Biofeedback, acupuncture and transcutaneous electric nerve stimulation in the management of temporomandibular disorders: a systematic review

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CRD summary
This review assessed the efficacy of biofeedback, acupuncture and transcutaneous electric nerve stimulation for temporomandibular disorders. The authors concluded that there was no evidence for the efficacy of these interventions. The authors' conclusions reflect the poor quality of the identified studies. However, the methods used to conduct the review were not reported and this weakens the strength of the evidence.

Authors' objectives
To assess the efficacy of biofeedback, acupuncture and transcutaneous electric nerve stimulation (TENS) in managing patients with temporomandibular disorders (TMDs).

Searching
MEDLINE, CINAHL, EMBASE, PsycINFO and the Cochrane Controlled Trials Register were searched from 1982 to May 2002 for studies reported in English, published in a peer-reviewed journal; the keywords were reported. The reference lists in included studies were checked.

Study selection
Study designs of evaluations included in the review
Controlled clinical trials with at least two patients per treatment group were eligible for inclusion.

Specific interventions included in the review
Studies of biofeedback, acupuncture and TENS were eligible, and were included in the review. The studies could use these interventions alone, or in conjunction with a management programme if the control group also received the management programme.

Participants included in the review
Studies of patients with signs and symptoms of TMD according to the Research Diagnostic Criteria for TMD and/or the International Headache Society classification systems were eligible for inclusion. Studies that did not define TMD in the text or using a reference were excluded.

Outcomes assessed in the review
Studies that assessed pain, subjective improvement of symptoms or functional status were eligible for inclusion. The included studies assessed the outcomes using a variety of measure (details were reported).

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The studies were assessed for the following ten criteria: adequacy of method of randomisation and concealment of treatment allocation; groups comparable at baseline on important prognostic factors; blinding of the outcome assessor; patient blinded; care provider blinded; cointerventions either avoided or comparable; acceptable compliance in all groups; acceptable withdrawal or drop-out rate during the treatment period; acceptable withdrawal or drop-out rate during the follow-up period; and analysis on an intention-to-treat basis. Studies meeting at least five of these ten criteria were classified as high quality. The authors did not state who performed the validity assessment.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

The results from each study were classified as either positive or negative if the intervention was significantly better or worse, respectively, than the control for at least one of the intended outcomes. Other studies were classified as having indifferent results.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative.

How were differences between studies investigated?
Study details and results were tabulated, and additional differences were discussed in the text.

Results of the review
Seven controlled studies (n=369) were included: six randomised controlled trials (RCTs; n=275) and one quasi-RCT (n=94). The sample size in the individual studies ranged from 19 to 100.

The study quality ranged from 0 to 4 (out of a possible 10), thus the quality of all the studies was classified as low. One study reported negative results (TENS), two reported positive results (acupuncture and biofeedback), and four reported indifferent results (biofeedback and acupuncture).

Authors’ conclusions
There was no evidence for the efficacy of biofeedback, acupuncture or TENS in managing patients with TMDs.

CRD commentary
The review question was clear in terms of the study design, participants, interventions and outcomes. Several relevant sources were searched but no attempts were made to minimise language bias. The inclusion of only studies published in peer-reviewed journals increased the potential for publication bias, which the authors did not investigate. The methods used to select studies, assess validity and extract the data were not described, so it is not known whether any efforts were made to reduce errors and bias. Validity was assessed using specified and appropriate criteria, and adequate details of each included study were given. The quality of the studies was taken into consideration when summarising the studies. The authors’ conclusions reflect the poor quality of the identified studies. However, overall, it is difficult to comment on the strength of the evidence underpinning the authors’ conclusions since the methods used to conduct the review were not reported.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that high-quality RCTs are required to assess the efficacy of biofeedback, acupuncture and TENS for TMDs.

Bibliographic details

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Subject indexing assigned by CRD
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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.