

## Psychological treatment of dental anxiety among adults

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# Psychological treatment of dental anxiety among adults [Psykologisk behandling av tandvårdsrädsla hos vuxna]

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HTA-centrum of Region Västra Götaland

## Summary of the Health Technology Assessment

### Method and patient group

Severe dental anxiety (phobia) may have substantial impact on a person's life. Not only are individuals with dental anxiety at risk of deterioration of oral health, with pain and dysfunctions, due to avoidance of dental care. The anxiety in itself may also impair their health related quality of life, and lead to general anxiety, or avoidance of social contacts. Therefore, it is equally important to reduce the dental anxiety as it is to treat the oral conditions. Behavioral therapy (BT)/cognitive behavioral therapy (CBT) is the most used psychological treatment for dental anxiety. Pharmacological treatment that may be used refers to dental care under general anesthesia/nitrous oxide sedation or pharmacological sedation. An alternative is conventional adapted dental treatment. This evaluation concerns the psychological treatment of adult dental patients with dental phobia/severe dental anxiety.

### Question at issue

Is BT a more effective treatment for dental phobia or dental anxiety/fear, concerning reduction of dental anxiety and acceptance of conventional dental treatment, than information, pharmacological sedation, experience of dental treatment under general anesthesia or placebo/no treatment?

### PICO (P=Patient I=Intervention C=Comparison O=Outcome)

P = Adults ( $\geq 18$  years) with dental phobia (according to DSM-IV or ICD-10) or severe dental anxiety (according to validated scales/instruments).

I = Behavioral therapy (BT) including cognitive behavioral therapy (CBT), exposure, systematic desensitization, or relaxation therapy.

C = Information, pharmacological sedation, general anesthesia or placebo/no treatment.

O = Level of dental anxiety/fear after intervention (measured with Dental Anxiety Scale [DAS] and Dental Fear Survey [DFS]), Acceptance of conventional (at least one occasion) dental treatment (without pharmacological sedation), Dental "treatability" rating, Quality of life/Oral health related quality of life, and Complications.

### Studied risks and benefits for patients of the new health technology

There is some support that BT gives a clinically relevant reduction of dental anxiety, measured with DAS. Low quality of evidence (GRADE  $\oplus\oplus\circ\circ$ ). There is insufficient support for the effect of behavioral therapy/cognitive behavioral therapy on dental anxiety, measured with DFS. Very low quality of evidence (GRADE  $\oplus\circ\circ\circ$ ). There is some support that behavioral therapy improves the patients' acceptance of conventional dental treatment more than general anesthesia. The quality of evidence is low (GRADE  $\oplus\oplus\circ\circ$ ).

The risks of the studied treatment are not fully evaluated, however all types of exposure based treatments may pose a risk of increased anxiety levels. Dental treatment under general anesthesia is also associated with certain medical risks. Thus, the mortality rate is estimated to <1:100,000 general anesthetic administrations.

The outcomes: 'Quality of life/oral health related quality of life' and 'complications' were not measured in any study.

#### Ethical questions

Besides deterioration of oral health, dental anxiety may impair the health-related quality of life and psychological health. Therefore, it seems important to reduce the dental anxiety in itself, and not only to focus on the oral health-related problems. All exposure based behavioral treatments pose a risk of increased anxiety, since the treatments are initially anxiety provoking. However, dental treatment under general anesthesia/sedation is also associated with certain medical risks.

#### Economical aspects

Estimated costs for BT and pharmacological treatment (i.e. general anesthesia) are 5,500 SEK and 17,000 SEK per patient, respectively. Indirect costs including patient fees have not been possible to estimate.

## Assessed health technology or method

### 1a **Project leader**

Ulla Wide Boman, licensed psychologist, PhD, Clinic of Oral Medicine, Public Dental Service, Region Västra Götaland; and Department of Behavioral and Community Dentistry, Institute of Odontology, Sahlgrenska Academy, University of Gothenburg, Göteborg, Sweden.

### 1b **The question was posed by**

Per-Olof Rödström, Clinical director, Clinic of Oral Medicine, Public Dental Service, Region Västra Götaland, Göteborg, Sweden.

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### 1e **Conflicts of interest for the proposer or any of the participants in the work group**

There are no conflicts of interest.

## Disease/disorder of Interest and Present Treatment

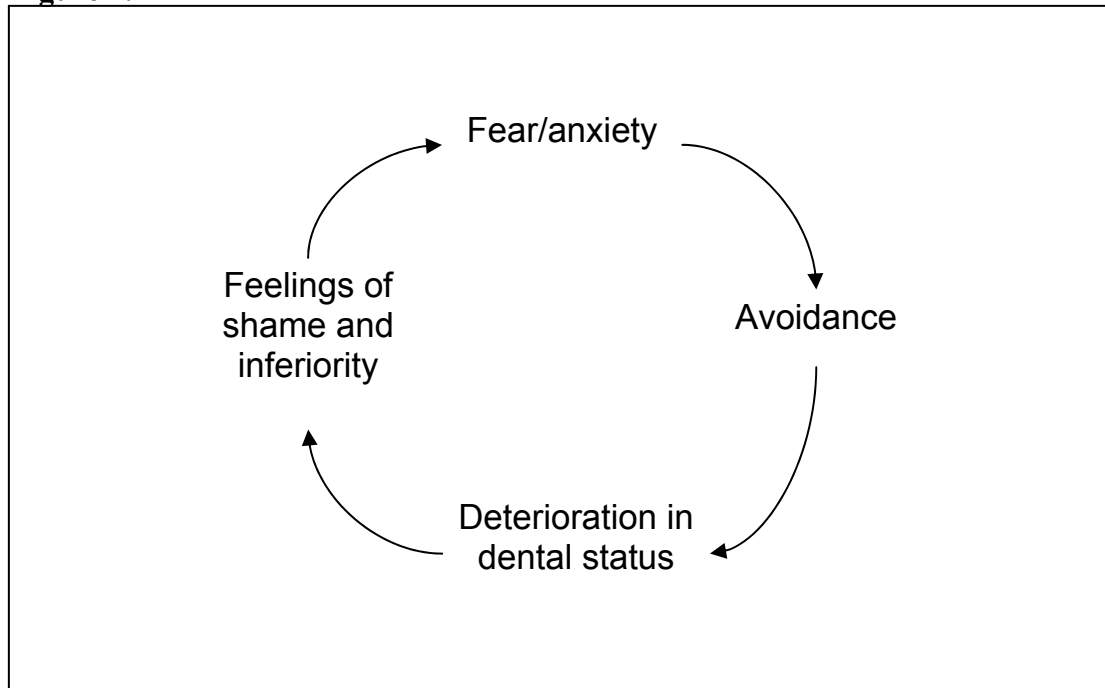
### 2a Disease/disorder of interest and its degree of severity

Dental anxiety is similar to specific phobias, because of the pronounced avoidance tendencies and because it interferes in several ways with the afflicted person's life. The condition often presents serious problems to the providers of dental care. Studies in population samples and clinical samples show that severe dental anxiety is related to poor dental health. Psychological and social problems may accompany individuals with long-standing dental anxiety. Increased levels of general anxiety, psychological symptoms and negative consequences in social relationships have also been reported. Such negative consequences may include embarrassment over poor oral health, reduced self-confidence as well as increased frequency of sick-leave/absence from work, and less involvement in social contexts.

Dental anxiety is often measured using the Dental Anxiety Scale (DAS) (Corah, 1969) and the Dental Fear Survey (DFS) (Kleinknecht *et al.*, 1973). The DAS consists of four items describing imaginary dental situations including 'appointment tomorrow' and different treatment situations. Responses are scored from 1 (no anxiety) to 5 (extreme anxiety), giving total scores varying from 4 to 20. DAS scores of 8 to 9 have been reported in normal patients, and 13 or above among dental phobia patients (Berggren *et al.*, 1985; Corah *et al.*, 1978; Schuurs *et al.*, 1993). The DFS consists of 20 items covering anticipatory anxiety, physiological reactions and situational anxiety. Responses are scored from 1 (no anxiety) to 5 (high intensity of anxiety), giving a total score varying from 20 to 100. The subscales anticipatory anxiety, physiological reactions and situational anxiety have been confirmed by factor analysis (McGlynn *et al.*, 1987), and are usually presented as mean item scores. Average DFS scores range from 35 to 45 in normal patients and are above 60 in patients with extreme dental anxiety (Schuurs *et al.*, 1993).

Berggren (1984) has presented a biopsychosocial vicious circle model (Figure 1) to describe how severe dental anxiety, together with its psychosocial concomitants, shape and maintain the complex odontological psychosocial disorder of severe dental anxiety over time. According to this model, an individual's initial dental anxiety may lead to avoidance of dental care. If the necessary treatment is neglected, deterioration in oral status will start and progress. The individual's increased awareness of dental health problems creates feelings of shame and inferiority in contacts with others, followed by increased dental anxiety, and so on.

**Figure 1.**



- Risk of premature death
- ☑ Risk of permanent illness or damage, or reduced quality of life
- ☑ Risk of disability and health-related quality of life

**2b Prevalence and incidence of the disease/disorder**

The prevalence of dental anxiety has been around 20% in different population based studies (Hakeberg, 1992; Hägglin, 2000). However, severe dental anxiety including dental phobia and avoidance of dental care was reported to approximately 5% (Hakeberg *et al.*, 1992; Vassend, 1993).

