good') (III, IV). The question was referred to in the text and tables as 'self-efficacy' (I, II). The psychological term 'self-efficacy' is defined as belief in one's ability to succeed in a specific situation at performing a task (Bandura, 1977) [85]. We believe that the term is applicable to a dentist's perceived ability to handle the treatment of fearful patients.

The response alternatives to the question referring to years of practice, '0-1 year', '2-5 yrs.', '6-15 yrs.' and '>15 yrs.' (I, II), were changed to '0-3 yrs.', '4-12 yrs.' and '> 12 yrs.'(III).

An attitude sum variable from the question, 'What are your feelings/thoughts about treating an adult patient with dental fear?', was computed in order to compare the intervention and non-intervention groups at baseline (III).

The question where the dentists were asked to estimate the proportion of their patients suffering from dental fear on a scale from 0 to 100% (I), was redrafted to 'Approximately what proportion of your adult patients do you perceive as being anxious or fearful during treatment?' (III).

Pre-period I, Post-period I and II Questionnaires (Appendixes 3-5)

The *Pre-period I questionnaire* (Appendix 3) consisted of ten questions from the web survey study (I) [87] that were included for comparison purposes: three questions related to background data; gender (I, II, III), profession (III), and years of practice (I, II, III); one question about postgraduate training in dental fear (II, III); one question about self-perceived competence in treating fearful patients (I, II, III); five questions covered feelings about treating fearful patients (I, III); and one question referred to the estimated proportion of adult fearful patients (I, III).

The *Post-period I questionnaire* (Appendix 4) was identical to the *Pre-period I questionnaire* (Appendix 3), except for the three questions referring to background data, which were omitted from the *Post-period questionnaire*. The *Post-period II questionnaire* responded to by the non-intervention group was identical to the *Post-period I questionnaire* (Appendix 4). In the *Post-period*

II questionnaire (Appendix 5) distributed to the intervention group, five additional questions were included. These questions referred to the health professionals' experiences of the Jönköping DFCM (III). In order to analyse changes over time, an additional variable was computed, showing the difference in the estimated proportion of adult fearful patients between the time points *Post-period II and Post-period I* (III).

Post-treatment rating by dental health professionals (Appendix 6)

After each patient encounter in Period I and II, the dental health professionals immediately recorded the reason for the appointment and assessed patient behaviour and treatment functioning during the dental treatment on 'The Dentist Rating Scale', with scores from 1 to 6 [88]. In study III, the scale was renamed 'The *Post-treatment care provider rating*', which also includes the reason for the appointment.

Pre-treatment patient questionnaire (Appendix 7)

The first questions in the *Pre-treatment questionnaire* asked about the patient's age, gender, and reason for the visit (Q. 2). Questions with fixed response alternatives were combined with free comments to open-ended questions. The answers to the latter were categorised as: 'acute treatment', 'acute pain', 'mouth guard/splint', and 'check-up/control'. A 'reason for dental visit' variable was computed ('do not know', 'dental examination', 'dental treatment'), in order to make comparisons of the effect of the DFCM on different subgroups in Periods I and II. The 'dental examination' category included 'examination' and 'check-up/control', and the 'dental treatment' category included all other treatment alternatives.

Dental fear was assessed by means of one global question and a dental fear index. The global question is usually referred to as the Dental Anxiety Question (DAQ) (Neverlien, 1990) [36] (Q. 1). The dental fear index used was the Anxiety and Fear Module (Q. 3 – 10), which is a part of the Index of Dental Anxiety and Fear (IDAF-4C+) [45, 46]. The Anxiety and Fear module assesses the emotional, behavioural, physiological and cognitive components of the anxiety, and is used for screening of dental patients. Full-scale scores are given as an average score across the eight items (range 1 – 5). The following patient levels of dental fear, derived from the Anxiety and Fear module of the IDAF-4, as suggested by Armfield, were used (2010) [19]: No or little dental fear (1.00 – 1.50); low dental fear (1.51 – 2.50); moderate dental fear (2.51 – 3.50); and high dental fear (> 3.50). In the present study, only patients who were categorised as fearful responded to the Phobia and Stimuli modules (results not shown).

Post-treatment Patient Questionnaire (Appendix 8)

The patient's perceived pain, discomfort, and tension/strain during the encounter were measured in the *Post-treatment questionnaire* on a VAS scale (0 – 10). The patient responded to the questions after treatment, outside the treatment room.

Patient satisfaction with the dentist's skills and behaviour was measured using the Patient Attitude Scale [89]. The questionnaire was modified to assess both dentists and dental hygienists; not only the dentist, as in the original version. For this reason, 'dentist' was replaced by 'dental health professional' throughout the questionnaire. Furthermore, the authors assessed the first item in the original nine-item questionnaire, 'The dentist was experienced and skilful', as being too indistinct, describing two professional qualities that do not necessarily assess the same thing. The author and a supervisor (SC) decided to divide the item into items 1 and 2. These two items, together with items 3 and 6, were related to the health professional's skills. The behavioural or interpersonal qualities were addressed with items 4, 5, 7, 8, 9, and 10.

The response alternatives to the Patient Attitude Scale were on a scale from 'Do not agree at all' (1) to 'Agree completely' (5). Total scores were obtained by summing up the responses to the ten items after reversing the coding of the four negatively worded items (items 3, 5, 7, 9). The total score ranged from 10 to 50, with higher scores indicating greater patient satisfaction. In order to compare the interpersonal and professional qualities of the dental health professionals, standard scores were obtained by calculating the mean of the items. The standard scale ranged from 1 to 5 (with higher scores indicating greater patient satisfaction).

3.2.5 PILOT STUDY

A pilot study was performed in 2012 at the Department of Oral and Maxillofacial Surgery in Jönköping (standard care, Period I), and in 2013 (intervention, Period II). The objectives were to test and to receive feedback on the study design, and to obtain preliminary outcomes. In total, eleven dentists, three dental hygienists, eighteen dental assistants, and 638 patients participated. In Period I, the patient response rate was 45% and in Period II, 38%. During Period I, the reception staff were responsible for the data collection in addition to their ordinary tasks. The high non-participation rate in the pilot study revealed a need for greater presence of research study personnel at the clinic during data collection. This requirement was met in Period II in order to facilitate data collection.

3.3 REPRESENTATIVITY OF THE SAMPLES

Table 3 compares background data for the dentists in the web survey and the DFCM studies. The proportion of dentists who assessed their self-efficacy to treating fearful patients as 'very good' was larger in the web survey study than in the DFCM study. There were also large differences in the estimated proportion of fearful patients between the web survey and the DFCM studies. The differences between the other variables were smaller.

Table 3. Comparison of dentists' background data in the web survey and DFCM studies: gender, post-graduate training in dental fear, self-efficacy in handling treatment problems with fearful patients, and 'estimated proportion of fearful patients'.

	Web survey n (%)	**DFCM** n (%)
Gender		
Male	319 (35.9)	12 (30.8)
Female	570 (64.1)	27 (69.2)
Post-graduate training		
No	351 (39.5)	14 (36.8)
Yes, a few	346 (38.9)	18 (47.4)
Yes, several	192 (21.6)	6 (15.8)
Self-efficacy[1]		
Very poor	1 (0.1)	0 (0.0)
Quite poor	71 (8.0)	2 (5.1)
Fairly good	646 (72.7)	34 (87.2)
Very good	171 (19.2)	3 (7.7)
Proportion of fearful patients[2]	Mean (SD) Median (Min; Max) n 16.4 (15.2) 10.0 (5.0; 90.0) n=889	Mean (SD) Median (Min; Max) n 30.1 (19.7) 30.0 (0.0; 80.0) n=39

[1] Self-efficacy = response to the question: How do you assess your skills in treating adult patients with dental fear? [2] Proportion of fearful patients = response to the question: Approximately what proportion of your adult patients do you perceive as being anxious or fearful during treatment?

Table 4 provides comparing data for the dentists in the web survey and DFCM studies, regarding years of practice. Despite different response alternatives, the proportion of dentists who had worked more than 15 years was larger in the web survey study than in the DFCM study.

Table 4. Comparison of dentists' work experience in terms of years of practice between the web survey and DFCM studies.

Web survey study		**DFCM study**	
Years of practice	n (%)	Years of practice	n (%)
0 – 1 yr.	42 (4.7)	0 – 3 yrs.	14 (36.8)
2 – 5 yrs.	189 (21.3)	4 – 12 yrs.	9 (23.7)
6 – 15 yrs.	151 (17.0)	> 12 yrs.	15 (39.5)
> 15 yrs.	507 (57.0)		

3.4 ETHICAL ASPECTS

The cross-sectional study is based on survey data that contain no sensitive personal data, nor any other information that can be viewed as ethically sensitive. The study was not reviewed by the Regional Ethics Review Board since it is not covered by the Ethics Review Act, as confirmed by the then scientific secretary at the Regional Ethics Review Board in Gothenburg. However, the study was conducted according to the ethical guidelines of the Helsinki Declaration. Participation was voluntary and the information to the study participants was designed according to the guidelines of the Regional Ethics Review Board.

The intervention study was approved by the Regional Ethical Review Board of Linköping University (Reg. no. 2013/322-31) and performed in accordance with the Declaration of Helsinki. Written consent was obtained from the dental health professionals and the patients.

