Alternative smoking cessation aids: a meta-analysis of randomized controlled trials

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CRD summary
The review concluded that acupuncture and hypnotherapy may help smokers to quit. Aversive smoking may help smokers quit, but there were no recent trials available that investigated this intervention. The authors advised caution when interpreting their results; this seems appropriate as the evidence base had a number of limitations which reduces the reliability of the overall results.

Authors’ objectives
To determine the efficacy of the alternative smoking cessation aids (acupuncture, hypnotherapy and aversive smoking).

Searching
PubMed, EMBASE, PsycINFO and The Cochrane Library were searched up to December 2010 for articles in English or French. Search terms were reported. Reference lists of systematic reviews and trials were also searched.

Study selection
Randomised controlled trials (RCTs) of alternative smoking cessation aids (acupuncture, hypnotherapy and aversive smoking) versus controls in adults were eligible for inclusion. Eligible trials had to report long-term smoking cessation at six to 12 months. Definitions of interventions were provided in the review. The relevant outcomes were: continuous abstinence at 12 months; continuous abstinence at six months; point prevalence abstinence at 12 months; and point prevalence abstinence at six months.

The included trials studied acupuncture, aversive smoking, or hypnotherapy versus control. The mean age of included patients ranged from 30.9 to 53.7 years, where reported. The mean number of cigarettes smoked per day ranged from 16 to 32. Included trials were published from 1973 to 2008, and were conducted in the UK, USA, Canada, France and Taiwan. The total duration of interventions ranged from 56 to 600 minutes, given over one to 20 sessions (where reported).

The authors did not state how many reviewers undertook study selection.

Assessment of study quality
Quality assessment was undertaken using the Cochrane Handbook Tool, which appraised several quality criteria, including blinding, allocation concealment, randomisation, and outcome reporting. Each quality item was scored as high quality, low quality or unclear quality.

The authors did not state how many reviewers undertook quality assessment.

Data extraction
Data were extracted on continuous and point prevalence abstinence at six and 12 months, and used to calculate odds ratios (ORs) with 95% confidence intervals (CIs). Only the most rigorous criterion of smoking cessation reported for each randomised controlled trial was extracted. Data were calculated on an intention-to-treat principle. Patients who were lost to follow-up were considered smokers.

Two reviewers extracted the data; disagreements were resolved by consensus or discussion with a third reviewer.

Methods of synthesis
DerSimonian and Laird random-effects meta-analysis was used to calculate pooled odds ratios with 95% confidence intervals for each smoking cessation aid, using the most rigorous criterion reported. Ι² statistic was used to assess statistical heterogeneity. Publication bias was assessed using funnel plots.

Results of the review
Fourteen RCTs were included in the review (1,195 patients). There were six trials of acupuncture, four trials of aversive smoking, and four trials of hypnotherapy. Trial sample size ranged from 17 to 258 patients. The quality of the trials was variable. Many trials had a low quality for other sources of biases (such as lack of biochemical validation of self reports of smoking cessation). All trials had unclear allocation concealment. Follow-up ranged from six to 12 months.

Compared with control, aversive smoking was associated with a statistically significant increase in smoking abstinence (OR 4.26, 95% CI 1.26 to 14.38; four RCTs; I²=21%) and hypnotherapy was associated with a non-statistically significant trend towards an increase in smoking abstinence (OR 4.55, 95% CI 0.98 to 21.01; four RCTs; I²=67%). Compared with sham acupuncture, acupuncture was associated with a statistically significant increase in smoking abstinence (OR 3.53, 95% CI 1.03 to 12.07; six RCTs; I²=85%).

**Authors’ conclusions**

Acupuncture and hypnotherapy may help smokers to quit. Aversive smoking also may help smokers to quit, but there were no recent trials in the review (included trials were published from 1973 to 1983) that investigated this intervention.

**CRD commentary**

Inclusion criteria for the review were clearly defined and several relevant databases were searched. There may have been the potential for language bias, as only English and French articles were included. Publication bias was considered but could not be formally assessed due to the low number of included trials. Attempts were made to reduce reviewer error and bias during data extraction, but it was not clear if the same attempts were made for study selection and quality assessment.

Quality assessment of included trials indicated that the quality of the evidence base was variable. There were differences across the trials for therapy type, duration and intensity. Some of the trials also had small sample sizes. Data were combined using suitable meta-analysis techniques. Statistical heterogeneity was reported; there was a high level of statistical heterogeneity in the acupuncture analysis, which may indicate that the data were not suitable for pooling. All of the analyses had wide confidence intervals, which the authors acknowledged.

The evidence base had a number of limitations, which reduces the reliability of the pooled results. The authors did advise that caution was required when interpreting their results, which seems appropriate.

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

**Practice:** The authors stated that physicians should be encouraged to use acupuncture or hypnotherapy, especially in patients who were unwilling or unable to use pharmacotherapies to aid smoking cessation.

**Research:** The authors stated that further trials of alternative smoking cessation aids were needed. In particular, new studies of aversive therapy were needed as most of the available trials were old. They also stated that there was a need to determine the combined effects of alternative smoking cessation aids. Also, more evidence was needed to determine whether alternative smoking cessation interventions were as effective as pharmacotherapies.

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