**2c Present treatment of the disease/disorder in the outpatient setting/ in-patient setting.**

In Sweden, the National Health Insurance covers the treatment costs of adults with extreme dental anxiety (1,200 SEK per treatment session), regulated by strict criteria concerning the patient, and the professionals delivering the treatment, allowing for a maximum of ten treatment sessions. The patient pays a fee corresponding to the fee charged for visits at the health care centers in the county or region in question (currently 100-300 SEK per visit).

In Region Västra Götaland adult patients with severe dental anxiety are referred to Special Care Dentistry Clinics/Clinics of Oral Medicine. These clinics provide adapted dental care including sedation (general anesthesia) and to varying degree also behavioral interventions for treatment of dental anxiety.

This section includes a brief description of common therapies for dental anxiety. There are two main treatment approaches that have been adopted to dental anxiety/phobia therapy: pharmacological, or psychological treatment modalities. In many cases, these methods are combined to customize individual treatment strategies.

### Pharmacological treatments

Nitrous oxide (N<sub>2</sub>O) sedation, premedication with pharmacological sedatives, and general anesthesia are common methods of choice in Sweden today, while intravenous sedation is only allowed in hospital settings. Premedication with orally administered benzodiazepines is commonly the method of choice, depending on effectiveness and drug prescription rights for dentists. The effects are anxiolytic, sedative, and post-treatment amnesia.

Dental treatment under general anesthesia has been considered the ultimate method to treat severely dentally anxious patients. The obvious advantage is that extensive treatment needs can be resolved during one single (or a limited number) of sessions under general anesthesia. However, during general anesthesia the patients cannot benefit from any positive experiences during conventional dental treatment.

### Psychological treatments

There is a wide range of psychological therapies used for dental anxiety and phobia. Some of the methods require more knowledge from the dentist and possibly a psychologist as therapist. The purpose of any therapy for dental anxiety reduction, pharmacological or behavioral, is to develop a physical and psychological environment where dental treatment can be performed with efficiency, safety and comfort for both the patients and the dentist. Furthermore, the choice of dental anxiety treatment modality is a critical factor, and should be patient centered and not dentist centered. In light of present knowledge, it is timely to require that diagnostic decisions include assessment of the psychological status of the patient, specifically with regard to fear and anxiety. Similarly, treatment planning decisions should require considerations of the most suitable combination of psychological and pharmacological treatment interventions. Among the best documented treatments for dental anxiety are the behaviorally and cognitively oriented techniques, and a combination of both modalities.

## **2d Annual number of patients that undergo the current treatment regimen**

There are no official data on the annual number of adult patients with dental anxiety referred to, and treated at the Public Dental Service, Region Västra Götaland. However, there are seven Special Care Dentistry Clinics/Clinics of Oral Medicine that routinely accept referrals for adult patients with dental anxiety and provide treatments. Approximately 200 new patients with severe dental anxiety attend the Clinic of Oral Medicine in Göteborg (Public Dental Service, Region Västra Götaland) every year; half of them referred from dentists and doctors, half of them through a self-referral system.

## **2e The normal pathway of a patient through the health care system**

Adult patients with dental anxiety are usually referred from general practitioners/physicians, or seek care on a self-referral basis. During the examination phase the patient meets the dentist and the psychologist/psychotherapist for examinations and treatment planning. The patients often have a substantial dental treatment need due to deteriorated oral status, and they also need treatment for their dental anxiety.

Due to the nature of dental anxiety and the associated avoidance behavior towards dental care, many patients have difficulties to attend and carry through a treatment. Another difficulty for patients to undergo treatment may be related to the treatment cost. The specific treatment options for patients with dental anxiety may be less known among the general practitioners and adult patients in the region.

**2f Actual wait time in days for medical assessment /treatment**

The time from referral to treatment is usually 3-6 months.

3a Name/description of the health technology at issue

BT/CBT is today the most accepted psychological treatment for anxiety related to particular situations and objects (specific phobias) (Roth *et al.*, 2005). Today, both behavioral and cognitive interventions are collected under the general term CBT. In clinical practice, behaviorally and cognitively oriented interventions are often combined, and there is clear evidence available for the effectiveness of BT/CBT treatment for anxiety disorders. Although, the underlying reason for treatment of dental anxiety may be to improve the oral health, the anxiety as such may have profound consequences on the affected persons life and well-being. Thus, here we focus on BT and CBT as broad general descriptors of the type of interventions of interest to evaluate for treatment of dental anxiety.

Behaviorally oriented interventions

During *exposure* the patient gradually approaches the anxiety provoking situations and objects identified. The patient is then encouraged to perceive all facets of the anxiety reaction, until the anxiety typically diminishes. The psychologist helps the patient to refrain from previous strategies to avoid the situation and the anxiety reactions. In a dental context, exposure has often been conducted in the form of *systematic desensitization*, which includes a structured use of *relaxation techniques*. *Biofeedback techniques* can also be used to facilitate relaxation training and systematic desensitization.

Cognitively oriented interventions

With *cognitive restructuring* dysfunctional thoughts and images in relation to dental treatment are identified and challenged. *Psycho-education* is used to teach the patient about fear and anxiety reactions, thereby normalizing the reactions. *Coping strategies* such as assertiveness training and information seeking can be used. Treatments vary also depending on who delivers treatment (psychologist/therapist, dentist), mode of delivery (individual or group), length (number of sessions), and special techniques used (biofeedback, film scenes).

The psychological treatment model used at the Clinic of Oral Medicine, Göteborg

A psychologist with formal training in CBT gives the treatment, which usually includes five to seven individual sessions. Treatment sessions are given in a dental treatment room at the clinic. A broad-based package of interventions is described in a manual. The interventions are adapted to each patient following a behavioral functional analysis. Exposure and relaxation interventions are combined, following the focus on systematic desensitization, which has been used since the start in the 1970s. Biofeedback technique may be used to facilitate treatment. Exposure takes place in a dental treatment room with all dental instruments available. However, most important part is to watch film scenes of a non-anxious patient attending a dental treatment. The patient views the scenes sitting in the dental treatment chair. Cognitive restructuring, and coping techniques are also used. Throughout the treatment sessions, behavioral experiments are planned and conducted, by allowing the patient to try out new forms of behavior together with the psychologist and especially in subsequent dental care situations. After a maximum of seven sessions at the psychologist, the patient continues phobia treatment with clinical

rehearsals/confirmatory treatment with the dentist. These sessions also function as further exposure and behavioral experiments.

**3b The work group's understanding of the potential value of the health technology**

Based on several previous scientific publications, we argue that there are additional positive effects of BT/CBT on dental anxiety in adults, compared to conventional pharmacological treatment. Such effects are that the patients learn to manage a conventional dental treatment with decreased levels of anxiety. Components of this effect may be to learn to relax during dental treatment, and to replace dysfunctional thinking patterns about dental care with more functional ones, through new positive experiences of dental care.

The treatment should preferably be provided at Special Care Dentistry Clinics/ Clinics of Oral Medicine. Especially, we would like to point out the necessity of collaboration between dentists and psychologists/psychotherapists.

Treatment should be provided to patients with the most severe form of dental anxiety, including avoidance behavior. But it may also be important to alleviate dental anxiety among those who are anxious, but still visit dental care on a regular basis. The gain would be to minimize a shift towards a more negative dental care behavior including avoidance of dental care.

**3c The central question for the current HTA project in one sentence**

Is BT a more effective treatment for dental phobia or dental anxiety/fear, concerning reduction of dental anxiety and acceptance of conventional dental treatment, than information, pharmacological sedation, experience of general anesthesia or placebo/no treatment?

**3d PICO (*P=Patient I=Intervention C=Comparison O=Outcome*)**

**P** = Adults ( $\geq 18$  years) with dental phobia (according to DSM-IV or ICD-10) or severe dental anxiety (according to validated scales/instruments).

**I** = Behavioral therapy (BT) including cognitive behavioral therapy (CBT), exposure, systematic desensitization, or relaxation therapy.

**C** = Information, pharmacological sedation, general anesthesia or placebo/no treatment.

**O** = Level of dental anxiety/fear after intervention (measured with Dental Anxiety scale [DAS] or Dental Fear Survey [DFS]), Acceptance of conventional (at least one occasion) dental treatment (without pharmacological sedation), Dental "treatability" rating, Quality of life/Oral health related quality of life, Complications.

**3e Key words**

Dental anxiety, Behavior therapy, Adult Tandvårdsrädsla, Beteendeterapi, Vuxna

#### 4 Search strategy, study selection and references –Appendix 3

During September, 2011, two librarians (AL, ME) conducted literature searches in PubMed, The Cochrane Library, EMBASE, CINAHL, PsycInfo and a number of HTA-databases. Reference lists of relevant articles were scrutinized for additional references. After removal of duplicates, a total of 990 articles were identified, of which the librarians excluded 848 abstracts. After been read in full text by the librarians, 86 additional articles were excluded. Fifty-six articles were sent to the work group for assessment. Ten of these articles were included in the report, and were critically appraised according to checklists for randomized controlled trials (SBU, 2012). Search strategies, eligibility criteria and a graphic presentation of the selection process are accounted for in Appendix 3. The librarians conducted the literature searches and excluded the abstracts in consultation with the HTA-centre and the work group.