3.5 DATA ANALYSES

Both parametric and non-parametric methods were used in the statistical inference testing. Results from the continuous scales were reported using mean values ($\bar{x}$) and standard deviations (SD) (I, II, III, IV). In papers III and IV, continuous variables were also described by the median, minimum and

maximum, and all categorical variables as numbers and percentages. The difference between study groups with respect to continuous outcome variables was described by means and 95% Confidence Intervals (CI), based on bootstrapping of 10 000 replicates (IV). For correlations, Spearman's Rank Order Correlation (r_s) was used (I, II, III, IV). For tests between two independent groups, Fisher's Exact Test was used for dichotomous variables (III, IV), the Chi-2 Test (Likelihood Ratio) (I, II) or the Mantel-Haenszel Exact Chi-2 Test (Exact Linear-by-Linear Association) (III, IV) for ordered categorical variables, and the Mann-Whitney U test (III, IV) for continuous variables. Changes within a sample were analysed using the Sign Test for ordinal scales (III), and the Wilcoxon Signed Rank Test for continuous variables (III). Bivariate logistic regression, adjusting for years of practice, and multiple logistic regression were used for analyses of relationships (Enter Method) (I, II). To test the potential effect of the DFCM on subgroups of patients (dental fear, gender, reason for dental visit), an interaction term between the subgroup and the DFCM was added in paper IV to a logistic regression model, with Intervention Period I vs. II as the outcome variable. No imputation of (missing) data was performed. The pre-chosen level of significance was $p < 0.05$ in all analyses, and all tests were two-tailed. Versions 20.0 (I, II) and 24.0 (III, IV) of the SPSS software package were used for all statistical analyses.

Qualitative content analysis according to Hsieh and Shannon (2015) was used for the analysis of open-ended questions [90]. Overall positive or negative respondents were identified by adding the positive and negative comments made by each health professional, leading to an overall positive, overall neutral or overall negative sum. A respondent was labelled 'overall positive', if all or most of the statements made were positive, and 'overall negative', in the case of the reverse overall response.

The question 'How do you assess your skills at treating adult patients with dental fear?', was used in the power calculation. Based on the assumption that all dentists and dental hygienists would increase their self-efficacy by at least one step, meaning that 30% in the non-intervention group and 60% in the intervention group would improve after Period II, the power was calculated to 0.9 (0.882). Sixty dental health professionals (dentists and dental hygienists) were included; 26 in the non-intervention group and 34 in the intervention group.

4 RESULTS

4.1 THE WEB SURVEY STUDY (I, II)

Studies I and II are based on a web survey responded to in 2009 by 889 Swedish dentists. In addition to presenting background data, the studies investigated the views/attitudes, feelings and experiences of the dentists regarding treatment of patients with dental fear, and their real and formal competence and need for dental fear training.

Background data on the 889 dentists who responded to the survey showed that the majority: had received their dental training in Sweden (91%), were women (64%), and had more than 15 years in the profession (57%). Some degree of dental fear was reported by 35% of the dentists and was more common by those who had received their training abroad (50%) than among dentists trained in Sweden (33%) ($p = 0.018$). On average, the dentists worked 88% of full time, and the mean proportion of recall adult patients was estimated at 68%.

4.1.1 THE DENTISTS' THOUGHTS, FEELINGS AND EXPERIENCE OF PATIENTS WITH DENTAL FEAR (I)

A majority of the respondents (80%) reported that they saw dental fear as a problem in dental care. Two thirds wanted to see a stronger focus on dental fear (67%), 8% recognized the problem but stated that other problems are more important, 5% saw dental fear as a problem that cannot be solved, but every fifth (20%) dentist did not consider dental fear a problem in dental care.

Approximately every other dentist (54%) responded that they 'never' or 'rarely' felt stress before treating a fearful patient, compared with the response alternatives 'sometimes' (37%), 'often' or 'always' (10%). Dentists trained abroad reported feeling stressed more often ('always', 'often'; 24%) than dentists trained in Sweden (8%) ($p = 0.030$). Feelings of stress ('always', 'often', 'sometimes') were reported more often by dentists with than without self-reported own dental fear (57% vs. 48%, $p = 0.037$).

Regarding self-rated competence in treating patients with dental fear (self-efficacy), most of the dentists stated that they were 'very good' (19%) or 'fairly good (73%). A high degree of self-efficacy was more common among female than among male dentists ($p = 0.001$). The higher the reported degree of self-efficacy, the lower the dentists' stress levels. Among dentists with low self-rated self-efficacy ('not very good/not good at all), 67% experienced stress

before treating fearful patients, and 49% and 28% of dentists reporting 'fairly good' and 'very good' self-efficacy, respectively, experienced stress ($p < 0.001$).

'Making a contribution' was the most commonly reported attitude (79%) to treating fearful patients by the dentists in the web survey, followed by 'positive challenge' (55%), 'difficult' (30%), 'poor economics' (29%), 'stressful' (20%), 'exciting' (18%), and 'reluctant/would rather be excused' (8%). More male than female dentists reported that they 'would rather not' treat fearful patients (12% and 6%, respectively, $p < 0.001$). Dentists with fewer years of practice reported more often than dentists with longer experience that they felt 'excited' about treating fearful patients ($p = 0.001$), and less often that it was 'poor economics' ($p = 0.003$). The feeling of 'making a contribution' for patients with dental fear was less explicit among dentists who had 2–5 years of practice than among those with fewer or more years in the profession ($p = 0.018$). Dentists trained abroad experienced more 'stress' ($p = 0.015$) when treating fearful patients and less often that they were 'making a contribution' ($p < 0.001$), compared with dentists trained in Sweden. The majority of the dentists, 67%, reported mainly positive attitudes, 16% mainly negative attitudes, and 17% reported one positive and one negative attitude. Negative attitudes only were reported by 10% of the dentists.

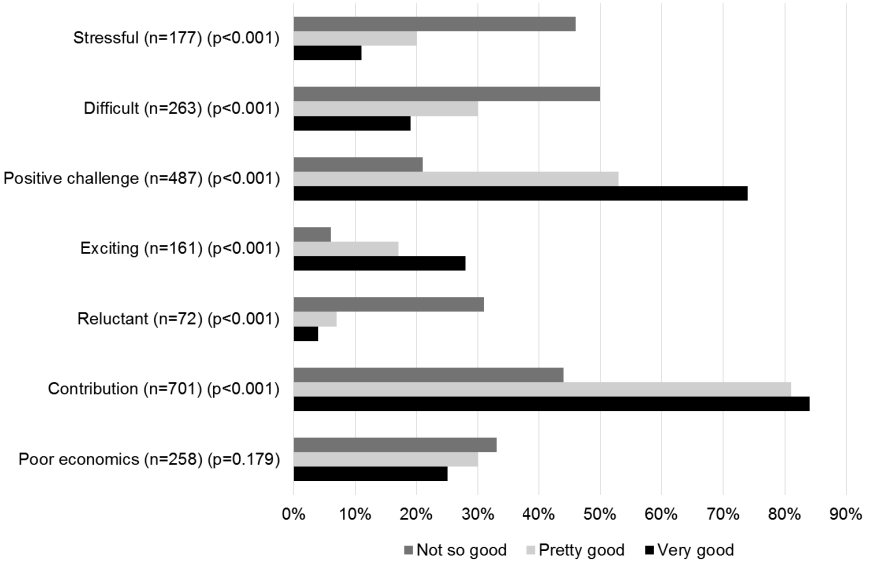

Figure 4. Attitudes to treating fearful dental patients reported by dentists (possible to respond with 1 to 3 alternatives) in relation to self-efficacy.

Twenty-five per cent of the male dentists reported mainly negative attitudes, compared with 14% of their female colleagues ($p = 0.008$). Figure 4 shows the different response alternatives in relation to self-efficacy. Thirty-seven dentists provided open comments to the question, 'How do you feel about treating an adult patient with dental fear? The answers reflected mixed feelings and experiences: 'You develop as a dentist and as a person', 'rewarding', 'feels good to be trusted', 'a part of the job that I try to manage as best I can', 'time-consuming', 'demands focus and total commitment and is therefore taxing'', 'difficult to say, as I think you make a contribution but it is not appreciated by the employer in today's economic situation', and 'it is very stressful in the emergency clinic, since you don't get the time you need'.

On average, the dentists estimated that 16% of their patients had dental fear. Female dentists reported a significantly larger proportion of fearful patients ($\overline{x}$ = 18%) than male dentists ($\overline{x}$ = 14%) ($p = 0.002$). The more experienced the dentist, the smaller the number of fearful patients reported (0-1 yrs., $\overline{x}$ = 20%; 2-5 yrs., $\overline{x}$ = 20%; 6-15 yrs., $\overline{x}$ = 18%; > 15 yrs., $\overline{x}$ = 14%) ($p < 0.001$). Dentists with higher levels of self-efficacy ('very good'/'fairly good') reported more fearful patients ($\overline{x}$ = 17%) than those with lower self-efficacy ($\overline{x}$ = 10%) ($p = 0.001$). Dentists who experienced dental fear as a problem in dentistry reported a larger number of fearful patients ($\overline{x}$ = 18%), compared with dentists who did not perceive dental fear as a problem ($\overline{x}$ = 12%) ($p < 0.001$).

4.1.2 MANAGING PATIENTS WITH DENTAL FEAR (II)

The majority (66%) of the 889 dentists 'always/often' allocated extra time for the treatment of fearful patients, followed by 'sometimes' (27%) and 'rarely/never' (7%). Female dentists allocated significantly more time than male dentists ($p < 0.001$). The treatment plan was 'always/often' (61%), 'sometimes' (30%), and 'rarely/never' (9%) adjusted because of the patient's dental fear.

