A systematic review and meta-analysis of acupuncture in in vitro fertilisation

El-Toukhy T, Sunkara S K, Khairy M, Dyer R, Khalaf Y, Coomarasamy A

CRD summary
The authors concluded that there was insufficient evidence about the effects of acupuncture on the in vitro-fertilisation (IVF) clinical pregnancy rate. This was a well-conducted review and the authors' conclusions are likely to be reliable.

Authors' objectives
To evaluate the effects of acupuncture during in vitro fertilisation (IVF) on clinical pregnancy and live birth rates.

Searching
MEDLINE, EMBASE and The Cochrane Library were searched from inception to the end of 2007/January 2008. Search terms were reported. No language restrictions were applied. In addition, ISI Proceedings, SciSearch, ISRCTN Register, meta Register of Controlled Trials and reference lists of reviews and relevant studies were screened.

Study selection
Parallel-group randomised controlled trials (RCTs) that compared any accepted acupuncture regimen with no or sham acupuncture in women undergoing IVF with or without intra-cytoplasmic sperm injection treatment (ICSI) were eligible for inclusion. Studies could use any standard method of sham acupuncture. The review outcomes were clinical pregnancy (ultrasound definition of an intrauterine gestational sac after IVF treatment) and live birth rate from a single IVF cycle per women randomised.

The included studies evaluated electroacupuncture, auricular acupuncture with or without electrical stimulation, traditional needle acupuncture and laser acupuncture. Acupuncture was delivered around the time of transvaginal retrieval and around the time of embryo transfer.

Two reviewers independently selected studies and resolved disagreements by consensus or with the help of a third reviewer.

Assessment of study quality
Two reviewers independently assessed validity using the adequacy of randomisation, allocation concealment, blinding, use of sham acupuncture and intention-to-treat (ITT) analysis. Authors were contacted for additional information if required.

Data extraction
Two reviewers independently extracted ITT data to construct 2x2 tables. Authors were contacted if required for missing information.

Methods of synthesis
The studies were grouped by time of acupuncture delivery and analysed separately. Pooled relative risks (RR) and 95% confidence intervals (CI) were calculated using a random-effects model. Heterogeneity was assessed using forest plots and the $X^2$ test. Sensitivity analysis was used to examine the influence of timing of acupuncture delivery, type of control (sham acupuncture or not) and one study that used an additional intervention. Meta-regression was used to explore the influence of allocation concealment, type of acupuncture, person administering acupuncture, number of sessions and use of sham acupuncture. Publication bias was assessed using a funnel plot and Begg's test.

Results of the review
Thirteen RCTs were included (n=2,500).
Five studies reported randomisation methods, 10 reported adequate allocation concealment, two were double-blinded and four were single-blinded, four used a placebo control, nine used ITT analysis and in eight studies groups were comparable at baseline.
Acupuncture at the time of the time of transvaginal retrieval (five RCTs, n=877)
None of the studies used a sham acupuncture control. There was no statistically significant difference between acupuncture and control in the clinical pregnancy rate, RR 1.06 (95% CI: 0.82, 1.37; p=0.65). No significant heterogeneity was found (p=0.13).

Acupuncture at the time of embryo transfer (eight RCTs, n=1,623)
All studies used traditional needle acupuncture; one study used laser acupuncture in one arm of a multiarm trial. There was no statistically significant difference between acupuncture and control in the clinical pregnancy rate, RR 1.23 (95% CI: 0.96, 1.58, p=0.09, significant heterogeneity was found, p=0.003) or the live birth rate, RR 1.34 (95% CI: 0.85, 2.11). No statistically significant treatment differences were found for the sensitivity analysis and no significant associations were found between clinical pregnancy rate and covariates including the use of sham acupuncture.

No evidence of publication bias was found.

**Authors' conclusions**
There was insufficient evidence about the effects of acupuncture on the IVF clinical pregnancy rate.

**CRD commentary**
The review question was clearly stated and inclusion criteria defined for intervention, participants, outcomes and study design. Several relevant sources were searched and attempts were made to minimise publication and language bias; no evidence of publication bias was found. Appropriate methods were used to minimise reviewer error and bias during the review process. Only RCTs were included, validity was assessed and results were reported. Appropriate methods were used for the meta-analyses. Heterogeneity was assessed and potential sources of heterogeneity were explored. This was a well-conducted review and the authors' conclusions are likely to be reliable.

**Implications of the review for practice and research**
Practice: The authors stated that women undergoing IVF should be informed that there is currently insufficient evidence about the effects of acupuncture during IVF on cycle outcome.

Research: The authors stated that further well-designed studies were required to evaluate the efficacy and cost-effectiveness of acupuncture during IVF before clinicians can recommend this treatment.

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the reliability of the review and the conclusions drawn.