##### 5a Describe briefly the present knowledge of the health technology

The systematic literature review identified ten RCT publications fulfilling the PICO (four of moderate and six of low quality), comprising seven different trials. Five of the publications emanated from two different RCTs.

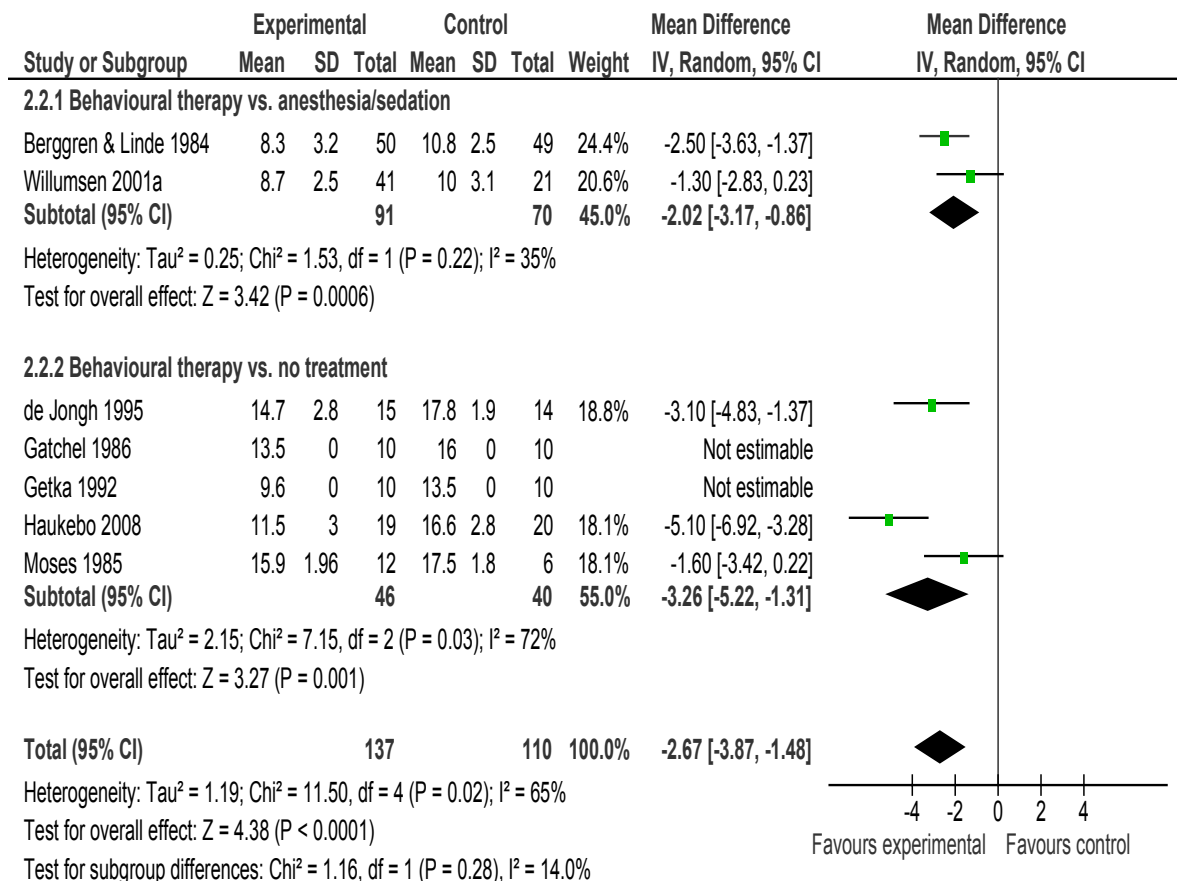
Berggren (1986), and Berggren & Linde (1986) compared BT with dental care under general anesthesia. The BT was given by a psychologist, with an average of six sessions. Willumsen *et al.*, (2001a, 2001b), and Willumsen & Vassend (2003) compared three different treatments: CBT, applied relaxation, and nitrous oxide sedation. A CBT trained dentist gave the treatment. De Jongh *et al.*, (1995) evaluated a one session cognitive treatment, information, and waiting list. The treatment was given by a dentist/psychologist. Gatchel (1986) tested a 30 minute videotaped dental anxiety reduction program with behavioral techniques versus a placebo condition. Getka & Glass (1992) compared BT, CBT, positive dental experience, and waiting list controls. Haukebø *et al.*, (2008) tested one and five-session exposure treatments versus a waiting list. A dentist with special training in CBT gave the treatment. Moses *et al.*, (1985) tested stress inoculation, coping skills, education, and waiting list, with a psychologist giving the treatments.

##### Level of dental anxiety measured with DAS and DFS

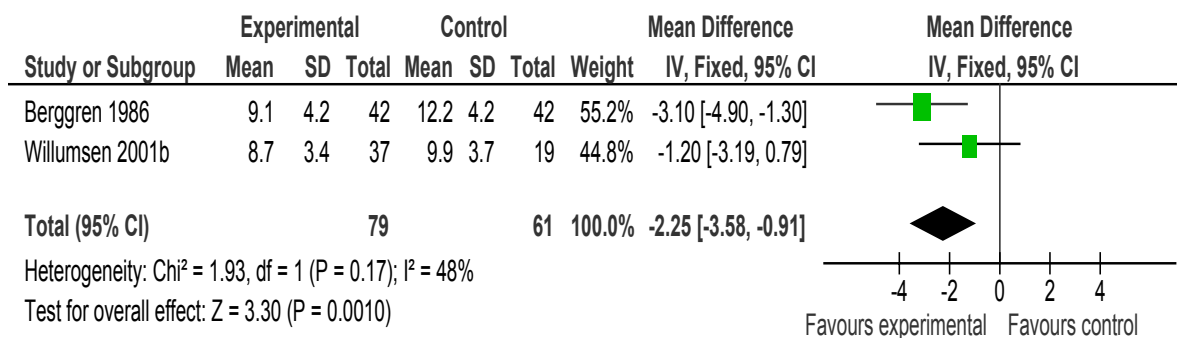
Ten RCT publications (seven trials) reported treatment effect on dental anxiety, as measured with the DAS scale (Appendix 1a). A meta-analysis showed statistically significant and clinically relevant, decreased level of dental anxiety with a mean of 2.7 DAS scores (Figure 2). Subdividing the studies according to type of controls, showed decreased DAS score with a mean of 2.0 for BT compared to anesthesia/sedation (two RCT, n=161), and with a mean of 3.3 DAS scores for BT compared to no treatment (three RCT, n=86). Follow-up data at 1-2 years, for BT compared to anesthesia/sedation (two reports, n=140), showed a decreased level of dental anxiety by a mean of 2.2 DAS scores. (Figure 3).

Conclusion: There is some support that behavioral therapy gives a clinically relevant reduction of dental anxiety, measured with DAS. Low quality of evidence (GRADE ⊕⊕○○).

**Figure 2. Behavioral therapy versus controls:  
Outcome DAS after treatment**



**Figure 3. Behavioral therapy versus anesthesia /sedation:  
Outcome DAS long term (1-2 years)**



Four RCTs (two trials) also reported effect on dental anxiety, measured with the DFS scale (Appendix 1b). Only one of the studies demonstrated a statistically significant reduction in dental anxiety. No meta-analysis could be performed for outcomes measured with the DFS-scale, due to inconsistencies in the data reported (different subscales used, different versions of the scale).

Conclusion: There is insufficient support for the effect of BT/CBT on dental anxiety, measured with DFS. Very low quality of evidence (GRADE ⊕○○○).

Acceptance of conventional dental treatment (without sedation/anesthesia), dental "treatability" rating

One RCT of moderate quality reported a statistically significant positive effect of BT on acceptance of conventional dental treatment, compared to general anesthesia, with 80% successful dental sessions in the BT group, and 53% in the general anesthesia group. Conclusion: There is some support that behavioral therapy improves the acceptance of conventional dental treatment more than general anesthesia. Low quality of evidence (GRADE ⊕⊕○○).

Quality of life/Oral health related quality of life

The outcome was not measured.

Complications

The outcome was not measured in the included publications, for any of the studied treatments or methodologies. In the literature, complications are found, e.g. in relation to general anesthesia, but at very low prevalence rates. Thus, the mortality rate is estimated to <1:100,000 general anesthetics (Messieha, 2009).

**5b Outcome tables – Appendix 1**

**5c Excluded articles – Appendix 2**

**5d Ongoing research**

A search was conducted in the Clinical Trials database (2011-10-18), [www.clinicaltrials.gov](http://www.clinicaltrials.gov), using the search terms: "Dental Anxiety" OR "Dental Anxieties" OR "Dental Fear" OR "Dental Fears" OR "Odontophobia" OR "Odontophobias" OR "Dental Phobia" OR "Dental Phobias" OR "Dental Phobic" OR "Dental Phobics".

Nine trial protocols were identified, six of which were irrelevant, and three were RCT protocols with behavioral approach on dental anxiety. One trial was recruiting, one was active (not recruiting), whereas one was completed, and subsequently published (Humphris *et al.*, 2006).