Regarding dental fear as a subject in basic dental training, more than half (58%) of the dentists stated that they wanted more and the rest thought it was enough. Female dentists wanted more dental fear training (59%) than male dentists (55%) ($p = 0.023$). Dentists who replied that they had no basic dental fear training were analyzed separately; 21% of the dentists trained outside of Sweden reported no dental fear training compared to 11% among those trained in Sweden ($p < 0.001$). Dentists who reported low self-efficacy wanted more dental fear training in their basic training (72%), compared with dentists with moderate (60%) and high self-rated competence (44%) ($p < 0.001$).

Post-graduate training in dental fear was reported by 61% of the dentists and was associated, for natural reasons, with more years in the profession. Dentists with low self-efficacy reported no further education to a greater extent (62%), compared with dentists with moderate (39%) and high (33%) self-rated competence (p <0.001).

Anxiety-reducing techniques

The dentists were asked in the web survey about the extent/degree to which they used various psychological and pharmacological anxiety-reducing techniques, whether they had received training in applying these techniques, and, if not, whether they would like such training.

The psychological techniques referred to were relaxation, distraction, Tell-Show-Do and hypnosis. The pharmacological anxiety-reducing techniques used were sedation with benzodiazepines as tablets or mixture/midazolam, and nitrous oxide (N2O) sedation. All the techniques, with the exception of N2O sedation and hypnosis, were used by more than 65% of the dentists. Only 2% of the dentists used neither pharmacological nor psychological techniques when treating patients with dental fear. Figure 5 shows the different anxiety-reducing techniques in relation to usage (always to rarely), desired competence (yes/no), and real and formal competence (yes/no). As shown in the figure, some dentists responded that they used a technique but still wanted formal competence. Table 5 shows the real and formal competence in using the anxiety-reducing techniques, in total, and by gender, years of practice, and place/country of training. Dentists trained abroad reported significantly lower competence levels with regard to sedation with midazolam and tablets and Tell-Show-Do. On the other hand, dentists trained abroad wished for more competence in using midazolam mixture ($p < 0.001$), benzodiazepines-tablets ($p < 0.001$), relaxation ($p = 0.012$), distraction ($p = 0.012$), and Tell-Show-Do ($p = 0.002$), compared with dentists trained in Sweden. The dentists' competence in using all the different anxiety-reducing techniques, with the exception of benzodiazepines-tablets, was associated with higher levels of self-efficacy ($p < 0.05$).

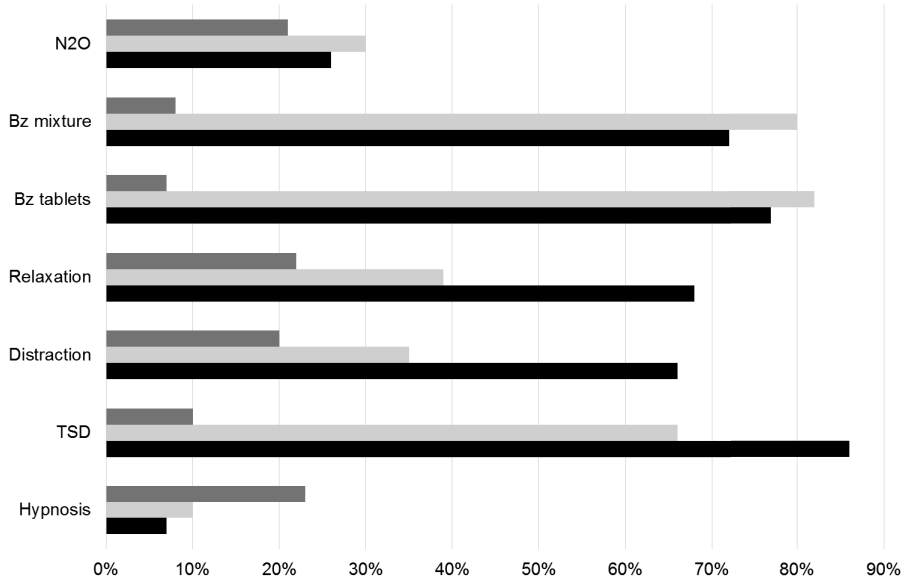

Figure 5. Dentists' wish for and reported competence, and application of different anxiety management techniques (n = 889). Bz mixture = benzodiazepine mixture (midazolam); Bz tablets = benzodiazepine tablets; N2O = nitrous oxide sedation; TSD = Tell-Show-Do. The different colours illustrate the prechosen response alternatives. Dark grey, 'Would like competence'; light grey, 'Have competence'; and black, 'Use technique'.

Table 5. Pharmacological and psychological techniques used by the dentists treating fearful patients, by background factors. Also showing the dentists' competence in the different techniques. Usage = the technique was used always to rarely; Competence = stated competence in the technique (yes/no). Multilogistic regression analyses (MRA) were performed with the different anxiety-reducing techniques used as dependent variables, and gender, years of practice and site of education as independent variables.

		Gender			**Years of practice**					**Site of education**			**Total**
		Female	Male	MRA	0-1	2-5	6-15	>15	MRA	Sweden	Other country	MRA	n=889
		%	%	p-value	%	%	%	%	p-value	%	%	p-value	%
Usage %	Nitrous oxide	26.8	24.8	**0.042**	2.2	9.5	23.2	35.1	**<0.001**	27.1	16.3	0.262	26.1
	Bz mixture[1, 2]	73.3	69.3	0.303	73.8	77.2	71.5	69.8	0.106	72.1	70.0	0.555	71.9
	Bz tablets[1]	74.9	80.9	0.163	54.8	67.7	82.8	80.7	**<0.001**	77.5	72.5	0.543	77.1
	Relaxation	71.1	61.4	**<0.001**	54.8	63.0	60.9	72.4	**<0.001**	67.6	67.5	0.752	67.6
	Distraction	67.7	62.4	**0.039**	54.8	63.0	57.6	70.2	**0.005**	66.9	55.0	0.064	65.8
	Tell-show-do	88.1	82.4	0.058	90.5	94.2	80.1	84.4	**0.007**	86.8	78.8	**0.016**	86.1
	Hypnosis	6.6	8.5	0.913	0.0	1.1	2.0	11.6	**<0.001**	7.7	2.5	0.391	7.2
Compe-tence %	Nitrous oxide	31.6	26.6	**0.003**	0.0	11.6	30.5	38.9	**<0.001**	31.0	17.5	0.118	29.8
	Bz mixture[1, 2]	82.3	74.9	**0.044**	90.5	88.9	77.5	75.9	**<0.001**	81.1	65.0	**<0.001**	79.6
	Bz tablets[1]	82.5	82.1	0.429	59.5	77.8	80.8	86.4	**<0.001**	84.5	60.0	**<0.001**	82.3
	Relaxation	40.7	37.3	0.159	35.7	36.5	26.5	44.8	**0.007**	39.8	36.3	0.729	39.5
	Distraction	36.8	32.3	0.128	35.7	34.9	27.2	37.7	0.328	36.1	26.3	0.096	35.2
	Tell-Show-Do	69.8	60.5	**0.041**	85.7	79.9	62.9	60.9	**<0.001**	67.4	57.5	**0.013**	66.5
	Hypnosis	8.9	12.2	0.742	0.0	1.1	2.6	16.6	**<0.001**	10.8	3.7	0.385	10.1

[1]Bz = benzodiazepine; [2]Bz mixture = midazolame

4.2 THE JÖNKÖPING DENTAL FEAR COPING MODEL (DFCM) STUDY (III, IV)

Studies III and IV describe the development and evaluation of a new, structured treatment model, the DFCM, with the focus on dental fear. The evaluation was carried out in an intervention study in nine dental health clinics during 2014-2016. After the initial 'pre-intervention period', the clinics were randomized to a 'non-intervention' or an 'intervention' group. The study design has been described in the form of a flowchart in Figure 2 (Material & Method). The model was evaluated both from a dental staff (III) and a patient (IV) perspective.

4.2.1 MANAGING PATIENTS WITH DENTAL FEAR (III)

Attitudes to and the management of patients with dental fear from the perspective of dental health professionals were investigated in Study III. Table 6 presents background data for the staff members participating in Periods I and II, with regard to gender, profession, years of practice, and further dental fear training, as well as attitudes to treating patients with dental fear. The data are presented as totals and for the intervention and non-intervention groups separately. Most of the staff members were women (91%). The proportion of staff members with more than three years of practice was high (81%). There were no statistically significant differences between the intervention and the non-intervention groups regarding gender, profession, years of practice or post-graduate training in the field of dental fear. This also applied when the same analysis was performed for the different categories of staff. Likewise, no statistically significant differences were found within the intervention and non-intervention groups between Periods I and II with regard to attitudes to treating patients with dental fear.

According to one hypothesis, the staff's assessment of their own skills at treating fearful patients (self-efficacy) would improve after training (intervention) in DFCM and use of this technique. The analysis showed no significant differences between Period I and II, neither in the intervention, nor in the non-intervention group (Table 7). According to the other hypothesis, the staff's estimation of the proportion of patients with dental fear would increase between Period I and II in the intervention group. However, no significant difference in the staff's estimation of the proportion of patients with dental fear was seen between Period I and II, neither in the intervention, nor in the non-intervention group (Table 7).

Table 6. Baseline data for dental health professionals participating in both periods: gender, years of practice, post-graduate training in dental fear, and attitudes towards treating adult patients with dental fear in relation to intervention and non-intervention.

