Acupuncture for pain relief in labour: a systematic review and meta-analysis

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CRD summary
This well-conducted review concluded that available evidence did not support using acupuncture to control labour pain and there was limited evidence that acupuncture reduced the need for other forms of pain relief; definitive conclusions could not be drawn and future research was recommended. The authors’ conclusions reflect the evidence beyond a short time-frame and are likely to be reliable.

Authors’ objectives
To evaluate the effectiveness of acupuncture on pain relief for women in labour.

Searching
MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL), Allied and Complementary Medicine Database (AMED), CINAHL, PsycINFO, and several Korean, Japanese and Chinese data sources (listed in the paper) were searched from inception to April 2009. Additional searches were conducted in Current Controlled Trials, the National Center for Complementary and Alternative Medicine at the National Institutes of Health, and the Complementary and Alternative Medicine Specialist Library at the National Health Service National Library for Health. Relevant journals, symposia, conference proceedings and reference lists were checked. Experts were contacted for information on additional studies. Search terms were reported. There were no language restrictions.

Study selection
Randomised controlled trials (RCTs) that compared acupuncture with any form of pain relief, no pain relief or placebo/sham acupuncture for women in labour were eligible for inclusion. Classical manual acupuncture, electroacupuncture, and electrical auricular acupuncture were the interventions of interest; these could be given as the sole analgesic method, or in addition to conventional analgesia. Excluded were trials of acupuncture-related techniques and trials of women with induced labour.

The eligible primary outcomes were pain relief (measured by a 100mm visual analogue scale (VAS) or numeric rating scale) and the requirement for meperidine, epidural analgesia, or other pain relief. Secondary outcomes of interest were maternal outcomes (satisfaction with pain relief and childbirth experience, duration and augmentation of labour, and delivery mode), foetal outcomes (Apgar score at five minutes, birth weight, and umbilical cord blood pH), and adverse events.

The included trials were conducted in hospital settings in five different countries (half were in Europe). Nulliparous and multiparous women were included; most were at 37 weeks of gestation or more. The included acupuncture types were classical acupuncture and electroacupuncture, using individualised, standardised and semi-standardised styles; the SP6 acupoint was the most frequently used. Control interventions included transcutaneous electrical nerve stimulation (TENS), conventional analgesia, minimal acupuncture at non-acupoints (fully defined in the paper), epidural analgesia, subcutaneous sterile water injection, placebo electroacupuncture (fully defined in the paper), or no intervention. Conventional care was also available in some trials.

Two reviewers independently selected the trials for inclusion. Disagreements were resolved by discussion.

Assessment of study quality
Trial quality was assessed using the Cochrane risk of bias tool, which covered randomisation, allocation concealment, blinding, completeness of outcome data, selective outcome reporting, and other potential risks of bias. A narrative summary was provided of trials meeting each quality item.

Two reviewers assessed trial quality, and disagreements were resolved by discussion.

Data extraction
Data were extracted to enable the calculation of mean differences (MD) for VAS pain intensity, and risk ratios (RR) for
numbers of women requiring further pain relief, with 95% confidence intervals (CIs). Authors were contacted for additional data, where necessary.

Two reviewers independently carried out the data extraction. Disagreements were resolved by discussion.

**Methods of synthesis**
Mean differences and risk ratios, with 95% confidence intervals, were pooled in a fixed-effect or random-effects meta-analysis. The latter was applied in the presence of statistical heterogeneity (quantified by the $I^2$ statistic, and defined as substantial for $I^2 > 50\%$). The analysis was grouped according to the control group comparisons.

**Results of the review**
Ten RCTs were included in the review (n=2,083 women, sample size range 90 to 607). Randomisation was described in eight trials, allocation concealment was adequate in seven trials, missing data was not substantial, and most trials appeared to be free of selective outcome reporting and other potential risks of bias. The use of blinding was limited.