The completed trial by Humphris *et al.*, (2006) aimed to replicate Dailey *et al.*, (2002) which showed that providing the dentist with information of the high level of a patient's dental anxiety prior to treatment led to reduction in anxiety from pre- to post- dental consultation. Humphris *et al.* (2006), however, failed to show significant effect of this intervention on state anxiety. None of these studies were concurrent with the addressed PICO.

**6 Medical societies or health authorities recommend the new health technology**

- The National Board of Health and Welfare**
- Medical societies**
- Other health authority**

The group is not aware of any such recommendations.

## Ethical aspects

### 7 Ethical consequences

Dental anxiety in itself may have a substantial impact on a person's life. Not only are patients with dental anxiety at risk to suffer from impaired (oral) health, pain, and oral dysfunctions due to avoidance of dental care. The anxiety may impair the health related quality of life, and also lead to general anxiety and/or to avoidance of social contacts. Therefore, it seems equally important to reduce the dental anxiety, as it is to treat the related oral conditions. As with all exposure based behavioral treatments there is a risk of increased anxiety level, since the treatment initially is anxiety provoking. However, conventional treatment of dental anxiety patients under general anesthesia and/or sedation is associated with certain medical risks.

## Organisation

### 8a When can this new health technology be put into practice?

The evaluated treatment is already in use.

### 8b Is this technology used in other hospitals in the Region Västra Götaland in Sweden?

There are seven Special Care Dentistry Clinics in the Region Västra Götaland accepting referrals and giving pharmacological treatments for adult patients with dental anxiety. The group is not aware of other clinics providing the evaluated behavioral treatment than the Special Care Dentistry Clinic/Clinic of Oral Medicine, in Göteborg.

### 8c According to the work group, will there be any consequences of the new health technology for personnel?

Collaboration between dentists and psychologists/psychotherapists' is required for this treatment modality (BT/CBT). The Public Dental Service would need to employ more psychologists/psychotherapists, since this is a function required by the National Dental Insurance for dental phobia treatment in adult patients.

### 8d Will there be any consequences for other clinics or supporting functions at the hospital or in the whole Region Västra Götaland in Sweden?

The number of general anesthesia sessions for dental care is likely to decrease over time in response to BT, which undoubtedly will implicate savings.

## Economy

### 9a Present costs of currently used technologies

The estimated cost for providing BT/CBT at a clinic with an employed psychologist is approximately 5,500 SEK per patient (8 sessions).

The estimated additional cost of a dental treatment under general anesthesia is 17,000 SEK per patient (Clinic of Oral Medicine, Public Dental Service, Göteborg).

Indirect costs including patient fees has not been possible to estimate, but the National Health Insurance subsidizes a maximum of ten BT/CBT sessions.

### 9b Expected costs of the new health technology

See 9a

### 9c Total change of cost

The group argues that the cost of behavioral treatments would be beneficial for public dental service.

### 9d Can the new technology be adopted and used within the present budget (clinic budget/hospital budget)?

It is already in use.

### 9e Available analyses of health economy, cost advantages or disadvantages

No such analyses are available.

## Unanswered Questions

### 10a Important gaps in scientific knowledge

There is a need for well-designed studies, both RCTs and observational studies, since the present HTA report has identified significant gaps in the current knowledge.

Especially there is a need for evaluations with clinically relevant outcome measures (acceptance of dental treatment, quality of life, dental status) and long-term follow-ups. In addition, in order to understand and appraise the impact of dental anxiety on community level, epidemiological data on the incidence and prevalence are needed. It would also be valuable to gain knowledge about the referral processes and care proceedings for patients with dental anxiety.

### 10b Is there any interest in your own clinic/research group/organisation to start studies/trials within the research field at issue?

Yes. The Clinic of Oral Medicine, Public Dental Service, and the Department of Behavioral and Community Dentistry, Institute of Odontology have the prerequisites to conduct such studies (see 10a).

## Statement from the HTA-centrum of Region Västra Götaland, Sweden

### Psychological treatment of dental anxiety among adults

#### Method and patient category:

Severe dental anxiety (phobia) has substantial impact on a person's life. Not only are individuals with dental anxiety at risk of deterioration of oral health, with pain and dysfunctions due to avoidance of dental care. The dental anxiety in itself may also impair their health related quality of life and lead to general anxiety, or to avoidance of social contacts. Therefore, reducing the dental anxiety is often just as important as treatment of the oral conditions. The standard treatments are pharmacological (sedation, general anesthesia) or psychological interventions. Treatment of patients with dental anxiety/phobia aims at reducing the levels of dental anxiety and to improve the oral status.

#### Question at issue:

Is behavioral therapy a more effective treatment for dental phobia or dental anxiety/fear, concerning reduction of dental anxiety and acceptance of conventional dental treatment, than information, pharmacological sedation, experience of dental treatment under general anesthesia or placebo/no treatment?

#### PICO (Patient, Intervention, Comparison, Outcome)

**P** = Adults ( $\geq 18$  years) with dental phobia (according to DSM-IV or ICD-10) or severe dental anxiety (according to validated scales/instruments).

**I** = Behavioral therapy including cognitive behavioral therapy, exposure, systematic desensitization, or relaxation therapy.

**C** = Information, pharmacological sedation, general anesthesia or placebo/no treatment.

**O** = Level of dental anxiety/fear after intervention (measured with Dental Anxiety Scale [DAS] or Dental Fear Survey [DFS]), Acceptance of conventional (at least one occasion) dental treatment (without pharmacological sedation), Dental 'treatability' rating, Quality of life/Oral health related quality of life, Complications.

#### Level of evidence:

The systematic literature review identified ten publications of low or moderate quality, comprising seven different randomized controlled trials (RCTs).

#### *Level of dental anxiety measured with validated scales (DAS/DFS)*

After behavioral therapy a clinically relevant decrease in the level of dental anxiety (measured with DAS) was evident, both in comparison with general anesthesia/sedation and no treatment (5 RCTs). Follow-up studies comparing behavioral therapy with general anesthesia/sedation showed a sustained effect after 1-2 years.

Conclusion: There is some support that behavioral therapy gives a clinically relevant reduction of dental anxiety, measured with DAS. Low quality of evidence (GRADE  $\oplus\oplus\circ\circ$ ).

One trial demonstrated a statistically significant reduction in dental anxiety (measured with DFS), whereas another failed to do so.

Conclusion: There is insufficient support for the effect of behavioral therapy on dental anxiety, measured with DFS. Very low quality of evidence (GRADE  $\oplus\circ\circ\circ$ ).

#### *Acceptance of conventional dental treatment (without sedation), dental 'treatability' rating*

One RCT of moderate quality reported an increased acceptance rate of conventional dental treatment with behavioral therapy (80%) compared to general anesthesia (53%).

Conclusion: There is some support that behavioral therapy improves the acceptance of conventional dental treatment. The quality of evidence is low (GRADE  $\oplus\oplus\circ\circ$ ).

The risks of the studied treatment are not fully evaluated. All types of exposure based treatments may initially pose a risk of increased anxiety levels. Also dental treatment under general anesthesia is associated with certain medical risks, with an estimated mortality rate of <1:100,000 general anesthetic administrations.

The outcomes: *quality of life/oral health related quality of life* and *complications* were not measured in any study.

Ethical aspects:

Besides deterioration of oral health, dental anxiety may impair the health related quality of life, and lead to general anxiety, or to avoidance of social contacts. Therefore, it seems important to reduce the dental anxiety in itself, and not only focus on oral health related problems. All exposure based behavioral treatments pose a risk of increased anxiety, since the treatments are anxiety provoking. Dental treatments under general anesthesia or pharmacological sedation are also associated with certain medical risks.

Economical aspects:

Estimated cost per patient is 5,500 SEK for behavioral therapy, and 17,000 SEK for general anesthesia.

Concluding remarks:

Patients with severe dental anxiety avoid dental care, which may result in impaired quality of life and deterioration of oral health. Dental treatments under general anesthesia are costly and associated with certain medical risks. There is some support that behavioral therapy reduces dental anxiety more than general anesthesia/sedation or no treatment and improves acceptance of conventional dental treatment (GRADE ⊕⊕○○).

The Regional Health Technology Assessment Centre (HTA-centrum) of Region Västra Götaland, Sweden (VGR) has the task to make statements on HTA reports carried out in VGR. The statement should summarise the question at issue, level of evidence, efficacy, risks, and economical and ethical aspects of the particular health technology that has been assessed in the report.

The HTA was accomplished during the period of 2011-09-07—2012-04-25.

Last search updated in September 2011.

