Psychological treatment of dental anxiety among adults: a systematic review

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CRD summary
This review concluded that there was evidence that behavioural interventions can help adults with dental anxiety/phobia but more well-designed studies were required. The low quality of evidence and lack of evaluation on the clinical significance of reductions in anxiety mean that these conclusions appear somewhat over-optimistic.

Authors' objectives
To assess the efficacy of behavioural interventions as treatment of dental anxiety or phobia in adults.

Searching
PubMed, EMBASE, CINAHL, PsycINFO, The Cochrane Library and HTA databases were searched from January 1970 to August 2011 for studies in English, Danish, Norwegian and Swedish. Search strategies were reported in an appendix. Reference lists of relevant articles were screened.

Study selection
Randomised controlled trials (RCTs) that evaluated behavioural interventions based on cognitive behavioral therapy or behavioral therapy (including exposure therapy, systematic desensitisation and relaxation therapy) as treatment of dental anxiety/phobia in adults were eligible for inclusion. Eligible participants had documented severe dental anxiety as measured using validated psychometric scales or fulfilling recognised diagnostic criteria. Eligible controls were information, sedation, general anaesthesia, placebo and no treatment. Outcomes of interest included level of dental anxiety, acceptance of conventional dental treatment (without sedation), quality of life, oral health-related quality of life and complications.

The included studies used two validated self-report scales of dental anxiety: Dental Anxiety Scale (DAS) and Dental Fear Survey (DFS). Two studies compared behavioral therapy with dental care under general anaesthesia. Three studies compared three different treatments: cognitive behavioral therapy, applied relaxation and nitrous oxide sedation. Most of the other studies compared a videotaped dental anxiety-reduction programme of behavioural techniques versus placebo or compared behavioral therapy and cognitive behavioral therapy with positive dental experience versus a waiting-list control or compared exposure treatments versus a waiting-list control. Treatment was delivered by a psychologist or dentist. Treatment frequency and the numbers of sessions varied. Most of the studies were conducted in Scandinavia or USA.

It was unclear how many reviewers assessed studies for inclusion.

Assessment of study quality
Study quality was assessed using a checklist for RCTs from the Swedish Council on Technology Assessment in Health Care. Numerous criteria were evaluated and included randomisation, blinding, drop-outs and precision (including power analysis). Each study was judged as of high, moderate or low quality. The quality of evidence for each outcome measure was also rated using the GRADE tool.

At least three reviewers assessed study quality and any disagreements were resolved by consensus.

Data extraction
Data were extracted on mean and standard deviation to enable calculation of mean differences and 95% confidence intervals (CI).

It was unclear how many reviewers performed data extraction.

Methods of synthesis
The studies were combined in a meta-analysis. Random-effects or fixed-effect models were used to pool the weighted mean differences (WMD) with 95% CI. Statistical heterogeneity was assessed using the $I^2$ statistic. Publication bias
was assessed using a funnel plot. Subgroup analyses were performed on different types of control.

**Results of the review**

Seven RCTs were included in the review (318 participants, range 20 to 99). Two RCTs were of moderate quality and five were of low quality.

Compared with controls, behavioural interventions were associated with a significant reduction in dental anxiety as measured using the Dental Anxiety Scale (WMD -2.67, 95% CI -3.87 to -1.48; five RCTs; $I^2=65\%$). Subgroup analyses did not significantly alter the results. One of the two studies that measured dental anxiety using the Dental Fear Survey scale reported a significant reduction in dental anxiety.

At long-term (one to two years) follow-up, behavioural interventions were associated with a significant reduction in dental anxiety as measured using the Dental Anxiety Scale (WMD -2.25, 95% CI -3.58 to -0.91; two RCTs; $I^2=48\%$). One study evaluated anxiety at five years and found no difference between behavioural interventions and controls.

One RCT reported a significant positive effect of behavioral therapy on the acceptance of conventional dental treatment compared with general anaesthesia (80% versus 53%; $p=0.009$).

No data were reported on quality of life, oral health-related quality of life and complications.

**Authors' conclusions**

There was evidence that behavioural interventions can help adults with dental anxiety/phobia but more well-designed studies were required.

**CRD commentary**

The review question was clear and supported by appropriate inclusion criteria. A range of relevant databases were searched. The search was restricted to four languages so the risk of missing relevant studies could not be ruled out. Sufficient attempts were made to minimise reviewer errors and biases during quality assessment; it was unclear whether study selection and data extraction were also performed in duplicate. Appropriate criteria were used to assess study quality and indicated that included studies were of low to moderate quality. However, full results of the quality assessment were not reported. The quality of evidence for each outcome measure was further rated using the GRADE tool. Statistical heterogeneity was assessed and the pooled outcomes were associated with moderate heterogeneity.

Appropriate methods were used to pool the results but no rationale was provided for whether a fixed-effect or random-effects model was used. No evaluation was presented about how clinically meaningful the reductions in anxiety were.

As the authors noted, the quality of the evidence was low.

The authors' conclusions and practice recommendations appear somewhat over-optimistic.

**Implications of the review for practice and research**

**Practice:** The authors stated that the findings from this review indicated that behavioural interventions should be provided to adult patients with dental anxiety/phobia.

**Research:** The authors stated that further well-designed studies, including a broader range of outcome measures, were required.

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