	Intervention		Non-intervention		Total		
	n	%	n	%	n	%	*p*
Gender							
Men	4	7.8	6	9.7	10	8.8	1.000[1]
Women	47	92.2	56	90.3	103	91.2	
Profession							
Dentists	13	25.5	20	32.3	33	29.2	0.535[1]
Dental hygienist	14	27.5	12	19.4	26	23.0	
Dental assistant	24	47.1	30	48.4	54	47.8	
Years of practice							
0-3	11	21.6	10	16.4	21	18.8	0.465[2]
4-12	15	29.4	17	27.9	32	28.6	
>12	25	49.0	34	55.7	59	52.7	
Post-graduate training							
No	16	31.4	17	27.9	33	29.5	1.000[2]
Yes, a few	26	51.0	36	59.0	62	55.4	
Yes, several	9	17.6	8	13.1	17	15.2	
Positive							
Not at all	1	2.0	1	1.6	2	1.8	0.110[2]
A little/somewhat	6	12.0	11	17.7	17	15.2	
Fairly positive	24	48.0	37	59.7	61	54.5	
Very positive	19	38.0	13	21.0	32	28.6	
Important							
Not at all	0	0.0	0	0.0	0	0.0	0.176[2]
A little/somewhat	2	3.9	4	6.5	6	5.3	
Fairly important	6	11.8	14	22.6	20	17.7	
Very important	43	84.3	44	71.0	87	77.0	
Emotionally stressful							
Not at all	10	20.0	4	6.5	14	12.5	0.473[2]
A little/somewhat	26	52.0	40	64.5	66	58.9	
Fairly stressful	12	24.0	18	29.0	30	26.8	
Very stressful	2	4.0	0	0.0	2	1.8	
Economically stressful							
Not at all	13	26.0	16	25.8	29	25.9	0.772[2]
A little/somewhat	18	36.0	24	38.7	42	37.5	
Fairly stressful	15	30.0	12	19.4	27	24.1	
Very stressful	4	8.0	10	16.1	14	12.5	

[1] Fisher's Exact Test
[2] Exact Linear-by-Linear Association

Table 7. The hypothesis variables of self-efficacy in treating fearful patients and estimated 'proportion of fearful patients' in Period I and Period II, and differences over time, in relation to intervention and non-intervention.

Self-efficacy[1]	**Intervention n=51** n (%)	*p* within	**Non-intervention n=62** n (%)	*p* within	*p* between
Period I					
Very poor	0 (0.0)		0 (0.0)		
Quite poor	5 (10.2)		8 (12.9)		0.085[3]
Fairly good	34 (69.4)		50 (80.6)		
Very good	10 (20.4)		4 (6.5)		
Period II					
Very poor	0 (0.0)		0 (0.0)		
Quite poor	3 (6.0)		5 (8.1)		0.680[3]
Fairly good	39 (78.0)		49 (79.0)		
Very good	8 (16.0)		8 (12.9)		
Change between Period I and II					
Worse	7 (14.6)		3 (4.8)		
Equal	34 (70.8)	1.000[5]	49 (79.0)	0.092[5]	0.249[3]
Better	7 (14.6)		10 (16.1)		
Proportion of fearful patients[2]	Mean (SD) Median (Min; Max) n	*p* within	Mean (SD) Median (Min; Max) n	*p* within	*p* between
Period I	32.9 (22.7) 30.0 (0.0; 80.0) n=49		28.2 (19.0) 27.5 (0.0; 70.0) n=60		0.321[4]
Period II	30.3 (21.3) 30.0 (0.0; 80.0) n=49		30.8 (19.9) 25.0 (3.0; 80.0) n=59		0.945[4]
Change between Period I and II	-2.3 (17.8) 0.0 (-45.0; 40.0) n=48	0.405[6]	2.6 (23.4) 0.0 (-67.0; 65.0) n=57	0.324[6]	0.249[4]

[1] Self-efficacy = response to the question: 'How do you assess your skills in treating adult patients with dental fear?'
[2] Proportion of fearful patients = response to the question: 'Approximately what proportion of your adult patients do you perceive as being anxious or fearful during treatment?'
[3] Exact Linear-by-Linear Association, [4] Mann-Whitney U Test, [5] Sign Test, [6] Wilcoxon Signed Ranks Test

When evaluating the DFCM, the staff was asked to answer three questions on how they perceived the model in relation to their previous way of working (’better than before’, ’equal’, ’worse’), with regard to: ‘Identifying adult patients with dental fear’, ‘Focus on patient needs’ and ‘Communication with the patient’. Practically no one had a negative attitude to the model. Altogether, 63% reported that the DFCM model lead to improved identification of patients with dental fear, compared with standard treatment. The dental health professionals reported that the model lead to improvements with regard to ‘Focus on patient needs’ (50%), and ‘Communication with the patient’ (54%). Two per cent responded that the DFCM was inferior to standard care with regard to ‘Focus on patients’ needs’. No one were negative to the model regarding ‘Identifying patients with dental fear’ or ’Communication’.

In an attempt to deepen the analysis, a complementary qualitative analysis was made of the answers to two open questions: ‘In your view, what are the advantages and/or disadvantages of the structured treatment model?’ and ‘Would you like to change anything in the structured treatment model, if so, what?’ The response rate for the two questions was 70% and 13%, respectively. The amount of data obtained from the answers to the latter question was too small to allow for any general conclusions to be drawn. Most of the open comments describe improvements to the quality of care: ‘It is sometimes difficult to know what the patient is afraid of’; ‘Increased awareness and new ways of thinking’; ‘Gives a clearer and faster insight into the patient’s problems, making it possible to take better action; and ‘The interaction with the patient was improved’. The qualitative content analysis was based on 68 statements. For the positive statements, the following subcategories were identified: ‘Improved history-taking and diagnostics’, ‘Better communication and contact’, and ‘Better understanding of patients and dental health care’. Among the negative statements, two subcategories emerged: ‘More demanding’, and ‘Less spontaneous’.

4.2.2 POST-TREATMENT RATING BY DENTAL HEALTH PROFESSIONALS (III)

Table 8 shows the staff’s assessments of the patient’s behavior during the visit: how tense the patient was and her/his ability to cope with the intervention performed during the visit. The results in Table 8 are reported for the intervention group in Period I and II, in relation to the patient’s degree of dental fear. There was no statistically significant difference in ratings by the dental health professional’s *Post-treatment care provider rating* between Period I and Period II for patients reporting ‘no or low dental fear’. In the other group, patients with low to extreme dental fear, all the represented dental health professions allocated higher scores during Period I than during Period II,

despite the lack of patient-reported differences in tension between the periods (Table 8).

Table 8. Patient tension to any degree during treatment according to dental health professionals in the intervention group and patients (VAS) in Period I and II, in relation to dental fear.

	Level of dental fear					
Tension (professionals)	**No to low** (IDAF 1.0 – 1.49)			**Low to extreme** (IDAF 1.5 - 5.0)		
Dentist (PTCPR[3])[4]	n	%	p^1	n	%	p^1
Period I	113/396	28.5	0.347	116/177	65.5	0.019
Period II	148/556	26.6		107/133	80.5	
Dental hygienist (PTCPR[3])[4]						
Period I	128/475	26.9	0.740	88/168	52.4	0.006
Period II	162/585	27.7		87/123	70.7	
Dental assistant (PTCPR[3])[4]						
Period I	67/390	17.2	0.537	89/156	57.1	0.011
Period II	101/551	18.3		102/135	75.6	
Patients (VAS)	n	Mean (SD)	p^2	n	Mean (SD)	p^2
Period I	915	1.1 (1.51)	0.243	360	4.2 (2.93)	0.809
Period II	1134	1.2 (1.60)		255	4.2 (2.97)	

[1] Exact Linear-by-Linear Association, [2]Mann-Whitney U Test, [3]PTCPR = *Post-treatment care provider rating* > 1, [4]The full PTCPR scale was used in the analysis.

4.2.3 PATIENTS (IV)

Study IV investigated and compared standard care (Period I) with management according to the DFCM (Period II) from a patient perspective. Table 9 shows background data regarding gender, age, dental fear and reason for visit for patients participating in Period I or Period II in the intervention group. The patients in Period I were significantly more fearful and a considerably larger number of them were aware of what treatment they would receive, compared with the patients in Period II. Dental fear was less common among older age groups and among men in both the non-intervention and the intervention group ($p < 0.001$) (data not shown).

The patient's experience of the dental visit was assessed using variables measuring discomfort, pain, tension and patient satisfaction following standard care (Period I), and treatment according to the DFCM (Period II). Table 10 shows the results for the four outcome measures. The patients in the group treated according to the model (Period II) reported significantly less tension during the visit. Sub-analyses showed that among the patients who expected dental treatment, the degree of discomfort was greater in Period I ($\overline{x} = 1.1$) than in Period II ($\overline{x} = 0.9$) ($p = 0.033$), as well as the degree of pain (Period I: $\overline{x} = 1.3$; Period II: $\overline{x} = 1.1$; $p = 0.016$) and perceived tension (Period I: $\overline{x} = 2.0$; Period II: $\overline{x} = 1.7$; $p = 0.012$). When the pain experiences in Period I and Period II were compared, patients with low fear according to IDAF-4C reported significantly more pain in Period I ($\overline{x} = 1.8$), compared with Period II ($\overline{x} = 1.4$) ($p = 0.014$).

Table 9. Background data for patients participating in periods I and II: gender, dental fear according to DAQ and IDAF-4C+, reason for dental visit, and age.

