

The effects of acupuncture on rates of clinical pregnancy among women undergoing *in vitro* fertilization: a systematic review and meta-analysis

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Abstract

BACKGROUND Recent systematic reviews of adjuvant acupuncture for IVF have pooled heterogeneous trials, without examining variables that might explain the heterogeneity. The aims of our meta-analysis were to quantify the overall pooled effects of adjuvant acupuncture on IVF clinical pregnancy success rates, and evaluate whether study design-, treatment- and population-related factors influence effect estimates.

METHODS We included randomized controlled trials that compared needle acupuncture administered within 1 day of embryo transfer, versus sham acupuncture or no adjuvant treatment. Our primary outcome was clinical pregnancy rates. We obtained from all investigators additional methodological details and outcome data not included in their original

publications. We analysed sham-controlled and no adjuvant treatment-controlled trials separately, but since there were no large or significant differences between these two subsets, we pooled all trials for subgroup analyses. We prespecified 11 subgroup variables (5 clinical and 6 methodological) to investigate sources of heterogeneity, using single covariate meta-regressions.

RESULTS Sixteen trials (4021 participants) were included in the meta-analyses. There was no statistically significant difference between acupuncture and controls when combining all trials [risk ratio (RR) 1.12, 95% confidence interval (CI), 0.96–1.31; $I^2 = 68\%$; 16 trials; 4021 participants], or when restricting to sham-controlled (RR 1.02, 0.83–1.26; $I^2 = 66\%$; 7 trials; 2044 participants) or no adjuvant treatment-controlled trials (RR 1.22, 0.97–1.52; $I^2 = 67\%$; 9 trials; 1977 participants). The type of control used did not significantly explain the statistical heterogeneity (interaction $P = 0.27$). Baseline pregnancy rate, measured as the observed rate of clinical pregnancy in the control group of each trial, was a statistically significant effect modifier (interaction $P < 0.001$), and this covariate explained most of the heterogeneity of the effects of adjuvant acupuncture across all trials (adjusted $R^2 = 93\%$; I^2 residual = 9%). Trials with lower control group rates of clinical pregnancy showed larger effects of adjuvant acupuncture (RR 1.53, 1.28–1.84; 7 trials; 1732 participants) than trials with higher control group rates of clinical pregnancy (RR 0.90, 0.80–1.01; 9 trials; 2289 participants). The asymmetric funnel plot showed a tendency for the intervention effects to be more beneficial in smaller trials.

CONCLUSIONS We found no pooled benefit of adjuvant acupuncture for IVF. The subgroup finding of a benefit in trials with lower, but not higher, baseline pregnancy rates (the only statistically significant subgroup finding in our earlier review) has been confirmed in this update, and was not explained by any confounding variables evaluated. However, this baseline pregnancy rate subgroup finding among published trials requires further confirmation and exploration in additional studies because of the multiple subgroup tests conducted, the risk of unidentified confounders, the multiple different factors that determine baseline rates, and the possibility of publication bias.

Key words

- [acupuncture](#)
 - [assisted conception](#)
 - [complementary medicine](#)
 - [in vitro fertilization](#)
 - [systematic review](#)
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