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# Infertility

# Infertilité : évaluation de l'acupuncture

Article connexe : - infertilité masculine-

## 1. Systematic Reviews and Meta-Analysis

### 1.1. Generic Acupuncture

#### 1.1.1. Quan 2022

Quan K, Yu C, Wen X, Lin Q, Wang N, Ma H. Acupuncture as Treatment for Female Infertility: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Evid Based Complement Alternat Med. 2022 Feb 16;2022:3595033. https://doi.org/10.1155/2022/3595033

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| **Background** | The effects of acupuncture on female infertility remain controversial. Also, the variation in the participant, interventions, outcomes studied, and trial design may relate to the efficacy of adjuvant acupuncture. The aim of the study is to systematically evaluate the efficacy and safety of acupuncture for female with infertility and hopefully provide reliable guidance for clinicians and patients. |
| **Methods** | We searched digital databases for relevant studies, including EMBASE, PubMed, Cochrane Library, and Web of Science, and the Cochrane Library up to April 2021, for randomized controlled trials (RCTs) evaluating the effects of acupuncture on women undergoing IVF and other treatment. We included studies with intervention groups using acupuncture and control groups consisting of no acupuncture or sham (placebo) acupuncture. Primary outcomes were clinical pregnancy rate (CPR) and live birth rate (LBR). Meta-regression and subgroup analysis were conducted on the basis of ten prespecified covariates to investigate the variances of the effects of adjuvant acupuncture on pregnancy rates and the sources of heterogeneity. |
| **Results** | **Twenty-seven studies with 7676 participants** were included. The results showed that the intervention group contributes more in outcomes including live birth rate (RR = 1.34; 95% CI (1.07, 1.67); P < 0.05), clinical pregnancy rate (RR = 1.43; 95% CI (1.21, 1.69); P < 0.05), biochemical pregnancy rate (RR = 1.42; 95% CI (1.05, 1.91); P < 0.05), ongoing pregnancy rate (RR = 1.25; 95% CI (0.88, 1.79); P < 0.05), adverse events (RR = 1.65; 95% CI (1.15, 2.36); P < 0.05), and implantation rate (MD = 1.19; 95% CI (1.07, 1.33); P < 0.05) when compared with the control group, and the difference is statistically significant. In terms of the number of oocytes retrieved, good-quality embryo rate, miscarriages, and ectopic pregnancy rate, the difference between the acupuncture group and the control group was not statistically significant. |
| **Conclusions** | Our analysis finds a benefit of acupuncture for outcomes in women with infertility, and the number of acupuncture treatments is a potential influential factor. Given the poor reporting and methodological flaws of existing studies, studies with larger scales and better methodologies are needed to verify these findings. More double-blind RCTs equipped with high quality and large samples are expected for the improvement of the level of evidence. |

### 1.1.2. Zhang 2020

Jinhuan Zhang, Yuhai He, Yongfeng Liu, Xingxian Huang, Haibo Yu. Effectiveness of different acupuncture for infertility: Overview of systematic reviews and network meta-analysis. European Journal of Integrative Medicine. 2020;40. [216448]. doi

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| **Introduction** | Acupuncture may be an effective treatment option for infertility. Although there are several forms of acupuncture, there are no data that define which is the most suitable for infertility. The aim of this study was to conduct a network meta-analysis (NMA) to compare the effectiveness of various types of acupuncture used in the treatment of infertility. |
| **Methods** | Searches in seven databases were conducted and data from randomized controlled trials (RCTs) of acupuncture for infertility extracted and systematically reviewed. A measurement tool to assess systematic reviews 2 (AMSTAR2) was used to evaluate the quality of the systematic reviews(SRs). After conducting pairwise meta-analyses, NMA was used to compare the efficacy of the acupuncture treatment options. The risk of bias was assessed using the Cochrane risk of bias tool. |
| **Results** | **Twenty-four eligible RCTs (n=2095)** were included in this review. The NMA data showed that warm acupuncture had the highest chances of increasing the rate of pregnancy (3 trials, 192 participants, RR=2.02,95%CI [1)]) while acupuncture most positively affected the ovulation rate. On the other hand, a combination of acupuncture and moxibustion (1 trial, 62 participants, RR=1.89 (0.69, 3.09) had the most significant improvement in endometrial thickness and could reduce the rate of pregnancy loss. |
| **Conclusion** | Compared with western medicine, acupuncture significantly increased the pregnancy and ovulation rates, as well as reducing the rate of miscarriages among Chinese women with infertility. Our NMA data demonstrated that warm acupuncture appears more effective in increasing the pregnancy rate. |

### 1.1.3. Li 2019

Li Zheyun, Wang Wanxue, Xie Yiran, Yang Yihua. [Acupuncture can improve the endometrium receptivity: a Meta-analysis]. Reproduction and Contraception. 2019;3:209-216. [201722].