On behalf of the HTA quality assurance group, in Region Västra Götaland, Göteborg, Sweden, 2012-04-25

Christina Bergh, Professor, MD  
Head of HTA-centrum of Region Västra Götaland, Sweden

HTA quality assurance group, in Region Västra Götaland, Sweden

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Peter Johansson  
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Anders Larsson  
MD, PhD  
Christian Rylander  
MD  
Ola Samuelson  
MD, PhD  
Henrik Sjövall  
MD, Professor  
Petteri Sjögren  
DDS, PhD

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MD, PhD  
Therese Svanberg  
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MD, PhD

## Utlåtande och sammanfattande bedömning från Kvalitetssäkringsgruppen

### Psykologisk behandling av tandvårdsrädsla hos vuxna

#### Metod och målgrupp:

Svår tandvårdsrädsla (ångest/fobi) kan ha betydande inverkan på en persons liv. Individer med tandvårdsrelaterad ångest riskerar försämrad munhälsa, undvikande av tandvård, försämrad hälsorelaterad livskvalitet, generella ångesttillstånd och undvikande av sociala sammanhang. Därför är det ofta lika viktigt att minska den tandvårdsrelaterade ångesten som det är att behandla munhålets sjukdomar. Nuvarande standardbehandling är farmakologisk (sedering, generell narkos) eller psykologisk. Behandlingen syftar till att minska den svåra tandvårdsrädslan/ångesten och att förbättra den orala hälsan.

Frågeställning: Är beteendeterapi en effektivare behandling mot tandvårdsfobi eller svår tandvårdsrelaterad ångest/rädsla, avseende minskning i tandvårdsrädsla/ångest och acceptans för konventionell tandbehandling, än information, farmakologisk sedering, narkostandvård eller placebo/ingen behandling?

#### PICO: (Patient, Intervention, Comparison, Outcome)

- P = Vuxna ( $\geq 18$  år) med tandvårdsfobi (enligt DSM-IV eller ICD-10) eller allvarlig tandvårdsrelaterad ångest (uppmätt med validerade instrument).
- I = Beteendeterapi inklusive kognitiv beteendeterapi, exponering, systematisk desensibilisering, eller avslappningsbehandling.
- C = Information, farmakologisk sedering, narkos, eller placebo/ingen behandling.
- O = Nivå av tandvårdsrädsla/ångest efter intervention (uppmätt med Dental Anxiety Scale [DAS] eller med Dental Fear Survey [DFS]), samt "behandlingsbarhet", livskvalitet/munhälsorelaterad livskvalitet, komplikationer.

#### Evidensläge för studerad patientnytta:

Den systematiska litteratursökningen resulterade i tio publikationer av låg och medelhög kvalitet. Dessa publikationer hade sitt ursprung i sju randomiserade kontrollerade studier (RCT).

#### *Nivå av tandvårdsrelaterad ångest uppmätt med validerade skalor (DAS/DFS)*

Efter beteendeterapi sågs en kliniskt relevant minskning av ångestnivån (uppmätt med DAS), både i jämförelse med narkostandvård/sedering och med ingen behandling. Uppföljning av dessa studier efter 1-2 år visade på kvarstående effekter.

Slutsats: Det finns visst stöd för att beteendeterapi kan minska den tandvårdsrelaterade ångestnivån, uppmätt med DAS, i större utsträckning än narkostandvård/farmakologisk sedering eller ingen behandling. Begränsat vetenskapligt underlag (GRADE  $\oplus\oplus\circ\circ$ ).

En RCT visade statistiskt säkerställd minskning av ångestnivå (uppmätt med DFS), medan en annan inte kunde säkerställa någon skillnad.

Slutsats: Det finns otillräckligt stöd för om beteendeterapi har effekt på tandvårdsrelaterad ångest, uppmätt med DFS. Otillräckligt vetenskapligt underlag (GRADE  $\oplus\circ\circ\circ$ ).

#### *Acceptans av konventionell tandbehandling (utan sedering/narkos), "behandlingsbarhet"*

En RCT av medelhög kvalitet rapporterade högre nivå av acceptans av konventionell tandbehandling med beteendeterapi (80%) än med narkos (53%).

Slutsats: Det finns visst stöd för att beteendeterapi kan öka acceptansen för konventionell tandbehandling. Begränsat vetenskapligt underlag (GRADE  $\oplus\oplus\circ\circ$ ).

Riskerna för den studerade behandlingen har inte utvärderats fullständigt, men alla typer av exponeringsbaserade behandlingar kan initialt medföra en risk för ökade ångestnivåer. Dock är även narkostandvård förenad med vissa medicinska risker, där dödligheten är beräknad till < 1:100,000 narkostillfällen.

Utfallen ”livskvalitet/munhälsorelaterad livskvalitet” samt ”komplikationer” mättes inte i någon studie.

#### Etiska aspekter:

Förutom försämring av munhälsan, kan tandvårdsrelaterad ångest försämra den hälsorelaterade livskvaliteten och leda till generella ångesttillstånd, samt till undvikande av sociala sammanhang. Därför anses det viktigt att minska den tandvårdsrelaterade ångesten och inte enbart fokusera på de munhälsorelaterade problemen. Alla exponeringsbaserade behandlingar utgör en risk för ökad ångest, eftersom de är ångestprovocerande. Dock är tandvård under narkos/farmakologisk sedering också förenad med vissa medicinska risker.

#### Ekonomiska aspekter

Den uppskattade kostnaden för beteendeterapi är 5 500 SEK per patient, och 17 000 SEK per patient för narkostandvård.

#### Sammanfattning och slutsats

Patienter med svår tandvårdsrelaterad ångest undviker tandvård vilket kan resultera i försämrad livskvalitet och försämring av munhälsan. Narkostandvård är kostsamt och förenat med vissa medicinska risker. Det finns visst stöd för att beteendeterapi kan minska tandvårdsrelaterad ångest i större utsträckning än narkos/farmakologisk sedering eller ingen behandling och öka acceptansen för konventionell tandvård (GRADE ⊕⊕○○).

HTA-kvalitetssäkringsgruppen har ett uppdrag att yttra sig över genomförda HTA i Västra Götalandsregionen. Yttrandet skall innefatta sammanfattning av frågeställning, samlat evidensläge, patientnytta, risker samt ekonomiska och etiska aspekter för den studerade teknologin.

Projektet har pågått under perioden 2011-09-07—2012-04-25.  
Sista uppdatering av artikelsökning 2011-09.

För HTA-kvalitetssäkringsgruppen 2012-04-25

Christina Bergh  
Ordförande

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Appendix 1a Project: Psychological treatment of dental anxiety among adults

Outcome variable: Dental Anxiety Scale (DAS)\*

Author, year	Country	Study design	Number of patients n=	With drawals - dropouts	Result mean (SD)		Comments	Quality (may vary according to outcome)
					Intervention	Control		
Berggren & Linde 1984	Sweden	RCT	99 50/49	-	Behavioral therapy (BT) 5-7 sessions 8.3 (3.2)	General anesthesia (GA) 10.8 (2.5) p<0.001	Before treatment: BT 16.6 (3.1) GA 16.7 (2,4) 13 vs 6 non-compliance	Moderate
Berggren 1986	Sweden	RCT (same pop as above)	99	15 6/9	Behavioral therapy 9.1 (4.2) n=44	General anesthesia 12.2 (4.2) n=40 p<0.05	2 yr follow-up of B&L-84	Moderate
de Jongh 1995	The Netherlands	RCT	29 15/14/23	9	1 hour cognitive intervention (CT) n=15 1 Month 14.7 (2.8)	Information intervention (II) n=14 1 month 17.8 (1.9) p<0.05	Before treatment: CT 17.5 (1.5) II 17.8 (2.2) No post test DAS for wait list n= 23	Low
			29	8	One year follow up 11.6 (3.2)	One year follow up 11.4 (3.2)		
Gatchel 1986	USA	RCT	20	?	Videotaped treatment 13.5 6 month follow up 13.3	16.0 6 month follow up 15.8	Before treatment: Video 16.6, Control 16.2 SD not available	Low
Getka 1992	USA	RCT	41	?	Behavioral therapy (BT) 9.60 Cognitive behavior therapy (CBT) 9.64	Waitlist 13.50 Positive Dental Experience (PDE)14.9 p<0.0001	Before treatment: BT 15.40, CBT (6 sessions) 14.91 Waitlist 14.9. PDE 15.8 SD not available	Low
			41	6	1 yr follow-up BT 9.6			
Haukebo 2008	Norway	RCT	40 10/10/20	1	1 (n=9) or 5 (n=10) sessions Exposure therapy 11.5 (3.0), n=19	Waitlist (n=20) 16.6 (2.8) p<0.01	Before treatment: Exposure therapy 17.2 (2.2) 1 session 16.6 (2.0) 5 sessions 16.6 (2.8) Waitlist 17.00 (2.8)	Low
			40	5	1 yr follow-up: n=35 1 session 10.4 (3.2) 5 sessions 10.1 (3.2)			

Appendix 1a Project: Psychological treatment of dental anxiety among adults

Outcome variable: Dental Anxiety Scale (DAS)\*

Author, year	Country	Study design	Number of patients n=	With drawals - dropouts	Result mean (SD)		Comments	Quality (may vary according to outcome)
					Intervention	Control		
Moses 1985	USA	RCT	24 6/6/6/6	1 replaced	Stress inoculation (SI) 15.6 (1.7) Coping skills (CS) 16.3 (2.3) Education (E) 15.6 (1.7)	Waitlist 17.5 (1.8) p<0.09	Before treatment: SI 16.7 (1.1), CS 17.7 (1.7), E 17.3 (1.7), Waitlist 17.5 (1.3)	Low
Willumsen 2001a (pp 290-296)	Norway	RCT	65 21/20/21	AR =2 NO=1	Cognitive therapy (CT) 9.3 (2.9) n=21 Applied relaxation (AR) 8.1 (1.9) n=20	Nitrous oxide sedation (NO) 10.0 (3.1) n=21 p>0.05	Before treatment: CT: 17.0 (3.0), AR: 17.8 (2.4), NO: 17.0 (3.1) Follow-up at 10 wks	Moderate
Willumsen 2001b (pp 335-340)	Norway	RCT (same pop as above)	62	NO=2 AR=1 CT= 3	Follow up 1 year CT 9.7 (3.5), n=18 AR 7.8 (3.2), n=19	Follow up 1 year NO 9.9 (3.7), n=19 p>0.05		Moderate
Willumsen & Vassend 2003	Norway	RCT (same pop as above)	62	15	Follow up 5 years CT 10.9 (4.3), n=12 AR 9.9 (4.4), n=15	Follow up 5 years NO: 10.6 (3.9), n=14 p>0.05		Low