	Period 1		**Period II**		
	n	%	n	%	*p*
Gender					
Male	608	46.4	652	46.0	0.878[1]
Female	703	53.6	764	54.0	
Dental fear DAQ					
No	867	66.0	1093	77.2	
A little	259	19.7	167	11.8	< 0.001[2]
Yes, quite (afraid)	122	9.3	90	6.4	
Yes, very (afraid)	66	5.0	66	4.7	
Dental fear IDAF					
No-Little	927	71.5	1156	81.6	
Low	252	19.4	150	10.6	< 0.001[2]
Moderate	71	5.5	74	5.2	
High	47	3.6	36	2.5	
Reason for dental visit					
Do not know	148	11.3	357	25.2	
Dental examination	348	29.2	416	29.4	< 0.001[1]
Dental treatment	783	59.5	643	45.4	
Age	Mean	SD	Mean	SD	*p*
	51	17.2	51	17.9	0.758[3]

[1] Fisher's Exact test, [2] Exact Linear-by-Linear Association, [3] Mann-Whitney U test

Table 10. Patient-reported outcomes for discomfort, pain, tension, and patient satisfaction with dental health professionals (Patient Attitude Scale, shown with Total and Standard scores) in relation to periods I and II.

	Period I (n = 1351) Mean (SD) Median (Min; Max) n	**Period II** (n = 1417) Mean (SD) Median (Min; Max) n	*p* value[1]	**Difference between period I and II** Mean (95 % CI)
Discomfort	1.0 (1.5) 0.3 (0.0; 10.0) n = 1297	0.9 (1.5) 0.3 (0.0; 10.0) n = 1390	0.596	0.035 (-0.081; 0.149)
Pain	1.2 (1.7) 0.4 (0.0; 10.0) n = 1298	1.1 (1.7) 0.5 (0.0; 10.0) n = 1389	0.226	0.079 (-0.051; 0.210)
Tension	2.0 (2.4) 1.0 (0.0; 10.0) n = 1296	1.7 (2.3) 0.8 (0.0; 10.0) n = 1389	0.041	0.209 (0.032; 0.385)
Patient Attitude Scale				
Total score	33.3 (2.6) 34.0 (10.0; 46.0) n = 1227	33.5 (2.0) 34.0 (18.0; 46.0) n = 1354	0.251	-0.186 (-0.366; -0.012)
Profession[2]	3.9 (0.4) 4.0 (1.0; 4.5) n = 1254	3.9 (0.3) 4.0 (1.0; 4.5) n = 1372	0.057	-0.043 (-0.070; -0.016)
Person[2]	3.0 (0.3) 3.0 (1.0; 5.0) n = 1240	3.0 (0.2) 3.0 (1.7; 5.0) n = 1369	0.693	-0.002 (-0.024; 0.018)

[1] Mann-Whitney U test
[2] Standard scores

5 DISCUSSION

The overall aims of this thesis were to study the attitudes of dental health professionals to fearful dental patients, and their skills and strategies when treating these patients. A second overarching aim was to develop and evaluate a structured model for information and communication about dental fear in the treatment situation, the Jönköping Dental Fear Coping Model (DFCM), to the benefit of both the dental health professionals and their adult patients. The evaluation of the DFCM primarily focuses on outcomes pertaining to dental health professionals, but also on patient outcomes. Most dental fear treatment has focused on extreme dental fear; however, the DFCM is designed to work with the different levels of dental fear encountered in ordinary dental clinical work.

The results from the first two studies (I and II), are important because they give us an understanding of how Swedish dentists experience patients with dental fear, and what preparedness they have to meet the needs of the patients. Most important, the results establish the basis for the design and evaluation of the DFCM as described in studies III and IV.

5.1 WEB SURVEY STUDIES

The aims of the first two studies were to investigate the attitudes, experiences and feelings of Swedish dentists treating patients with dental fear, the impact of gender, age and site of education, skills in dental fear, including undergraduate and post-graduate training and possible training needs, and different treatment strategies used when treating fearful adult patients.

The results were interesting but not unexpected. The proportion of adult patients with dental fear, as assessed by the dentists, was 16%, on average, in study I, which corresponds to the prevalence reported in a recent Swedish study [5]. The majority of the responding dentists stated that dental fear is a problem in routine dental care, that treating patients with dental fear is a positive challenge, and that they feel that they make a contribution. They also reported that treating patients with dental fear is associated with hard work and poor revenues, and little appreciation by employers. Female dentists reported higher self-efficacy when treating patients with dental fear than their male colleagues and the proportion of male dentists who would rather be excused from treating patients with dental fear was twice that of their female colleagues.

Dentists trained in the EU reported stress more often and less of making a contribution when treating fearful patients, compared with colleagues trained in Sweden. The Nordic Dental Schools are believed to have a consensus regarding undergraduate training in dental fear, as reflected in their curricula. However, the results from the web survey study, showing that dentists trained outside the Nordic countries significantly more often reported perceived stress before treating a fearful patient than dentists trained in Sweden, are worrying and cannot be neglected. We suggest that lack of training in dental fear may be the reason, as dentists trained abroad reported no undergraduate training twice as often as dentists trained in Sweden, indicating a need for postgraduate training for those dentists.

In general, the dentists' views of treating fearful patients were mainly positive. However, it is problematic that quite a large proportion of dentists reported stress and that some dentists who treat many fearful patients feel that their employers do not appreciate their efforts. In the long run, this may entail a risk of dentists becoming reluctant to treat patients with dental fear. Consequently, the quality of care may be affected and lead to future problems for both patients and dental health professionals. A variety of techniques, both psychological and pharmacological, are used in Swedish dental clinics to meet the needs of the fearful adult patient. The competence in using these techniques varies, as does self-rated ability to treat fearful patients. There is an obvious need for additional education and research in the field of dental fear. A large proportion of the responding dentists report this need, and many have attempted to compensate for the lack of training in dental fear in the undergraduate curricula by attending postgraduate courses. The amount of dental fear training varies with the site of education; dentists who have attended dental schools outside Sweden tend to have a greater need for enhanced competence in handling dental fear. We believe that education in dental fear is valuable for all dental health professionals in general dental practice, in order to improve the treatment of fearful patients. Such education will hopefully result in better care and fewer stress reactions, both among the dental staff and the patients, and a reduced prevalence of dental fear.

5.2 COMPARISON OF RESULTS FROM THE WEB SURVEY AND THE DFCM STUDIES

The study samples of the web survey and the DFCM studies were compared, in separate analyses, regarding gender, postgraduate training in dental fear, perceived competence in treating adult fearful patients, and estimated proportion of fearful patients (Table 3, Thesis). The majority of the dentists were females in both samples, which also applies to Swedish dentists in general

[79]. The dentists in the web survey had more postgraduate training in dental fear than the dentists in the DFCM study, probably due to the greater proportion of experienced dentists in the web survey sample (Table 4, Thesis). The greater experience and more extensive training may explain why dentists in the web survey responded 'very good' more often to the question about perceived competence in treating fearful patients (self-efficacy) than the dentists in DFCM study III. The estimated proportion of fearful patients was nearly twice as large in the DFCM study compared with the web survey. The most reasonable explanation seems to be that the dental health professionals in the DFCM study were aware of participating in a study aimed at alleviating dental fear problems, and thus paid greater attention to these patients. Other possible explanations could be the difference in years of practice between the samples or (more unlikely) that there was a true difference, *i.e.,* the result reflects the true (higher) prevalence of dental fear in Jönköping County compared with Sweden in total.

5.3 DEVELOPMENT OF THE JÖNKÖPING DENTAL FEAR COPING MODEL (DFCM)

The basic aims of the DFCM were to provide dental health professionals with information on whether the patient is afraid or suspicious, and to improve their ability to handle this information when communicating with the patient. Dailey et al. (2002) showed, in a simple but sophisticatedly designed study, that dental fear was reduced if the patients informed their dentists about their fears [68]. Our study had a similar design, but we wanted the dental health professionals to receive more information, as dental fear is an inhomogeneous phenomenon [22, 50, 91], and stimulate communication between the patient and the dental health professionals. Against this background, we considered other sources of inspiration. One source was the University of Washington Diagnostic Categories of Dental Fear, usually referred to as the Seattle system [22], which is based on extensive clinical experience and includes a categorisation system for fearful patients and appropriate treatment strategies. As mentioned previously, the categories are *fear of specific stimuli*, *distrust of dental personnel*, *generalised anxiety*, and *fear of (medical) catastrophe*. Although the Seattle system does not correlate with psychiatric diagnostic systems such as the DSM-III-R [51], it is valid from a psychological point of view [52], and is suggested to be a useful clinical tool in the treatment of patients with dental fear. Another clinical tool that was used was *Ditt valg*, developed on the basis of the Seattle system [53, 54] to help dental patients put their dental fear into words by using cards representing different statements related to previous dental experiences, possible reasons for attending (pros) and not attending (cons) dental appointments, and preferences for future treatment. In order to

improve the dental health professionals' ability to communicate the information to their patients on the basis of the received information, parts of the Motivational Interviewing [69] method was used as a communication strategy. However, this is not a pure MI intervention, but rather a mixture containing these three cornerstones.

5.4 EVALUATION OF THE DFCM

We assumed that using the DFCM would lead to decreased stress levels among dental health professionals treating fearful patients. The results from the quantitative analyses of the questions about stress with ready-made response alternatives did not support that assumption, since the stress reactions were not lowered by using the DFCM. However, the qualitative analyses of the open comments contributed more information. Not surprisingly, more resources, especially more time when treating fearful patients, was requested in order to reduce the professionals' perceived stress. The fact that the DFCM was perceived to be more demanding and less spontaneous than usual treatment was probably due, in part, to the fact that the design of the study involved the professionals using the model also with patients with whom they had already established a relationship, thereby making it less rewarding, and, in part, because there was insufficient time for the professionals to familiarise themselves with the model within the relatively short timeframe of the study. However, the dental health professionals appreciated the structured approach of the DFCM, which increased the awareness of dental fear and improved attitudes towards fearful dental patients.