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| **Objective** | To systemically evaluate the effectiveness of acupuncture on improving the endometrium receptivity (ER). |
| **Methods** | The clinical randomized controlled studies on the improvement of ER by acupuncture were retrieved by Chinese moxibustion, Wanfang and PubMed database. According to the inclusion and exclusion criteria, the literatures were selected and RevMan5.3 was used for meta-analysis. The data of uterine artery pulsation index (PI),uterine artery blood flow resistance index (RI),endometrium thickness and clinical pregnancy rate were analyzed and evaluated, and the improvement of ER by acupuncture or acupuncture combined with other methods was compared. |
| **Results** | A total of **15 articles** were included, and acupuncture or acupuncture combined with other methods could better improve uterine artery PI (P□0.000 01),uterine artery blood flow RI (P□0.000 01),endometrium thickness (P□0.000 01),type A endometrium (P□0.000 01) and **clinical pregnancy rate** (P□0.000 01). |
| **Conclusion** | The improvement of ER with acupuncture or moxibustion combined with other treatment methods is better than that without acupuncture. |

### 1.1.4. Yun 2019 ☆

Yun L , Liqun W , Shuqi Y , Chunxiao W , Liming L , Wei Y. Acupuncture for infertile women without undergoing assisted reproductive techniques (ART): A systematic review and meta-analysis. Medicine (Baltimore). 2019;98(29). [200807].

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| **Background** | Acupuncture is widely used for infertile women without undergoing assisted reproductive techniques (ART) in China but its effect is unclear. We aim to assess whether acupuncture and its combined therapy exert a positive influence on the outcome of female fertility. |
| **Methods** | We searched 6 databases, including Medline, EMBASE, the Cochrane Central Register of Controlled Trials, the China National Knowledge Infrastructure (CNKI), the China Science and Technology Journal Database (VIP), and Wan-Fang Data, from inception to June 2018. Studies of randomized controlled trials (RCTs) on women with infertility treated by acupuncture or its combined therapy were included. A meta-analysis was performed using Revman 5.3. The methodological quality of the studies was assessed through the risk of bias assessment tool by the Cochrane Collaboration. |
| **Results** | The pregnancy rate was significantly improved with treatment (RR = 1.84, 95% CI 1.62 to 2.10, P < .00001), compared to that in the control group. Subgroup analysis showed that comparing with pure western medicine intervention, no matter intervention with acupuncture alone, with acupuncture plus western medicine, with acupuncture plus Chinese medicine, or acupuncture plus Chinese medicine and western medicine, all of these subgroups exhibited significant improvement. The subgroup according to different types of infertility showed a significant improvement in infertility caused by polycystic ovary syndrome, tubal infertility, ovulatory disorder, and other factors. In addition, the ovulation rate and endometrial thickness were significantly increased. The level of LH was obviously decreased. Moreover, with acupuncture, less adverse effects occurred. The funnel plot revealed that publication bias might exist. All trials included had unclear risks in the aspects of allocation concealment, blinding of participants and personnel, blinding of outcome assessment, selective reporting, and other bias. Only 1 study was assessed as unclear risk in random sequence generation. In the incomplete outcome data, all studies were low risk, except 1. |
| **Conclusions** | Acupuncture and its combined therapy may be effective for treating female infertility. However, the included studies are not robust enough to draw a firm conclusion due to the not robustly sampled quality of the included studies. Future high-quality RCTs are needed to confirm our findings. |

### 1.1.5. Zhong 2019 ☆

Zhong Y, Zeng F, Liu W, Ma J, Guan Y, Song Y. Acupuncture in improving endometrial receptivity: a systematic review and meta-analysis. BMC Complement Altern Med. 2019;19(1):61. [196024].