\* DAS (Dental Anxiety Scale) includes 4 items rated 1-5. A higher rating denotes more dental anxiety. Results presented as mean sum score (range 4-20), cut off for dental phobia > 12

Appendix 1b Project: Psychological treatment of dental anxiety among adults

Outcome variable: Dental Fear Survey (DFS)

Author, year	Country	Study design	Number of patients n=	With drawals - dropouts	Result		Comments	Quality (may vary according to outcome)
					Intervention Mean (SD)	Control Mean (SD)		
Haukebø, 2008	Norway	RCT	40 10/10/20	1	1 (n=9) or 5 (n=10) sessions Exposure therapy 58.4 (14.1), (n=19)	Waitlist (n=20) 75.7 (8.8)  p<0.01 (between groups)	Before treatment: Exposure therapy 78.6 (7.7) Waitlist 75.6 (8.9) DFS * mean sum score Item 1 and 2 omitted in post-treatment assessment in this study	Low
Willumsen, 2001a	Norway	RCT	65 21/20/21	3	Cognitive therapy (CT) (n=21) Arousal 2.6 (1.0) Situation 2.1 (0.7)  Applied relaxation (AR) (n=20) Arousal 2.5 (1.0) Situation 2.4 (1.0)	Nitrous oxide sedation (NO) (n=21) Arousal 2.9 (0.9) Situation 2.7 (0.9)  ns (between groups)	Before treatment: CT Arousal 3.6 (0.9), Situation 4.0 (0.6) AR Arousal 3.7 (0.7), Situation 4.0 (0.6) NO Arousal 3.7 (0.8), Situation 4.2 (0.5)  Two DFS subscales (mean item score).	Moderate
Willumsen, 2001b	Norway	RCT	62	6	CT (n=18) DFS tot 2.5 (0.8) <sup>1</sup> Behavior 3.2 (1.6) <sup>1</sup> Arousal 2.5 (1.0) <sup>2</sup> Situation 2.5 (0.8) <sup>1</sup>  AR (n=19) DFS tot 2.0 (0.7) <sup>1</sup> Behavior 2.2 (1.4) <sup>1</sup> Arousal 2.2 (0.9) <sup>2</sup> Situation 1.8 (0.8) <sup>1</sup>	NO (n=19) DFS tot 2.7 (1.0) <sup>1</sup> Behavior 3.3 (1.2) <sup>1</sup> Arousal 2.6 (1.0) <sup>2</sup> Situations 2.6 (1.0) <sup>1</sup>  <sup>1</sup> AR<NO=CT p<0.05 <sup>2</sup> ns (between groups)	1 year follow-up  DFS mean item score + 3 subscales	Moderate
Willumsen, 2003	Norway	RCT	62	19 (non-respond.) 2 drops.	CT (n=12) DFS tot 2.8 (0.7)  AR (n=15) DFS tot 2.3 (0.9)	NO (n=14) DFS tot 2.7 (0.8)  ns (between groups)	5 year follow-up  DFS mean item score	Low

\* DFS (Dental Fear Survey) includes 20 items rated 1-5. A higher rating denotes more dental anxiety. Results presented as mean sum score (range 20-100), or mean item score (1-5). Cut-off level for dental phobia: DFS score 60. DFS is also divided in three dimensions, presented as mean item score (range 1-5).

Appendix 1c Project: Psychological treatment of dental anxiety among adults.

Outcome variable: Acceptance of dental treatment, dentist treatability rating (combined)

Author, year	Country	Study design	Number of patients n=	With drawals - dropouts	Result mean (SD)		Comments	Quality (may vary according to outcome)
					Intervention	Control		

Berggren, 1984	Sweden	RCT	99 50/49		Behavioral therapy Successful 80% (n=40)	General anesthesia Successful 53% (n=26)  p=0.009 (Chi two test-calculated from data)	Two sessions dental treatment, rating of success or failure made by dentist with dentist rating scale	Moderate
Haukebø, 2008	Norway	RCT	40 10/10/20	1	1 (n=9) or 5 (n=10) sessions Exposure therapy. 92.3% success (completed all 14 steps in behavioral test at post-treatment)	No control according to PICO	Behavioral test 14 steps, from entering room to filling cavity, success rated by dentist	Low

## Appendix 2 Project: Psychological treatment of dental anxiety among adults

### Excluded articles

Study (author, publication year)	Reason for exclusion
Aartman, 1999	Cohort study, no randomization
Aartman, 2000	Cohort study, no randomization
Beck, 1978	No control
Berggren & Carsson, 1986	Duplicate publication with Berggren 1986.
Bernstein, 1982	No RCT
Biggs, 2003	Wrong patients
Coldwell, 2007	Wrong controls
Corah, 1981, Behav res and the	Wrong patients
Corah, 1979, J Dent Res	Wrong patients
Corah, 1979, J Am Dent Assoc	Wrong patients
Corah, 1981, J Am Dent Assoc	Wrong patients
Davies, 2011	Wrong study design
Denney, 1983	Wrong outcome
Gatchel, 1980	Wrong patients
Hakeberg, 1990	Wrong control

## Appendix 2 Project: Psychological treatment of dental anxiety among adults

### Excluded articles

Study (author, publication year)	Reason for exclusion
Hakeberg, 1993	Wrong design
Hakeberg, 1997	Wrong design
Hammarstrand, 1995	Wrong control
Houlihan, 1986	Wrong patients
Hunt, 2005	Wrong outcome
Johren, 2000	No RCT
Katcher, 1984	Wrong intervention
Kroeger, 1989	Wrong design
Kvale, 2004	Systematic review
Lahmann, 2008	Wrong patients
Lamb, 1980	Wrong patients
Landau, 1984	Wrong design
Lidell, 1994	Wrong design
Litt, 1999	Wrong patients
Litt, 1993	Wrong patients
Litt, 1995	Wrong patients

## Appendix 2 Project: Psychological treatment of dental anxiety among adults

### Excluded articles

Study (author, publication year)	Reason for exclusion
Logan, 1978	Wrong patients
McAmmond, 1971	Wrong patients
Miller, 1978	Wrong control
Moore, 1996	Wrong design
Moore, 1994	Wrong design
Moore, 2002	Wrong design
Moore, 1991	Wrong design
Morarend, 2011	Wrong intervention (phobia for injections)
Morse, 1993	Wrong patients
Shaw, 1974	Wrong patients
Sime, 1985	Wrong patients
Thom, 2000	Wrong design
Vassend 2000	Duplicate publication with Willumsen <i>et al.</i> , 2001a
Wannemueller, 2011	Wrong design
Wroblewski, 1977	Wrong design

### **Appendix 3, Search strategy, study selection and references**

#### **Question at issue:**

Is behavioral therapy (BT) a more effective treatment for dental phobia or dental anxiety/fear, concerning reduction of dental anxiety and acceptance of conventional dental treatment, than information, pharmacological sedation, experience of dental treatment under general anesthesia or placebo/no treatment?

**PICO**: (Patient, Intervention, Comparison, Outcome)

**P** = Adults ( $\geq 18$  years) with dental phobia (according to DSM-IV or ICD-10) or severe dental anxiety (according to validated scales/instruments)

**I** = Behavioral therapy (BT) including cognitive behavioral therapy (CBT), exposure, systematic desensitization, or relaxation therapy

**C** = Information, pharmacological sedation, general anesthesia or placebo/no treatment

**O** =

- Level of dental anxiety/fear after intervention (measured with Dental Anxiety Scale [DAS] and Dental Fear Survey [DFS])
- Acceptance of conventional (at least one occasion), dental treatment (without pharmacological sedation), and dental "treatability" rating
- Quality of life/Oral health related quality of life
- Complications