**Pain intensity**
Electroacupuncture was significantly favourable to placebo acupuncture for reduction in pain intensity at 15 minutes (MD -4.09, 95% CI -8.05 to -0.12; two trials; $I^2 = 0\%$) and 30 minutes (MD -5.94, 95% CI -9.83 to -2.06; two trials; $I^2 = 0\%$) after treatment, but this effect was not statistically significant at one to three hours later (two trials; $I^2 = 0\%$ to 7%). Similar trends were noted for electroacupuncture or manual acupuncture compared with no intervention at 15 minutes (MD -6.81, 95% CI -10.77 to -2.84; two trials; $I^2 = 0\%$) and 30 minutes (MD -10.56, 95% CI -16.08 to -5.03; two trials; $I^2 = 46\%$), with no further statistically significant effects at one hour (four trials; $I^2 = 92\%$), two hours (four trials; $I^2 = 84\%$) and three hours (two trials; $I^2 = 53\%$) after treatment.

**Pain relief**
In those receiving acupuncture compared with conventional analgesia alone, significantly fewer women required meperidine (RR 0.20, 95% CI 0.12 to 0.33; three trials; $I^2 = 0\%$), or other pharmacological and/or invasive analgesic methods (RR 0.75, 95% CI 0.66 to 0.85; two trials; $I^2 = 40\%$). There were no significant differences between acupuncture and minimal acupuncture (three trials, although statistical heterogeneity was reported, $I^2 = 92$ to 98%). One trial reported a statistically significant benefit in favour of acupuncture compared with TENS (with both arms also containing conventional care) in terms of reduced need for pharmacological or invasive pain relief (RR 0.85, 95% CI 0.74 to 0.98). A second trial reported no statistically significant difference between acupuncture and TENS.

Improved maternal outcomes were reported for acupuncture in a small number of trials.

Foetal outcomes were not significantly different between groups (where reported).

There were no adverse events relating to acupuncture treatment (where reported).

**Authors' conclusions**
The available evidence did not support the use of acupuncture for controlling labour pain, and there was limited evidence that acupuncture might reduce the need for other forms of pain relief. The heterogeneity of available trials meant that firm conclusions were not possible; further research is warranted.

**CRD commentary**
The review question was clear; it was supported by detailed and potentially replicable inclusion criteria. The search strategy included a wide range of data sources. Attempts were made to minimise language and publication biases. The review process was conducted with sufficient attempts to minimise further bias and error.

An appropriate quality assessment tool was applied to the included trials. Trial characteristics and results were clearly presented. The chosen method of synthesis appropriately took account of statistical heterogeneity. Clinical and statistical heterogeneity were high. Only a small number of trials (often dominated by one providing the greatest weight) contributed to each outcome. The authors drew attention to several potential methodological limitations in the review and topic area; their recommendations for further research seemed justified.

This was a well-conducted review. The authors' conclusions reflect the evidence on outcomes beyond a short time-frame and are likely to be reliable.
Implications of the review for practice and research

**Practice:** The authors stated that the review findings should be made available to doctors and women to help them make informed decisions about the use of acupuncture for pain control.

**Research:** The authors stated that further research is needed to identify the optimal acupuncture intervention and sham/placebo controls, the most appropriate timing of outcome measurements, staffing and education, intervention costs, and adverse events.

**Funding**

**Bibliographic details**

**PubMedID**
20438555

**DOI**
10.1111/j.1471-0528.2010.02570.x

**Original Paper URL**

**Indexing Status**
Subject indexing assigned by NLM

**MeSH**
Acupuncture Therapy; Analgesia, Obstetrical /methods; Female; Humans; Labor Pain /therapy; Pain Measurement /methods; Pregnancy; Pregnancy Outcome; Randomized Controlled Trials as Topic

**AccessionNumber**
12010004454

**Date bibliographic record published**
01/12/2010

**Date abstract record published**
15/06/2011

**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.