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| **Background** | This systematic review aimed at summarizing and evaluating the evidence of randomized controlled trials (RCTs) using acupuncture to improve endometrial receptivity (ER). |
| **Methods** | We searched 12 databases electronically through August 2018 without language restrictions. We included RCTs of women of infertility due to low ER, and excluded infertility caused by other reasons or non-RCTs. Two independent reviewers extracted the characteristics of studies and resolved the differences through consensus. Data were pooled and expressed as standard mean difference (SMD) or mean difference (MD) for continuous outcomes and risk ratio (RR) for dichotomous outcomes, with 95% confidence interval (CI). |

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| **Results** | We found very low to moderate level of evidence that acupuncture may improve pregnancy rate (RR = 1.23 95%CI[1.13, 1.34] P < 0.00001) and embryo transfer rate (RR = 2.04 95%CI[1.13, 3.70] P = 0.02), increase trilinear endometrium (RR = 1.47 95%CI [1.27, 1.70] P < 0.00001), thicken endometrium (SMD = 0.41 95% CI [0.11, 0.72] P = 0.008), reduce resistive index (RI) (MD = -0.08 95% CI [- 0.15, - 0.02] P = 0.01), pulse index (PI) (SMD = -2.39 95% CI [- 3.85, - 0.93] P = 0.001) and peak systolic velocity/ end-diastolic blood velocity (S/D) (SMD = -0.60 95% CI [- 0.89, - 0.30] P < 0.0001), compared with medication, sham acupuncture or physiotherapy. Acupuncture was statistically significant as a treatment approach. |
| **Conclusion** | **The efficacy and safety of acupuncture on key outcomes in women with low ER is statistically significant**, but the level of most evidence was very low or low. More large-scale, long-term RCTs with rigorous methodologies are needed. |

### 1.1.6. Liu 2018

Liu Tao, Zhang Chi, Cao Jianan, Liu Xia, Liu Mi, Liu Mailan, Chang Xiaorong. [A Meta-analysis on the Clinical Study of Acupuncture in Treating Infertility]. Chinese Medicine Modern Distance Education of China. 2018;9:48-51. [201783].

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| 目的 系统评价历年针刺治疗不孕症的疗效性与安全性. 方法 计算机检索中国知网数据库(CNKI)中针刺治疗不孕症的临床随机对照试验. 检索时间从建库至2017年11月1日. 由2名研究者以Jadad标准对每个纳入研究进行偏倚风险与质量评估, 使用RevMan 5.3软件进行meta分析. 结果 共纳入12项研究, 共计1124例患者.meta分析结果显示:以针刺为主要干预措施组对照西药或中药组受孕率高, 总体有效率OR=3.23,95□CI为[2.42□4.32] (P□ 0.00001),且漏斗图结果显示基本对称. 结论 针刺或以针刺为主要治疗措施治疗不孕症疗效优于常规西药或中药治疗, 可提高患者受孕率. | |
| **Objective** | To systematically evaluate the efficacy and safety of acupuncture for infertility over the years. |
| **Methods** | A computer-based randomized controlled trial of acupuncture treatment of infertility in China Knowledge Network (CNKI). The search time was from Jianku to November 2017. On the 1st, two investigators used the Jadad criteria to evaluate the risk and quality of each included study, and used RevMan 5.3 software for meta-analysis. |
| **Results** | The results included 12 studies, a total of 1124 patients. The meta-analysis showed: The main intervention group was higher in pregnancy rate than the western medicine or Chinese medicine group. The overall effective rate was OR=3.23, 95% CI was [2.42~4.32] (P< 0.00001), and the funnel plot showed basic symmetry. |
| **Conclusion** | Acupuncture or Acupuncture is the main treatment for infertility. The curative effect is better than conventional western medicine or traditional Chinese medicine treatment, which can improve the pregnancy rate of patients. |

### 1.1.7. Hu 2017 ☆

Hu Qiulan, He Yuan, Wang Liwei, Huang Lijun, Liu Buping. [Meta-analysis on Acupuncture Therapy for Improving Endometrial Receptivity]. Clinical Journal of Traditional Chinese Medicine. 2017;01. [49142].

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| **Objective** | To evaluate the effectiveness of acupuncture to improve the receptivity of endometrium. |
| **Methods** | The clinical articles in Wan Fang Data, CNKI, VIP, CBM and Pubmed were electronically searched from the database set up till March 2016. Collect and select related literatures which report the effectiveness of acupuncture to improve the receptivity of endometrium with randomized controlled trials. Two Evaluators screen the studies and extract information independently, and evaluate the risk of bias about the inclusive articles. Analyze the final data by Meta-analysis with Rev Man5. 3 Meta-analysis software. |
| **Results** | Acupuncture combined with western medicine, acupuncture and western medicine, western medicine and acupuncture, western medicine and western medicine, acupuncture and moxibustion, acupuncture and moxibustion, acupuncture and moxibustion, acupuncture and moxibustion, + Acupuncture + Western medicine + Western medicine and Western medicine to improve the endometrial morphology were significantly different, the experimental group was significantly better than the treatment group, acupuncture and Western medicine, acupuncture + Western + Western medicine and Western medicine on the Improve the uterine artery blood flow was significantly different, acupuncture + Western + Western + Western medicine and Western medicine to improve uterine artery blood flow was no significant difference between the experimental group was significantly better than the treatment group. |
| **Conclusion** | A sole acupuncture therapy or with other therapy methods to improve the receptivity of endometrium has good curative effect. |

### 1.1.8. Clark 2013 ~

Clark NA, Will M, Moravek MB, Fisseha S. A systematic review of the evidence for complementary and alternative medicine in infertility. Int J Gynaecol Obstet 2013.122(3):202-6. [170667].