The dental health professionals stated that it was easier to identify dental fear after the introduction of the DFCM. This was confirmed by the result that the dental health professionals who received DFCM training were more observant of patients' tension (using the *Post-treatment care provider rating*) among patients with low to extreme dental fear in Period II compared with Period I (Table 8, Thesis). Furthermore, approximately half of the dental health professionals in the study sample perceived improvement in communication skills and in their ability to assess the needs of their fearful patients during dental treatment.

The DFCM was intended for use with new patients or in recall dental examinations, to promote a good and trusting relationship. In order to gather sufficient data within a reasonable period of time, all adult patients who came to the clinic were asked to participate in the study. For this reason, previously established contacts may have been disrupted by the dental health professional asking the patient questions about dental fear on the second or third visit. In order for the study to be feasible, this approach was necessary. However, this

proved to be fortunate, as the positive effects of the DFCM—reduced pain, discomfort and tension—were mainly seen in the sub-group analyses in patients receiving dental treatment. If the DFCM had been evaluated in patients who only underwent a dental examination, these desired effects would not have been noticed. When analysing all patients (both examination and dental treatment patients), statistically significant differences between Period I and II were only found for tension, with patients participating in Period II being significantly less tense. The statistical differences found in the total group, as well as in the sub-group analyses, can probably be attributed to the effect of the DFCM.

In study III, we found no support for our two hypotheses that health professionals working according to the Jönköping DFCM (I), increase their perceived competence in treating adult fearful patients; and (II), increase their estimated number of adult patients with dental fear. However, with such high initial assessments of dental fear among patients by the health professionals, increased rates were not expected after the introduction of the DFCM in the study clinics.

The hypothesis put forward in study IV was that using the Jönköping DFCM would result in a reduction in the patient's discomfort, pain, tension, and increased satisfaction with dental health professionals. The hypothesis was somewhat supported by the results; tension among patients decreased in Period II compared with Period I. However, such effects were not shown for the other outcomes, discomfort and pain. Interestingly, significant reductions in all three outcomes (discomfort, pain, tension) were observed in sub-analyses of patients who expected dental treatment in Period II, compared with Period I. Female patients were significantly more tense, and patients with low levels of dental fear experienced more pain in Period I than in Period II. Although the results were significant, the effects were small. In a British study by Dailey et al. (2002), a similar intervention was performed. Even though other outcome measures than in the present study were used, the differences between the intervention and control groups were clearly significant. The reason why the results in the two studies differed was possibly due to more fearful patients in the British than in the present study, thus leaving greater scope for fear reduction with less of a floor effect, compared with the present study.

5.5 METHODOLOGIC CONSIDERATIONS

The study sample in the web survey studies (I, II) consisted of 889 members of the Association of Public Health Dentists (APHD), approximately 12% of all Swedish dentists. The results are based on a large sample, the response rate was high, and a non-participation analysis regarding age and gender was performed but revealed no statistically significant differences. All in all, the results could probably be interpreted as being representative of dentists in the Swedish Public Dental Service for age and gender.

The web survey was a cross-sectional observational study, designed and executed as a part of a Master's Degree (one year) by two dental hygienist students (authors: JC, study I, and JH, study II), who composed the web survey with questions that they formulated themselves or that had been used previously. The questionnaire was evaluated before study start by ten dentists who perceived the questionnaire to be adequate and easy to answer. The response rate in the study was good (69%) [92]. One of the web survey questions, 'Do you find yourself good at treating adult patients with dental fear?', referred to the dentists' self-perceived ability to treat fearful patients, a self-rated quality often referred to as 'self-efficacy' [85]. The question is not quite neutral, and could therefore be considered somewhat biased [93]. Nevertheless, the issue was considered important by the authors who reformulated the question in the DFCM study into, 'How do you assess your skills at treating adult patients with dental fear?'

The concept of dental fear or the different fear levels were not defined in the web survey and the DFCM questionnaires. The latter could have led to confusion about which fearful dental patients the questions referred to, especially the question concerning the proportion of fearful patients. However, the dentists' responses to the question correlated well with the prevalence in the population data [5].

In study III, the DFCM was evaluated using quantitative and qualitative methods. For evaluation reasons, three aspects of the DFCM were used: 'identifying dental fear', 'focus on patient needs', and 'communication'. For these three aspects, there were no significant differences between dental care supported by the DFCM and standard care treatment. There were probably too few response alternatives; one positive, one negative, and an intermediate neutral. If the respondents experienced difficulty summarising a complex experience by choosing one of these options, the middle option may have been the easiest and safest to choose [94]. A qualitative analysis of the open-ended question was made of the verbal descriptions given by those choosing the

middle response alternative, showing a predominantly positive attitude to the DFCM. The result of the qualitative analysis showed a principally positive assessment of the DFCM by the dental health professionals, compared with standard care.

The model was found to have no effect on the dental health professionals' self-efficacy in treating fearful patients; thus, the first hypothesis had to be rejected. Regarding self-efficacy, 20% in the intervention and 6.5% in the non-intervention group reported their competence at baseline to be 'very good', which means that they could not improve further, indicating a so-called "ceiling effect".

The power analysis was based on our hypothesis about self-efficacy in treating fearful patients, which the data failed to support. Possibly, the presumed effect was too high, the direction of the effect was calculated to be positive (one-way), and the health professionals' awareness of patients with dental fear and the complexity of the fear itself increased, leading to a humbler attitude to their own competence. Furthermore, the dropout levels were higher than expected. The number of health professionals in the intervention group, 34 dentists and dental hygienists, were calculated to reach power, but only 27 dental health professionals participated in Period II.

Study IV is based on two large study/patient samples with relatively few dropouts, which gives strength to the study. However, some limitations, such as missing dropout analyses, have to be considered. There were also more missing data in Period I than in Period II. This may be explained by the way the questionnaires were administered: pen-and-paper self-ratings in Period I and electronic self-assessments in Period II. However, in our view, the different administration methods do not jeopardise the results of this study. Furthermore, the effect sizes for the statistically significant results ($p < 0.05$), according to Cohen [95], are small (< 0.2). Whether the small differences between Period I and II are of practical relevance should be investigated in further studies. Finally, the model was developed to be used with new and recall patients for dental examinations, but in order to implement the project (in terms of time and economic resources), patients who were scheduled for dental treatment were included in the study. However, as mentioned previously, this was found to be fortunate, as the positive effects of the DFCM were seen in relation to dental treatment.

Different patients participated in Period I and II in the DFCM study. The patients in neither of the two groups had any knowledge of whether the dental health professionals had undergone training in the Jönköping DFCM. Patients

who were treated by professionals in the intervention group did not differ with regard to age and gender between Period I and II (Table 9, Thesis). However, the patients in Period I were significantly more fearful, and significantly more patients were aware of the planned dental treatment compared with the patients in Period II. The reason for these differences is unclear, but the way in which patients were asked to participate in the study may have varied between Periods I and II. The dropout rate was greater in Period I than in Period II, which may have meant that more fearful patients declined participation in the study in Period I. It is also possible that the higher degree of dental fear in Period I reflected an increased awareness among the patients about their planned dental treatment.

The dentists in the web survey corresponded well to the National Board of Health and Welfare (NBHW) statistics (web survey, age > 50 yrs., 46%; and NBHW, age > 49 yrs., 48%) [83], which means that the study sample was representative of Swedish dentists with regard to age. In the web survey and the DFCM studies, as in the national statistics (NBHW), female dentists predominated.

The web survey study was a cross-sectional, observational study. The DFMC study, an intervention study, was designed to make possible a broad analysis of dental fear-related issues in a natural clinical context, both among dental health professionals and patients. It also makes it possible to observe changes over time, both spontaneous changes and changes that can be attributed to the introduction of DFCM. We believe that such a design is appropriate at an initial stage of research in a largely unknown area. As the understanding of what factors are the most important improves, the continued exploration of the area can make use of experimental designs with a narrower scope, like randomised control trials (RCTs).

6 MAIN OBSERVATIONS AND CONCLUSIONS

- The majority of dentists in the Swedish Public Dental Service experience dental fear as a problem.

- Swedish dentists' views on treating fearful patients are mainly positive; it is a positive challenge and they feel that they make a contribution. However, they also report that treating patients with dental fear is associated with stress, hard work and poor revenues, and little appreciation by employers.

- The majority of the health professionals reported high self-efficacy in treating fearful dental patients; among dentists it was more than 90%. Female dentists reported significantly higher levels than male dentists.

- A variety of techniques, both psychological and pharmacological, are used at Swedish dental clinics to meet the needs of the fearful adult patient.

- There is a need for supplementary training in dental fear among Swedish dental health professionals, in particular for dentists trained at dental schools outside the Nordic countries.

- The Jönköping Dental Fear Coping Model (DFCM) promotes a holistic approach to the treatment of adult fearful patients. Benefits of the DFCM in routine dental care were shown in the qualitative analysis. However, stress among the dental health professionals was not reduced by using the model.

- The DFCM has several positive effects on adult patients in routine dental care. Several of the differences between standard care and treatment according to the model were significant, though with small effect sizes.

- It is important to evaluate the model in further studies to make it possible to draw generalisable conclusions.