#### **Eligibility criteria**

##### **Study design:**

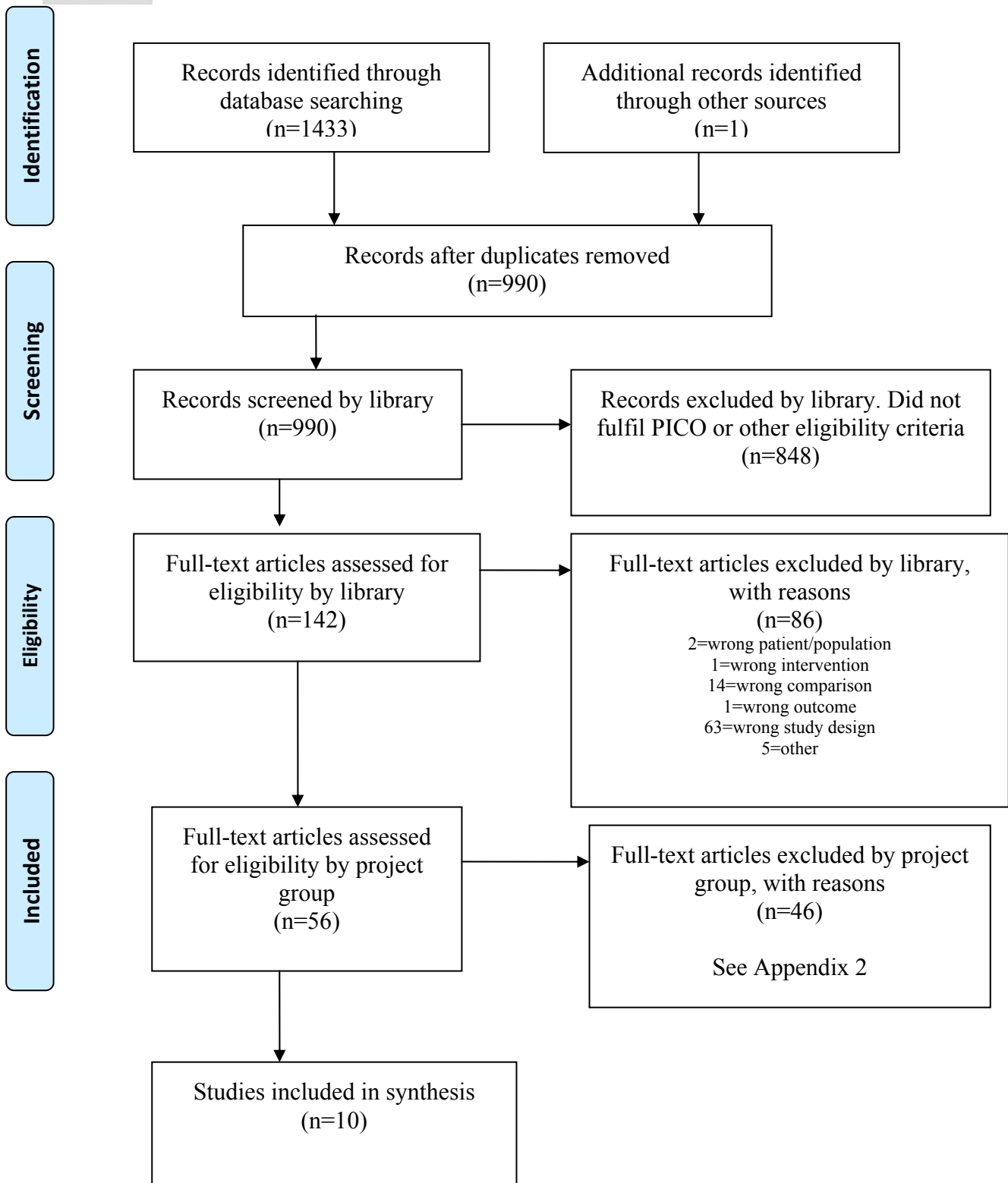
- RCT
- Systematic reviews
- No case reports or review articles

##### **Language:**

English, Danish, Norwegian, Swedish

**Publication date:** 1970-

## Selection process – flow diagram





#25	Search CBT	3556
#24	Search "Cognitive Behavior Therapy" OR "Cognitive Behaviour Therapy" OR "Cognitive Behavior Therapies" OR "Cognitive Behaviour Therapies" OR "Cognitive Behavior Treatment" OR "Cognitive Behavior Treatments" OR "Cognitive Behaviour Treatment" OR "Cognitive Behaviour Treatments" OR "Cognitive Behavioral Therapy" OR "Cognitive Behavioral Therapies" OR "Cognitive Behavioural Therapy" OR "Cognitive Behavioural Therapies" OR "Cognitive Behavioral Treatment" OR "Cognitive Behavioral Treatments" OR "Cognitive Behavioural Treatment" OR "Cognitive Behavioural Treatments"	16570
#23	Search "Cognitive Therapy"[Mesh]	11770
#21	Search Behavior Modifications	109123
#20	Search Behavior Modification	111598
#19	Search Conditioning Therapies	106235
#18	Search Conditioning Therapy	116853
#17	Search "Behavior Therapy" OR "Behaviour Therapy" OR "Behavior Therapies" OR "Behaviour Therapies" OR "Behavior Treatment" OR "Behavior Treatments" OR "Behaviour Treatment" OR "Behaviour Treatments" OR "Behavioral Therapy" OR "Behavioral Therapies" OR "Behavioural Therapy" OR "Behavioural Therapies" OR "Behavioral Treatment" OR "Behavioral Treatments" OR "Behavioural Treatment" OR "Behavioural Treatments"	251536
#16	Search "Behavior Therapy"[Mesh:NoExp]	21368
#13	Search ((((((((((#2) OR #3) OR #4) OR #5) OR #6) OR #7) OR #8) OR #9) OR #10) OR #11) OR #12	4557
#12	Search Dental phobics	41
#11	Search Dental phobic	292
#10	Search Dental Phobias	3733
#9	Search Dental Phobia	3774
#8	Search Odontophobias	3718
#7	Search Odontophobia	3726
#6	Search Dental Fears	3814
#5	Search Dental Fear	4409
#4	Search Dental Anxieties	3738
#3	Search Dental Anxiety	3718
#2	Search "Dental Anxiety"[Mesh]	1700

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**Database:** EMBASE (OVID SP)

**Date:** 2011-09-14

**No of results:** 285

#	Searches	Results
1	exp dental anxiety/	1510
2	Dental Anxiet\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	1772
3	Dental Fear\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	474
4	Odontophobia\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	10
5	Dental Phobi\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	217
6	2 or 3 or 4 or 5	1998
7	exp behavior therapy/	33227
8	Behavio?r Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	35202
9	Behavio?r Treatment\$1.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	263
10	Behavio?ral Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	7927
11	Behavio?ral Treatment\$1.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	4221
12	Conditioning Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	427
13	Cognitive Psychotherap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	432
14	exp cognitive therapy/	24603
15	Cognitive Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	25038
16	exp behavior modification/	5871
17	Behavio?r Modification\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	7601
18	exp behavior therapy/	33227
19	Behavio?r Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	35202
20	Behavio?r Treatment\$1.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	263
21	Behavio?ral Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	7927
22	Behavio?ral Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	7927
23	Behavio?ral Treatment\$1.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	4221
24	exp cognitive therapy/	24603
25	Cognitive Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	25038
26	CBT.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	4795
27	Cognitive Psychotherap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	432

28	Cognition Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	5
29	Cognitive Behavio?r Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	2488
30	Cognitive Behavio?r Treatment\$.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	32
31	exp systematic desensitization/	213
32	Psychologic\$2 Desensitization.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	6
33	Systematic desensitization therapy.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	12
34	Mindfulness.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	1272
35	Implosive Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	34
36	Flooding Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	16
37	Exposure Therap\$3.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	765
38	exp relaxation training/	7357
39	Relaxation.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	90576
40	exp meditation/	2454
41	Meditation.mp. [mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer, device trade name, keyword]	3511
42	7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41	149141
43	6 and 42	305
44	limit 43 to ((danish or english or norwegian or swedish) and yr="1970 -Current")	285

**Database:** PsycINFO (OVID SP)

**Date:** 2011-09-14

**No of results:** 119

#	Searches	Results
1	exp Anxiety/ or anxiety.mp.	127154
2	Anxieties.mp.	3837
3	fear.mp. or exp Fear/	42679
4	fears.mp.	9018
5	phobia.mp. or exp Phobias/	12926
6	phobias.mp.	5865
7	phobic.mp.	4518
8	phobics.mp.	799
9	odontophobia.mp.	1
10	odontophobias.mp.	0
11	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10	170130
12	exp Behavior Therapy/	15444

13	Behavior Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	24349
14	Behavior Treatment\$1.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	483
15	Behavioral Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	9583
16	Behavioral Treatment\$1.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	6718
17	exp Cognitive Therapy/	10890
18	Cognitive Behavior Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	9777
19	Cognitive Behavior Treatment\$1.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	104
20	cbt.mp.	5323
21	exp Systematic Desensitization Therapy/ or desensitization.mp.	5173
22	Relaxation.mp. or exp Relaxation Therapy/ or exp Relaxation/	12573
23	meditation.mp. or exp Meditation/	4043
24	Mindfulness.mp. or exp Mindfulness/	2671
25	Cognitive Psychotherap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	325
26	Cognition Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	4
27	Cognitive Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	12429
28	exp Implosive Therapy/	407
29	Implosive Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	466
30	Flooding Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	57
31	exp Exposure Therapy/	3168
32	Exposure Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	1601
33	12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32	58907
34	exp Dental Treatment/	1132
35	dental treatment\$.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	1096
36	Dental Therap\$3.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	5
37	34 or 35 or 36	1210
38	exp Behavior Modification/	34989
39	Behavior Modification\$.mp. [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures]	14068
40	38 or 39	36494
41	33 or 40	77057
42	11 and 37 and 41	123
43	limit 42 to ((danish or english or norwegian or swedish) and yr="1970 -Current")	119