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| **Background** | The use of complementary and alternative medicine (CAM) by patients and physicians has increased markedly in recent years. Many case reports, case series, and uncontrolled trials of varying quality have been completed; however, there is now a slowly increasing number of randomized controlled trials (RCTs) examining the use of CAM. |
| **Objectives** | To identify, survey, and review RCTs investigating the use of CAM for infertility treatment. |
| **Methods** | Search Strategy: The MEDLINE and Cochrane databases were electronically searched. Selection Criteria: RCTs examining modalities for treatment or improvement of health status were reviewed. Data collection and analysis: RCTs were included based on use of objective measures, articles written in English, availability through the University of Michigan database, and clear published clinical outcomes. |
| **Main Results** | Thirty-seven articles assessing a variety of CAM modalities met inclusion criteria. Acupuncture, selenium supplementation, weight loss, and psychotherapeutic intervention had 3 or more studies demonstrating beneficial effect. Other interventions had been studied less and evidence for them was limited. |
| **Conclusions** | Although there is preliminary evidence of the effectiveness of some CAM interventions among infertile patients, many of these interventions require further investigation before they can be considered for routine clinical use. |

### 1.1.9. Franconi 2011 ☆☆

Franconi G, Manni L, Aloe L, Mazzilli F, Giambalvo Dal Ben G, Lenzi A, Fabbri A. Acupuncture in clinical and experimental reproductive medicine: a review. J Endocrinol Invest 2011;34(4):307-11. [156073]

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| **Objectifs** | Acupuncture has been used as treatment for infertility for hundreds of years, and recently it has been studied in male and female infertility and in assisted reproductive technologies, although its role in reproductive medicine is still debated. To review studies on acupuncture in reproductive medicine, in experimental and clinical settings. |
| **Méthodes** | Papers were retrieved on PubMed and Google Scholar and were included in the review if at least the abstract was in English. |
| **Résultats** | There is evidence of benefit mainly when acupuncture is performed on the day of embryo transfer (ET) in the live birth rate. Benefit is also evident when acupuncture is performed for female infertility due to polycystic ovary syndrome (PCOS). There is some evidence of sperm quality improvement when acupuncture is performed on males affected by idiopathic infertility. Experimental studies suggest that acupuncture effects are mediated by changes in activity of the autonomic nervous system and stimulation of neuropeptides/neurotransmitters which may be involved in the pathogenesis of infertility. |
| **Conclusions** | Acupuncture seems to have beneficial effects on live birth rate when performed on the day of ET, and to be useful also in PCOS as well as in male idiopathic infertility, with very low incidence of side effects. However, further studies are necessary to confirm the clinical results and to expand our knowledge of the mechanisms involved. |

#### 1.1.10. Ng 2008 ☆

Ng EH, So WS, Gao J, Wong YY, Ho PC. The role of acupuncture in the management of subfertility. Fertil Steril. 2008;90(1):1-13. [149869].

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| **Objective** | To review systematically the use of acupuncture in the management of subfertility. |
| **Design** | A computer search was performed via several English and Chinese databases to identify journals relevant to the subject. |
| **Result(S)** | The positive effect of acupuncture in the treatment of subfertility may be related to the central sympathetic inhibition by the endorphin system, the change in uterine blood flow and motility, and stress reduction. Acupuncture may help restore ovulation in patients with polycystic ovary syndrome, although there are not enough randomized studies to validate this. There is also no sufficient evidence supporting the role of acupuncture in male subfertility, as most of the studies are uncontrolled case reports or case series in which the sample sizes were small. Despite these deficiencies, acupuncture can be considered as an effective alternative for pain relief during oocyte retrieval in patients who cannot tolerate side effects of conscious sedation. The pregnancy rate of IVF treatment is significantly increased, especially when acupuncture is administered on the day of embryo transfer. |
| **Conclusion(S)** | Although acupuncture has gained increasing popularity in the management of subfertility, its effectiveness has remained controversial. |

## 1.2. Special Clinical Forms

### 1.2.1. Anovulatory Infertility:

#### 1.2.1.1. Gao 2020 (vs clomiphene citrate)

Gao R, Guo B, Bai J, Wu Y, Wu K. Acupuncture and clomiphene citrate for anovulatory infertility: a systematic review and meta-analysis. Acupuncture in Medicine. 2020;38(1):25-36. [210499]. doi