7 FUTURE PERSPECTIVES

The Jönköping DFCM should be used to establish good relationships with patients during the dental examination, and the Dental Fear Summary provides information of importance to the dental treatment. The model helps the dental health professionals identify patients also with low levels of dental fear, and provides information about the individual patient's problems. The Jönköping DFCM needs to be evaluated in other studies and in other contexts, for example, in private dental care. We also believe that the DFCM needs to be adjusted or shortened before being implemented in general dental practice.

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APPENDIX 1

Ditt valg

	Non-fearful	Fear of Spec Stimuli	Distrust of Dental Personnel	Generalized Anxiety	Fear of Catastrophe
Mina erfarenheter	Jag brukar bli vänligt och bra bemött hos tandläkaren	Tandbehandling är smärtsam, och bedövningen fungerar ofta dåligt	Tandläkaren slutar inte när jag visar att jag behöver en paus, och jag känner att jag tappar kontroll	Jag har låtit bli att gå på en avtalad tid eftersom jag alltid oroar mig innan besöket	Jag har råkat ut för att jag reagerat mycket starkt på något under en tandbehandling.
	Jag oroar mig sällan för saker, och har inga problem med tandvården	När jag får bedövning känner jag mig illamående och yr	Jag känner mig ofta generad och skamsen när jag undersöks av tandläkare	Att få tandbehandling är en av många saker som jag är rädd för	Det har känts som om jag fått svårt att andas under tidigare behandling
			Jag får för lite information och vet inte vad som skall hända		
	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad
Förväntningar och farhågor	Jag tror inte att jag har några problem med tänderna	Det finns saker som jag är särskilt rädd för under tandbehandlingen	Behandlaren kommer nog att kritisera mig för att jag inte skött mina tänder	Jag kommer nog inte att klara av att genomföra behandlingen/undersökningen	Jag är rädd att få panikkänslor hos tandläkaren
	Jag tror att jag kommer få vara med och bestämma vad som skall göras	Det kommer säkert att göra ont	Tandläkaren kommer att göra som han/hon tycker är bäst, utan att bry sig om vad jag tycker	Jag vet inte vad det är men det känns obehagligt när jag tänker på att jag skall gå till tandläkaren	Jag är rädd att de skall tappa något i halsen så att jag får svårt att andas
					Jag är rädd att jag ska bli yr och svimma, eller få svårt att andas
	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad
Viktigt för mig	Jag går regelbundet till en snäll och bra tandläkare/tandhygienist, och hoppas kunna fortsätta gå där	Jag skulle uppskatta att få en spegel så jag kan se vad som görs under behandlingen	Jag vill att man frågar mig om jag vill ha information om tandborstning / tandtråd	Jag skulle vilja få någon medicin som gör mig mer avslappnad under behandlingen	Jag vill att man visar och berättar vad som sker under behandlingen
		Jag skulle gärna vilja att man börjar lugnt, så att jag känner att jag har kontroll - och att jag klarar av det	Jag vill få olika förslag och möjlighet att vara med och bestämma om behandlingen	Jag önskar att jag kunde slippa ha obehagliga känslor i kroppen när jag går till tandläkaren	Jag vill bli förvarnad om något kan vara farligt på något sätt
			Jag vill att man visar mig respekt, och låter mig bestämma vad som gör ont eller inte		Jag vill ligga ned när jag får bedövning, så att jag inte svimmar
	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad	Annat, skriv själv vad

APPENDIX 2

Webbenkäten (hade annat utseende i web-versionen)

1. Arbetar du med vuxna patienter?

'Ja'; 'Nej'.

Tandläkares möte med tandvårdsrädda patienter

Alla frågor i denna enkät avser behandling av vuxna patienter

2. Vad har du för uppfattning idag om din grundutbildning vad det gäller tandvårdsrädsla?

'Hade velat ha mer'; 'Lagom'; 'Hade velat ha mindre'; eller 'Fick ingen'.

3. Har du gått någon kurs i ämnet tandvårdsrädsla/ patientomhändertagande efter din examen?

'Ja, enstaka'; 'Ja, flera'; eller 'Nej'.

4. Har du vid något eller några tillfällen sökt stöd eller information från nedanstående källor inför behandling av en tandvårdsrädd vuxen patient vad det gäller rädslan?

'Ja'; 'Nej'

5. Om ja, vilka?

'Internet'; 'Kollega på kliniken'; 'Vetenskapliga artiklar'; 'Sjukhustandvården'; 'Psykolog eller liknande', eller 'Annan'.

6. Upplever du att tandvårdsrädsla är ett problem inom tandvården?

'Ja, man borde lägga mer focus på det'; 'Ja, men det är inte mycket att göra åt'; 'Ja, men det finns annat som är viktigare'; eller 'Nej, inte speciellt'.

7. Känner du dig stressad inför behandling av en patient som du vet är tandvårdsrädd?

Skala från 1 till 5 ('Alltid'; 'Ofta'; 'Ibland'; 'Sällan'; eller 'Aldrig').

8. Sätter du upp längre tid för undersökning och behandling av en vuxen patient som du vet är tandvårdsrädd?

Skala från 1 till 5 ('Alltid'; 'Ofta'; 'Ibland'; 'Sällan'; eller 'Aldrig').

9. Anpassar du din terapiplan till patientens tandvårdsrädsla?

Skala från 1 till 5 ('Alltid'; 'Ofta'; 'Ibland'; 'Sällan'; eller 'Aldrig').

10. Behandlar du en vuxen tandvårdsrädd patient utifrån vad du lärt dig? (Du kan ange flera svar)

'I din utbildning'; 'I vidareutbildning'; eller 'Av erfarenhet'.

11. Behandlar du själv vuxna tandvårdsrädda patienter med hjälp av?

'Lustgas'; 'Midazolam'; 'Lugnande tabletter'; 'Avslappning'; 'Distraktion'; 'Tillvänjning, som Tell-Show-Do'; och 'Hypnos'.

Anges för varje teknik på en skala 1 till 5 ('Alltid'; 'Ofta'; 'Ibland'; 'Sällan'; eller 'Aldrig').

12. Har du kompetens i de nämnda teknikerna?

'Lustgas'; 'Midazolam'; 'Lugnande tabletter'; 'Avslappning'; 'Distraktion'; 'Tillvänjning, som Tell-Show-Do'; och 'Hypnos'.

Anges för varje teknik: Har kompetens; Har ingen kompetens; Skulle vilja ha kompetens.

13. Remitterar du tandvårdsrädda patienter till narkosbehandling?

Skala från 1 till 5 ('Alltid'; 'Ofta'; 'Ibland'; 'Sällan'; eller 'Aldrig').

14. Hur tycker du att det är att behandla en tandvårdsrädd vuxen patient? (Välj de viktigaste alternativen för dig, max 3 st)

'Stressande'; 'Jobbigt'; 'En positiv utmaning'; 'Spännande'; 'Skulle helst slippa'; 'Känns att man gör en insats'; 'Ekonomiskt belastande'; eller 'Annat'.

15. Upplever du dig vara bra på att behandla tandvårdsrädda vuxna patienter?

'Ja, mycket'; 'Ja, ganska'; 'Nej, inte speciellt'; eller 'Nej, inte alls'.

16. Finns det möjlighet till fobibehandling enligt Tandvårdsstödet i den region där du arbetar?

'Ja'; 'Nej'; eller 'Vet inte'.

17. Om ja, har du någon gång remitterat en patient till en sådan behandling?

'Ja'; 'Nej'

18. Hur upplever du det själv att gå till tandläkaren?

'Jag bryr mig inte alls'; 'Jag tycker inte om det eller tycker det är ganska obehagligt'; 'Jag är mycket rädd eller tycker det är mycket obehagligt'; eller 'Jag är livrädd'.

19. Din ålder

'24 – 30 år'; '31 – 40 år'; '41 – 50 år'; or 'äldre än 50 år'.

20. Kön

'Man'; 'Kvinna'

21. Din arbetstid som tandläkare i procent (%)

Skala från 0–100.

22. Ungefär hur stor andel av dina patienter är vuxna? (%)

Skala från 0–100.

23. Ungefär hur stor andel av dina vuxna patienter är tandvårdsrädda? (%)

Skala från 0–100.

24. Vilken är din utbildningsort/land?

'Stockholm'; 'Göteborg'; 'Umeå'; 'Malmö'; eller 'Annat land, specificerat'.

25. Hur många år har du praktiserat som tandläkare?

'0 – 1 år'; '2 – 5 år'; '6 – 15 år'; eller 'mer än 15 år'.

26. Dina eventuella kommentarer till denna enkät.

APPENDIX 3

(Före period ett) Kod: ____

ENKÄT TANDVÅRDSPERSONAL (1)

Konfidentiellt

Kön? ❒ Man ❒ Kvinna

Ditt yrke? ❒ Tandläkare ❒ Tandhygienist ❒ Tandsköterska

Hur många år har du arbetat i yrket?

❒ 0-3 år ❒ 4-12 år ❒ mer än 12 år

Har du gått någon kurs i ämnet tandvårdsrädsla/patientomhändertagande efter din examen?

❒ Nej ❒ Ja, enstaka ❒ Ja, flera

Hur upplever du din kompetens att behandla tandvårdsrädda vuxna patienter?

❒ Mycket låg ❒ Ganska låg ❒ Ganska hög ❒ Mycket hög

Hur tycker du att det är att behandla tandvårdsrädda vuxna patienter?

Positivt utmanande ❒ Inte alls ❒ Något ❒ Ganska mycket ❒ Mycket

Viktigt ❒ Inte alls ❒ Något ❒ Ganska mycket ❒ Mycket

Psykologiskt stressande ❒ Inte alls ❒ Något ❒ Ganska mycket ❒ Mycket

Ekonomiskt stressande ❒ Inte alls ❒ Något ❒ Ganska mycket ❒ Mycket

Egna kommentarer till frågan:

_____

_____

Ungefär hur stor andel av dina vuxna patienter uppskattar du känner oro och rädsla i samband med behandling?

