A meta-analysis of the effectiveness of acupuncture in smoking cessation
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Authors' objectives
To undertake a systematic review of all randomised controlled trials (RCTs) which have examined the effectiveness of acupuncture as an aid to smoking cessation.

Searching
The following databases were searched from inception until December 1994: MEDLINE, Psychological Abstracts, Dissertation Abstracts, Health Planning and Administration, Social SciSearch, Smoking and Health, EMBASE, Biological Abstracts and a pharmaceutical database. The keywords used were 'smoking cessation' and 'acupuncture' in combination. Additional studies were located by examining published reviews, reference lists from clinical trials, conference abstracts (from primary care meetings and the World Conference on Tobacco and Health), smoking and health bulletins, and the bibliography on smoking and health.

Study selection
Study designs of evaluations included in the review
RCTs examining the effectiveness of acupuncture in smoking cessation were included if they had at least two treatment groups, and allocation to groups was by formal randomisation. Excluded were studies with historical controls, trials of short duration (less than 3 months) and those that did not include measurement of smoking cessation. Follow-up periods ranged from 6 to 12 months.

Specific interventions included in the review
The following acupuncture points were used: lung, ear, hunger auricular, gall bladder, Shuai gu, Tong zi Liao, Quihou, Shenmen, Yin Tang, Giap Ty and Zu San Li with or without small plastic bead or press needles being left in situ. Acupuncture and electro-acupuncture were studied.

Participants included in the review
Volunteers of both sexes participated in the trials. Inclusion and exclusion criteria varied between studies and details are given of the criteria used for each study.

Outcomes assessed in the review
The outcome assessed was smoking cessation at 1, 3, 6 and 12 months (where available). The strictest criteria used to define abstinence was used for each study. Smoking cessation was defined by self-reporting, and validated by either expired carbon monoxide (less than 5 ppm) or by two significant others nominated by the patient.

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

Assessment of study quality
The following criteria were used to assess the primary studies: quality of randomisation, intention to treat analysis, and the blinding of assessors of cessation to the treatment group. A score from one to three was given to each study for each dimension, with one being scored if little or no attempt had been made to control potential bias. The original authors were contacted for further information if methods to control bias were unclear. Scores for individual trials on these three criteria are given. The authors do not state how the papers were assessed for quality, or how many of the authors performed the quality assessment.

Data extraction
The following data were extracted from the primary studies by two authors independently: country of origin, study population, eligibility criteria, nature of the intervention, details of study design (including method of allocation, blinding, study structure), outcome measures, and validation of smoking status. Any disagreements were resolved by referral to a third author.

Patients lost to follow-up were treated as continuing smokers.

**Methods of synthesis**

**How were the studies combined?**
The odds ratios (ORs) were combined using the fixed-effect model described by Peto (see Other Publications of Related Interest no.1).

**How were differences between studies investigated?**
The Mantel-Haenszel test was used to assess heterogeneity between trials. Sensitivity analysis was performed by omitting one trial in which the number of patients was small and doubt existed about the randomisation method, and after considering only trials comparing acupuncture with placebo or no acupuncture.

**Results of the review**

Nine RCTs (N=4,115 volunteers, with 1,237 receiving acupuncture) were used to assess the effectiveness of acupuncture on smoking cessation at 6 months.

Four RCTs (N=2,941 volunteers) were used to assess the effectiveness of acupuncture on smoking cessation at 12 months.

Five RCTs (N=463) were used to compare acupuncture with sham acupuncture, and 1 RCT (N=1,532) with four arms of combinations of acupuncture, nicotine gum, sham acupuncture and placebo gum.

Two RCTs (N=332) were used to assess acupuncture compared to group therapy.

Two RCTs (N=1,425) were used to assess acupuncture compared to nicotine gum.

One RCT (N=64) was used to assess acupuncture compared to behaviour therapy.

One RCT (N=24) was used to assess acupuncture compared to individual hypnosis. One RCT (N=22) was used to assess acupuncture compared to group hypnosis.

Most studies scored poorly in their method of randomisation and in the assessment of outcome.

At 6 months: OR 1.83 (95% confidence interval, CI: 0.97, 3.46); test for heterogeneity 9.45 (P=0.05).

At 12 months: OR 1.47 (95% CI: 1.10, 1.98); test for heterogeneity 7.22 (P=0.07).

Total: OR 1.53 (95% CI: 1.17, 2.00); test for heterogeneity 17.03 (P=0.09).

Acupuncture versus sham acupuncture: OR 1.16 (95% CI: 0.90, 1.49); test for heterogeneity 5.36 (P=0.37).

Acupuncture versus group therapy: OR 2.23 (95% CI: 1.16, 4.28).

Acupuncture versus nicotine gum: OR 0.77 (95% CI: 0.54, 1.11).

Acupuncture versus behaviour: OR 0.77 (95% CI: 0.29, 2.09).

Acupuncture versus individual hypnosis: OR 0.36 (95% CI: 10.07, 3.01).

Acupuncture versus group hypnosis: OR 0.52 (95% CI: 0.09, 3.01).
Authors' conclusions
While acupuncture appears promising there is insufficient evidence at present to recommend it as an effective form of therapy. More direct comparative trials with larger numbers of participants are required before the effectiveness of acupuncture can be reliably compared against these other therapies.

CRD commentary
This is a clearly-written and well-conducted review. The extensive literature search should have revealed most of the relevant studies, though as the authors point out, some results from unpublished trials with less favourable results may have been omitted. The inclusion criteria for the primary studies were defined, as were the criteria for evaluating the quality of the included studies. The quality scores obtained by the individual trials, and reported in the review, reveal that most of the primary studies had not accounted for potential sources of bias. Details are given of the rigorous methodology used in data extraction but similar detail is not given on the methods of study selection or quality scoring. The potential for bias in the primary studies justifies the authors' reservations about the effectiveness of acupuncture based on the studies included in this review.

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Record Status
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.