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| **Objective** | To evaluate the comparative effectiveness of acupuncture or acupuncture combined with clomiphene citrate (CC) versus CC alone on the outcomes of anovulatory infertility. |
| **Methods** | A literature search in eight databases yielded nine randomised controlled trials (RCTs) that evaluated the comparative effectiveness of acupuncture and CC in anovulatory infertility. Subsequently, data were extracted and the studies were assessed for the quality of their methodological designs and risk of bias. Meta-analyses of the RCT data were conducted. |
| **Results** | **Nine trials including 1441 women** were included in the meta-analysis. There were no significant differences in the rates of pregnancy (odds ratio (OR) 1.18, 95% CI 0.83 to 1.69), ovulation (OR 2.57, 95% CI 0.59 to 11.29) or pregnancy loss (OR 0.98, 95% CI 0.59 to 1.63) when acupuncture was used as an adjuvant therapy alongside CC. Although acupuncture alone did not increase the ovulation rate (OR 0.41, 95% CI 0.11 to 1.49), our review demonstrated superior effects in patients who received acupuncture as a separate treatment modality with respect to both the pregnancy rate (OR 2.34, 95% CI 1.76 to 3.10) and the maximum follicular diameter (mean difference 0.50 mm, 95% CI 0.44 to 0.56 mm) when compared with CC alone. Statistical analysis also showed a reduction in the rate of pregnancy loss when acupuncture was used as a separate treatment compared with CC alone (OR 0.19, 95% CI 0.08 to 0.45). |
| **Conclusions** | Based on the above pooled results of the studies, the use of acupuncture as a monotherapy significantly improved the rate of pregnancy among the study participants compared with the use of CC alone. However, any results drawn from these studies should be interpreted with caution when considering the context of clinical practice. |

#### 1.2.1.2. Ai 2017

Ai Xiao, Wang Lin, Yi Wei, Xu Neng-Gui. [Meta-analysis of Acupuncture-Moxibustion in Treatment of Anovulation Infertility]. Guiding Journal of Traditional Chinese Medicine and Pharmacy. 2017;20. [42594].

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| **Objective** | To evaluate the clinical effects of acupuncture on anovulation infertility using metaanalysis method. |
| **Methods** | Literature analysis was established based on the collection of the RCT (randomized controlled trials) clinical research literatures about the treatment of anovulation infertility with acupuncture by searching China journal full text database (CNKI), Wanfang database, Chinese biomedical literature CD-ROM Database (CBM), Pubmed and Web of Science database from January 1999 to July 2016. The test bias risk and quality assessment in accordance with Risk of bias table made by Cochrane network, Rev Man5. 2 was used for heterogeneity test and according to the results determine if a fixed or a random effect model, then getting the pooled OR, P value and the 95% confidence interval. |
| **Results** | The successful pregnant rate of acupuncture group significantly higher than western medicine group [OR =2. 56, 95% CI (1. 94, 3. 38), P <0. 000, 01]. The successful pregnant rate of the combination of acupuncture and Chinese medicine group significantly higher than western medicine group [OR=3. 24, 95% CI (2. 19, 4. 77), P<0. 000, 01]. |
| **Conclusion** | Acupuncture is an effective method for anovulation infertility than western medicine and acupuncture added with traditional Chinese medicine is better. |

### 1.2.2. Polycystic Ovary Syndrome Induced Infertility

#### 1.2.2.1. Deng 2024

Deng YP, Zhou YL, Wei TT, He GS, Zhu ZX, Zhang SN, Liu MJ, Xue JJ, Zhang WX, Yang XG. Combined traditional Chinese medicine therapy for the treatment of infertility with polycystic ovary syndrome: A network meta-analysis of randomized controlled trials. Medicine (Baltimore). 2024 Jul 12;103(28):e38912. https://doi.org/10.1097/MD.0000000000038912