_____(%)

APPENDIX 4

(Efter period ett) Kod: ____

ENKÄT TANDVÅRDSPERSONAL (2)

Konfidentiellt

Hur upplever du din kompetens att behandla tandvårdsrädda vuxna patienter?

❒ Mycket låg ❒ Ganska låg ❒ Ganska hög ❒ Mycket hög

Hur tycker du att det är att behandla tandvårdsrädda vuxna patienter?

Positivt utmanande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Viktigt	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Psykologiskt stressande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Ekonomiskt stressande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket

Egna kommentarer till frågan:

_____

_____

_____

Ungefär hur stor andel av dina vuxna patienter uppskattar du känner oro och rädsla i samband med behandling?

_____(%)

APPENDIX 5

(Efter period två, interventionsgruppen) Kod:___

ENKÄT TANDVÅRDSPERSONAL (3)

Konfidentiellt

Hur upplever du din kompetens att behandla tandvårdsrädda vuxna patienter?

❒ Mycket låg ❒ Ganska låg ❒ Ganska hög ❒ Mycket hög

Hur tycker du att det är att behandla tandvårdsrädda vuxna patienter?

Positivt utmanande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Viktigt	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Psykologiskt stressande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket
Ekonomiskt stressande	❒ Inte alls	❒ Något	❒ Ganska mycket	❒ Mycket

Egna kommentarer till frågan:

_____

_____

Ungefär hur stor andel av dina vuxna patienter uppskattar du känner oro och rädsla i samband med behandling?

_____(%)

Vilka fördelar respektive nackdelar har enligt din mening den strukturerade behandlingsmodellen?

_____

_____

Är det något du skulle vilja ändra på i den strukturerade behandlingsmodellen, i så fall vad?

_____
_____

Hur är det att använda den strukturerade behandlingsmodellen jämfört med hur du arbetade tidigare, avseende att identifiera tandvårdsrädsla?

❒ Sämre än tidigare ❒ Ingen skillnad mot tidigare ❒ Bättre än tidigare

Hur är det att använda den strukturerade behandlingsmodellen jämfört med hur du arbetade tidigare, avseende att *fokusera på patienters behov?*

❒ Sämre än tidigare ❒ Ingen skillnad mot tidigare ❒ Bättre än tidigare

Hur är det att använda den strukturerade behandlingsmodellen jämfört med hur du arbetade tidigare, avseende att *kommunicera med patienter?*

❒ Sämre än tidigare ❒ Ingen skillnad mot tidigare ❒ Bättre än tidigare

APPENDIX 6

KOD: ____

POST-TREATMENT CARE PROVIDER RATING

Jag är ❒ Tandläkare ❒ Tandhygienist ❒ Tandsköterska

Ny patient för mig som behandlare ❒ Ja ❒ Nej

1. Hur upplevde du patienten idag?

I. ❒ Patienten är helt avslappnad. Behandling kan genomföras utan några problem.

II. ❒ Patienten är väl avslappnad, även om en viss spänning kan märkas. Inga behandlingsproblem.

III. ❒ Patienten är ganska avslappnad. Behandling kan genomföras med anpassning till patientens reaktioner.

IV. ❒ Patienten är inte avslappnad. Behandling kan med svårighet genomföras efter stor anpassning till patientens reaktioner.

V. ❒ Patienten går med på att försöka behandling, men är så spänd eller reagerar på annat sätt så att behandling är praktiskt ogenomförbar.

VI. ❒ Patienten vägrar behandling.

Vilken behandling har utförts idag?
Du kan välja ett eller flera alternativ.

2. ❒ Undersökning 3. ❒ Bedövning 4. ❒ Sedering

5. ❒ Polering 6. ❒ Depuration 7. ❒ Lagning

8. ❒ Rotbehandling 9. ❒ Tandextraktion 10. ❒ Operation

11. ❒ Avtryckstagning 12. ❒ Protetik 13. ❒ Bettskena

14. ❒ Övrigt. Vad? _____

APPENDIX 7

Kod: ____

PATIENTENKÄT ***(fylls i före behandling)***

Kön? ❒ Man ❒ Kvinna

Ålder? **……**

1. Är du rädd för att gå till tandläkaren?

❒ Nej

❒ Lite

❒ Ja ganska

❒ Ja mycket

2. Vet du vad som ska hända vid besöket idag?

❒ Ja ❒ Nej

Om ja, välj ett eller flera alternativ

2. ❒ Undersökning
3. ❒ Bedövning
5. ❒ Polering
6. ❒ Tandstensborttagning
7. ❒ Lagning
8. ❒ Rotbehandling/rotfyllning
9. ❒ Tandborttagning
12. ❒ Kron-/bro-/protesarbete
14. ❒ Annat. Vad? _____

Hur mycket instämmer du med följande påståenden?

	Inte alls	Lite grann	I viss mån	Ganska mycket	Väldigt mycket
3. Jag känner mig ängslig strax innan jag ska till tandläkaren.					
4. Jag brukar undvika att gå till tandläkaren eftersom jag tycker att det är obehagligt.					
5. Jag känner mig spänd och nervös när jag fått en tid hos tandläkaren.					
6. Jag tror att något riktigt hemskt skulle kunna hända mig om jag gick till tandläkaren.					
7. Jag känner mig rädd när jag är hos tandläkaren.					
8. Mitt hjärta slår snabbare när jag går till tandläkaren.					
9. Jag skjuter på att beställa tid hos tandläkaren.					
10. Inför ett tandläkarbesök tänker jag ofta på allt som kan gå fel.					

Om du i frågorna 3- 10 enbart har angett att du 'inte alls' känner oro eller obehag, så ber vi dig hoppa till sista frågan (27).

Stämmer följande påståenden in på dig?

11. Min rädsla, eller mitt undvikande av tandvård, stör mitt liv påtagligt (vardagliga rutiner, arbete eller studier, sociala aktiviteter eller relationer).

❒ Ja ❒ Nej

12. Jag lider verkligen av att jag är så tandvårdsrädd.

❒ Ja ❒ Nej

13. Jag tycker att min rädsla är överdriven eller orimlig.

❒ Ja ❒ Nej

14. Jag är rädd för att gå till tandläkaren eftersom jag oroar mig för att få en panikattack (t.ex. plötslig rädsla med svettningar, hjärtklappning, rädsla för att dö eller tappa kontroll, bröstsmärtor etc.).

❒ Ja ❒ Nej

15. Jag är rädd för att gå till tandläkaren eftersom jag vanligtvis är väldigt osäker eller besväras av att bli granskad eller bedömd av andra människor.

❒ Ja ❒ Nej

Hur orolig är du för följande när du går till tandläkaren?

	Inte alls orolig	Lite orolig	Något orolig	Ganska orolig	Väldigt orolig
16. Smärtsam eller obehaglig behandling.					
17. Att skämmas eller bli generad.					
18. Att inte ha kontroll över vad som händer.					
19. Att känna illamående eller äckel.					
20. Att känna domning av bedövningen.					
21. Att inte veta vad tandläkaren ska göra.					
22. Kostnaden för tandbehandling.					
23. Nålar eller sprutor.					
24. Att få kräkreflexer eller kvävningskänslor.					
25. Att tandläkaren ska vara osympatisk eller ovänlig.					

26. Är det något annat i tandvården som du är rädd för eller upplever som obehagligt?

_____

_____

27. Den här enkäten har jag besvarat:

- ❒ Enbart före besöket
- ❒ Både före och efter besöket
- ❒ Enbart efter besöket

APPENDIX 8

Kod: ____

PATIENTENKÄT (Fylls i efter behandling)

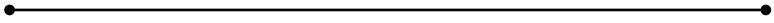
Kommer ej att visas för tandvårdspersonalen.

Markera med ett kryss någonstans på linjen som överensstämmer med vad du kände.

1. Upplevde du smärta i samband med undersökningen/behandlingen idag?

Nej ingen smärta alls — Ja värsta tänkbara smärta

2. Upplevde du annat obehag vid undersökningen/behandlingen?



Nej inget obehag — Ja värsta tänkbara obehag

3. Hur spänd var du under undersökningen/behandlingen?

Helt avslappnad — Mycket spänd

Kryssa för det alternativet som överensstämmer med din uppfattning om besöket hos tandläkaren/tandhygienisten (behandlaren) idag.

4. Behandlaren verkade vara erfaren.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

5. Behandlaren verkade vara skicklig.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

6. Behandlaren var hårdhänt.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

7. Behandlaren gav sig tid att lyssna, och verkade ha förmåga att förstå och sätta sig in i min situation.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

8. Behandlaren verkade arbeta stressigt och jäktat.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

9. Jag tror att behandlaren gav mig en så smärtfri behandling som möjligt.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

10. Behandlaren var överlägsen, nonchalant och kylig.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

11. Behandlaren var lugn, vänlig och omtänksam.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

12. Behandlaren verkade kritisk mot mig och mina tänder.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

13. Behandlaren talade noga om för mig vad som skulle göras i munnen och varför det skulle göras.

Stämmer inte alls ❒ ❒ ❒ ❒ ❒ Stämmer helt

14. Kan du tänka dig att besvara några fler frågor om tre månader?

❒ Ja ❒ Nej

Din e-postadress (om du svarat ja).

_____

Ditt namn och din adress om du saknar e-post?

_____

_____

_____