**Database:** Cinahl (EBSCO)

**Date:** 2011-09-14

**No of results:** 115

Search ID#	Search Terms	Results
S18	S3 and S16 <b>Limiters</b> - Published Date from: 19700101-20110931; Language: Danish, English, Norwegian, Swedish	115
S17	S3 and S16	115
S16	S4 or S5 or S6 or S7 or S8 or S9 or S10 or S11 or S12 or S13 or S14 or S15	60662
S15	Mindfulness	541
S14	Meditation	1629
S13	(MH "Meditation")	1341
S12	Relaxation	5990
S11	(MH "Relaxation")	1389
S10	Implosive Therap* OR Flooding Therap* OR Exposure Therap*	7090
S9	Psychologic* Desensitization OR "Systematic desensitization therapy" OR Mindfulness	776
S8	(MH "Desensitization, Psychologic")	176
S7	Cognitive Behavio* Therap* OR Cognitive Behavio* Treatment* OR CBT OR Cognitive Psychotherap* OR Cognitive Therap* OR Cognition Therap*	17154
S6	(MH "Cognitive Therapy")	5825
S5	Behavio* Therap* OR Behavio* Treatment* OR Conditioning Therap* OR Behavior Modification*	37381
S4	(MH "Behavior Therapy+")	9300
S3	S1 or S2	645
S2	Dental anxiet* OR Dental Fear* OR Odontophobia* OR Dental Phobi*	645
S1	(MH "Dental Anxiety")	428

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**Database:** The Cochrane Library

**Date:** 2011-09-14

**No of results:** 103

*Cochrane reviews* 3

*Other reviews* 1

*Clinical trials* 99

ID	Search	Hits
#1	MeSH descriptor Dental Anxiety explode all trees	190
#2	(Dental anxiety ):ti,ab,kw or (Dental Fear):ti,ab,kw or (Odontophobia):ti,ab,kw or (Dental Phobia):ti,ab,kw or (Dental phobic):ti,ab,kw	451
#3	(#1 OR #2)	451
#4	(Behavior Therapy ):ti,ab,kw or (Conditioning Therapy):ti,ab,kw or (Behavior Modification):ti,ab,kw	14625
#5	MeSH descriptor Cognitive Therapy explode all trees	3531
#6	(Cognitive Therapy):ti,ab,kw or (Cognitive Behavior Therapy):ti,ab,kw or (CBT):ti,ab,kw or (Cognitive Psychotherapy):ti,ab,kw or (Cognition Therapy):ti,ab,kw	9045
#7	(Psychological Desensitization ):ti,ab,kw or (Psychologic Desensitization ):ti,ab,kw	354
#8	MeSH descriptor Relaxation Therapy explode all trees	1204
#9	(Relaxation):ti,ab,kw	4772

#10	MeSH descriptor Meditation explode all trees	169
#11	(Meditation):ti,ab,kw	400
#12	(cognitive behavior treatment ):ti,ab,kw	1569
#13	MeSH descriptor Behavior Therapy, this term only	2988
#14	(Behavioral Treatment):ti,ab,kw or (Behavioral Therapy):ti,ab,kw	7177
#15	(Cognitive Behavioral Therapy):ti,ab,kw or (Cognitive Behavioral Treatment):ti,ab,kw	3497
#16	MeSH descriptor Desensitization, Psychologic, this term only	289
#17	(Systematic desensitization therapy):ti,ab,kw	42
#18	(Mindfulness):ti,ab,kw	235
#19	MeSH descriptor Implosive Therapy, this term only	76
#20	(Implosive Therapy ):ti,ab,kw	112
#21	(Flooding Therapy):ti,ab,kw	16
#22	(Exposure Therapy):ti,ab,kw	2157
#23	(#4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19 OR #20 OR #21 OR #22)	29363
#24	(#3 AND #23)	103
#25	(#24), from 1970 to 2011	103

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**Database:** CRD  
**Date:** 2011-09-14  
**No of results:** 7

1	MeSH DESCRIPTOR Dental anxiety EXPLODE ALL TREES WITH QUALIFIER undefined	2
2	(dental anxiety) OR (dental fear) OR (odontophobia) OR (dental phobia) OR (dental phobic)	7
3	#1 OR #2	7

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**SBU, Kunnskapssenteret, Sundhedsstyrelsen 2011-09-14**  
Nothing relevant to the question at issue was found

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**Reference lists**  
1 results

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## **Reference lists**

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Summary of Findings: Project **Psychological treatment of dental anxiety among adults**

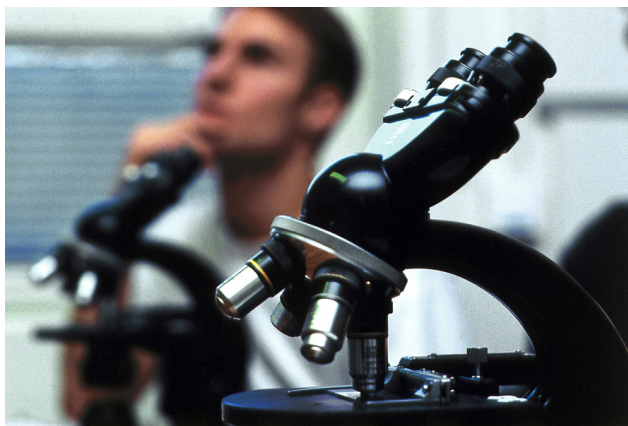
<b>Outcome variable</b>	<b>Design</b>	<b>Study limitations</b>	<b>Consistency</b>	<b>Directness</b>	<b>Precision</b>	<b>Publication bias</b>	<b>Magnitude of Effect*</b>	<b>Relative effect (95%CI)</b>	<b>Absolute effect</b>	<b>Quality of evidence GRADE</b>
<b>Number of studies</b>										
<b>DAS</b> CBT vs. all controls 5	RCT	Serious limitations (-1) Unclear randomization No blinding	Some inconsistency (0?) Statistical heterogeneity	Some uncertainty (0?) Advertisement recruitment in few studies	No imprecision (0)	Unlikely	-	-3.9, -1.5	Mean difference 2.7 less fear	Low
<b>DAS</b> CBT vs. anesthesia/sedation 2	RCT	Serious limitations (-1) Unclear randomization No blinding	No inconsistency (0)	No uncertainty	No imprecision (0)	Unlikely	-	-3.2, -0.9	Mean difference 2.0 less fear	Low
<b>DAS long term</b> (1-2yrs) CBT vs. anesthesia/sedation 2	RCT	Serious limitations (-1) Unclear randomization No blinding	Some inconsistency (0?) Statistical heterogeneity	Some uncertainty (0?) Advertisement recruitment in few studies	No imprecision (0)	Unlikely	-	-3.6, 0.9	Mean difference 2.3 less fear	Low
<b>DFS</b> CBT vs. anesthesia/sedation, or waitlist 4	RCT	Serious limitations (-1) Unclear randomization No blinding	Some inconsistency (0?)	Some uncertainty (0?) All patients receive 'good care' and compassion	Serious imprecision (-1)	Unlikely	-	n.a.	n.a.	Very low
<b>Acceptance of dental treatment</b> BT vs. general anesthesia 1	RCT	Serious limitations (-1) Unclear randomization No blinding	No inconsistency (0)	No uncertainty	No imprecision (0)	Likely (-1)	-	BT leads approx. 1.5 times more often to acceptance of conventional treatment	BT: 80% acceptance vs. General anesthesia: 50% acceptance	Low

BT= Behavior therapy. CBT = Cognitive behavior therapy. n.a. = not applicable

\*Applicable for observational studies

# Region Västra Götaland, HTA-centrum

Health Technology Assessment  
Regional activity-based HTA



## HTA

Health technology assessment (HTA) is the systematic evaluation of properties, effects, and/or impacts of health care technologies, i.e. interventions that may be used to promote health, to prevent, diagnose or treat disease or for rehabilitation or long-term care. It may address the direct, intended consequences of technologies as well as their indirect, unintended consequences. Its main purpose is to inform technology-related policymaking in health care.

To evaluate the quality of evidence the Centre of Health Technology Assessment in Region Västra Götaland is currently using the GRADE system, which has been developed by a widely representative group of international guideline developers. According to GRADE the level of evidence is graded in four categories:

High quality of evidence	= (GRADE ⊕⊕⊕⊕ )
Moderate quality of evidence	= (GRADE ⊕⊕⊕○)
Low quality of evidence	= (GRADE ⊕⊕○○)
Very low quality of evidence	= (GRADE ⊕○○○)

In GRADE there is also a system to rate the strength of recommendation of a technology as either “strong” or “weak”. This is presently not used by the Centre of Health Technology Assessment in Region Västra Götaland. However, the assessments still offer some guidance to decision makers in the health care system. If the level of evidence of a positive effect of a technology is of high or moderate quality it most probably qualifies to be used in routine medical care. If the level of evidence is of low quality the use of the technology may be motivated provided there is an acceptable balance between benefits and risks, cost-effectiveness and ethical considerations. Promising technologies, but a very low quality of evidence, motivate further research but should not be used in everyday routine clinical work.

Christina Bergh, Professor, MD.  
Head of HTA-centrum