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| **Backgound** | Polycystic ovary syndrome (PCOS) infertility has attracted great attention from researchers due to its high incidence. Numerous studies have shown that Chinese medicine is effective in treating this disease, but there is a wide variety of Chinese medicine therapies available, and there is a lack of comparative evaluation of the efficacy of various Chinese medicine combination therapies in the clinic, which requires further in-depth exploration. This study aims to evaluate the efficacy of a combined traditional Chinese medicine (TCM) therapy for the treatment of infertility with PCOS using network meta-analysis (NMA). |
| **Methods** | In PubMed, web of Science, Cochrane Library, Embase, China Knowledge Network, Wanfang Data, VIP Database, China Biomedical Literature Database (SinoMed) databases, searchs were conducted for information about the randomized controlled trials (RCTs) of combined TCM therapy for the treatment of infertility with PCOS. Quality evaluation was performed using the Cochrane 5.3 risk of bias assessment tool, and NMA using Stata 16.0. |
| **Results** | This study comprised **28 RCTs** using 8 combined TCM therapies in total. The results of the NMA showed that moxibustion + herbal, fire acupuncture + herbal, acupuncture + herbal, electroacupuncture + herbal, and acupoint application + herbal improved the clinical pregnancy rate better than acupuncture, herbal, and western medicines monotherapy ($P < .05$). Additionally, ear point pressure + herbal enema + herbal, acupuncture and moxibustion + herbal, fire acupuncture + herbal, and acupuncture + herbal improved the ovulation rate better than acupuncture, herbal, and western medicines monotherapy ($P < .05$). Moxibustion + herbal, fire acupuncture + herbal, and acupuncture + herbal are the 3 most effective therapies for improving the clinical pregnancy rate. Fire acupuncture + herbal, acupuncture + herbal, and ear point pressure + herbal enema + herbal are the 3 most effective therapies for improving the ovulation rate. |
| **Conclusion** | The combined TCM therapy demonstrated better efficacy for the treatment of infertility with PCOS compared to acupuncture, herbal, and western medicines monotherapy. However, the optimal treatment therapy varied depending on the outcome indicators. Further large sample, high-quality, and standardized RCTs are needed to verify these findings. |

#### 1.2.2.2. Yang 2023

Yang L, Yang W, Sun M, Luo L, Li HR, Miao R, Pang L, Chen Y, Zou K. Meta analysis of ovulation induction effect and pregnancy outcome of acupuncture & moxibustion combined with clomiphene in patients with polycystic ovary syndrome. Front Endocrinol (Lausanne). 2023 Nov 20;14:1261016. https://doi.org/10.3389/fendo.2023.1261016

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| **Objective** | Using Mesh Meta Analysis to evaluate the efficacy of Acupuncture & Moxibustion, Clomiphene, Acupuncture & Moxibustion combined with Clomiphene for treating Polycystic Ovary Syndrome (PCOS), in order to provide evidence-based medical evidence for whether to recommend Acupuncture & Moxibustion or Combine western medicine to treat PCOS. |

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| **Methods** | Eight databases including The Cochrane Library, Pubmed, Embase, Web of Science, CNKI, Wanfang Date, VIP and CBM were searched by computer. The included research period is from the establishment of the database to May 2023, which concerned with randomized controlled trials involving Acupuncture & Moxibustion, Clomiphene, Acupuncture & Moxibustion combined with Clomiphene on ovulation induction and pregnancy outcome in patients with PCOS. The duration of the research paper is from 2016 to 2023.The inclusion criteria refer to the Rotterdam standards issued by the European Center for Human Reproduction and Embryology and the American Society of Reproductive Medicine in January 2003, or the Expert Consensus on the Diagnosis and Treatment of Polycystic Ovarian Syndrome by the Endocrinology Group of the Obstetrics and Gynecology Branch of the Chinese Medical Association. Simultaneously exclude related diseases, repetitive literature, as well as literature with incomplete abstract information and no original data provided. Two researchers independently screened the literature, extracted data, and evaluated the risk of bias included in the study, using Stata17.0 software for a mesh meta-analysis. |
| **Results** | **Six randomized controlled trials were included, covering 1410 PCOS patients**. Three interventions included Acupuncture & Moxibustion, Clomiphene, Acupuncture & Moxibustion combined with Clomiphene. Mesh Meta Analysis showed that in terms of improving ovulation rate, there was no statistical difference between Acupuncture & Moxibustion (A), Clomiphene (B), Clomiphene combined with Acupuncture & Moxibustion (C) ($P>0.05$).Acupuncture & Moxibustion (A) versus Clomiphene (B) [MD=0.15,95% CI (-0.51,0.80)], Acupuncture & Moxibustion (A) versus Clomiphene combined with Acupuncture & Moxibustion (C) [MD=1.60,95% CI (0.97,2.23)], Clomiphene (B) versus Clomiphene combined with Acupuncture & Moxibustion (C) [MD=1.45,95% CI (0.91,1.99)]. In terms of pregnancy outcome, the difference between the three intervention methods was statistically significant ($P<0.05$). Acupuncture & Moxibustion (A) versus Clomiphene (B) [MD=-0.80,95% CI (-1.84,0.23)], Acupuncture & Moxibustion (A) versus Clomiphene combined with Acupuncture & Moxibustion (C) [MD=0.29,95% CI (-0.73,1.30)], and Clomiphene (B) versus Clomiphene combined with Acupuncture & Moxibustion (C) [MD=1.09,95% CI (0.39,1.79)], The order of pregnancy rate from high to low is Acupuncture & Moxibustion combined with Clomiphene (C), Acupuncture & Moxibustion (A), Clomiphene (C).In terms of influencing endometrial thickness, the difference between the three intervention methods was statistically significant ($P<0.05$). Acupuncture & Moxibustion (A) versus Clomiphene (B) [MD=-0.84,95% CI (-1.87,0.19)], Acupuncture & Moxibustion (A) versus Acupuncture & Moxibustion combined with Clomiphene (C) [MD=0.26,95% CI (-1.01,1.53)], Clomiphene (B) versus Acupuncture & Moxibustion combined with Clomiphene (C) [MD=1.10,95% CI (0.36,1.84)], Acupuncture & Moxibustion combined with Clomiphene (C) has the best effect on improving endometrial thickness. In subgroup analysis, the effect of Acupuncture & Moxibustion treatment frequency on ovulation rate and pregnancy rate was not statistically significant. The combination of Acupuncture & Moxibustion, Electroacupuncture and warm Acupuncture & Moxibustion has no effect on the pregnancy rate, but the combination of Electroacupuncture and Clomiphene has the best effect on improving the ovulation rate. In the observation of adverse reactions, compared with clomiphene alone, Acupuncture & Moxibustion combined with Clomiphene can reduce the occurrence of Luteinized Unruptured Follicle Syndrome (LUFS) and Ovarian Hyperstimulation Syndrome (OHSS), and reduce the occurrence of physical adverse reactions such as nausea, vomiting, headache and dermatitis. |

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| **Conclusion** | Acupuncture & Moxibustion is effective in improving the ovulation promoting effect and pregnancy outcome of PCOS patients. The ovulation promoting effect of Acupuncture & Moxibustion or combined with Clomiphene is similar to that of Clomiphene alone, but Acupuncture & Moxibustion combined with Clomiphene has more advantages in improving the pregnancy rate of PCOS, and it also can reduce the adverse reactions of Clomiphene alone. Acupuncture & Moxibustion can be used as a recommended treatment for PCOS. More cases should also be included in the subgroup analysis to study the impact of Acupuncture & Moxibustion programs on clinical efficacy and further optimize the Acupuncture & Moxibustion treatment program. |

#### 1.2.2.3. Chen 2022

Chen X, Lan Y, Yang L, Liu Y, Li H, Zhu X, Zhao Y, Long C, Wang M, Xie Q, Li Z, Wu J. Acupuncture combined with metformin versus metformin alone to improve pregnancy rate in polycystic ovary syndrome: A systematic review and meta-analysis. Front Endocrinol (Lausanne). 2022 Aug 29;13:978280. https://doi.org/10.3389/fendo.2022.978280.

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| **Objective** | The aim of this study was to evaluate the comparison between acupuncture combined with metformin versus metformin alone in improving the pregnancy rate of people with polycystic ovary syndrome (PCOS). |
| **Methods** | A literature search of eight databases resulted in nine randomized controlled trials (RCTs) that assessed the effect of acupuncture combined with metformin on pregnancy rate in PCOS patients compared with metformin alone. Subsequently, data extraction and analysis were conducted to evaluate the quality and risk of bias of the methodological design of the study, and meta-analysis was conducted on the RCT data. |
| **Results** | **Nine RCTs and 1,159 women** were included. Acupuncture can improve pregnancy rate. It was analyzed according to the diagnostic criteria of PCOS [Z = 2.72, p = 0.007, relative risk (RR) 1.31, 95% CI 1.08 to 1.60, p = 0.15, I 2 = 41%]. Analysis was performed according to different diagnostic criteria of pregnancy (Z = 3.22, p = 0.001, RR 1.35, 95% CI 1.13 to 1.63, p = 0.12, I 2 = 42%). Acupuncture can improve ovulation rate. Subgroup analysis was performed according to the number of ovulation patients (Z = 2.67, p = 0.008, RR 1.31, 95% CI 1.07 to 1.59, p = 0.04, I 2 = 63%) and ovulation cycle (Z = 3.57; p = 0.0004, RR 1.18, 95% CI 1.08 to 1.29, p = 0.57, I 2 = 0%). Statistical analysis also showed that acupuncture combined with metformin could improve homeostatic model assessment of insulin resistance (HOMA-IR) [mean difference (MD) -0.68, 95% CI -1.01 to -0.35, p = 0.003, I 2 = 83%]. |
| **Conclusions** | Based on the results of this study, compared with metformin alone, acupuncture combined with metformin has a positive effect on pregnancy rate, ovulation rate, and insulin resistance in PCOS. However, due to the limitations regarding the number and quality of the included studies, the above conclusions need to be verified by further high-quality studies. |

#### 1.2.2.4. Song 2019 (Network meta-analysis)

Song YJ, Liang FX, Wu S, Yang HS, Chen L, Huang Q, Tang HT, Lu W, Wang H, Chen S, Zhang YJ, Zhang YL. [Network meta-analysis on the effects of the acupuncture-related therapy on ovulation rate and pregnancy rate in patients with polycystic ovary syndrome]. Chinese Acupuncture and Moxibustion. 2019;39(7):792-8. [199342].

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| **Objective** | To review systematically the safety and effectiveness of acupuncture-related therapies on ovulation rate and pregnancy rate in patients with polycystic ovary syndrome (PCOS). |

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| **Methods** | From PubMed, Embase, the Cochrane Library, China Biology Medicine disc (CBM), China National Knowledge Infrastructure (CNKI), Wanfang database and VIP database, the randomized controlled trials (RCTs) on PCOS were retrieved in the period from the date of database establishment to January 8, 2018. Two researchers screened the articles, extracted the data and assessed the bias risk of the eligible trials independently. Using Stata 13.0 and WinBUGS 1.4.3 software, the data were analyzed. |
| **Results** | A total of 39 RCTs were collected, including 4605 cases of PCOS and 14 kinds of acupuncture-related therapies and the comprehensive therapies. The short-term therapeutic effects were observed. The results of mesh meta-analysis showed: regarding the ovulation rate, the effects of the acupuncture-medication therapy were better than western medication. The top 6 therapeutic measures were the treatment with acupoint thread-embedding therapy and medication (93.3%), the treatment with moxibustion and Chinese herbal medicine (91.4%), moxibustion (74.5%), the treatment with acupuncture and medication (65.7%), the treatment with acupuncture-moxibustion and auricular point therapy (61.9%) and the treatment with acupuncture and auricular point therapy (49.6%). Regarding the pregnancy rate, the effects of the acupuncture-medication therapy were better than western medication. The top 6 therapeutic measures were the treatment with acupuncture and auricular point therapy (91.5%), the treatment with moxibustion and Chinese herbal medication (86.9%), the treatment with acupuncture-moxibustion and auricular point therapy (81.1%), the treatment with acupoint thread-embedding therapy and medication (69.4%), the treatment with acupuncture and medication (66.1%) and the treatment with placebo and western medication (58.7%). |
| **Conclusion** | Among acupuncture-related therapies, the combined treatment is more advantageous than single therapy and its safety is superior to western medication. The combined therapies are various in advantages. Because of the limitation of the present researches, it needs a large scale of RCTs with rational design, high quality and proper methods to verify this research conclusion. |

#### 1.2.2.5. Shan 2018

Shan Lina, Lin Lixia, Chen Yijiao, Chen Sida, Liu Buping. [Meta-analysis on Acupuncture and Clomiphene Citrate Therapy for Polycystic Ovary Syndrome Induced Infertility]. World Chinese Medicine. 2018;(3). [115726].

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| **Objective** | To evaluate the efficacy of acupuncture and clomiphene citrate (CC) treatment for Polycystic Ovary Syndrome (PCOS) -induced infertility. |
| **Methods** | China National Knowledge Infrastructure, Wanfang Data, VIP China Science and Technology Journal Database covering the period of 1979-2016 were searched. Two reviewers assessed the methodological quality according to Jadad scale and Cochrane Systematic Review independently. Meta-analysis was performed by using the Rev Man 5. 3 software. |
| **Results** | A total of **9 articles involving 769 patients** were included. The total effective rate between acupuncture combined with other methods of traditional Chinese medicine and CC combined with other therapies, acupuncture combined with other methods of traditional Chinese medicine and CC alone was that the former was significantly higher than the latter (P < 0. 05). There was no significant difference between acupuncture alone and CC combined with other therapies (P > 0. 05). The gravidity rate between acupuncture alone and CC combined with other therapies, acupuncture combined with other methods of traditional Chinese medicine and CC alone was that the former was significantly higher than the latter (P < 0. 05). As to the improvement of FSH and T, or the reduction of LH, acupuncture combined with other methods of traditional Chinese medicine was definitely prior to CC alone (P < 0. 05). |

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| **Conclusion** | As to the total effective rate and the gravidity rate, the treatment of acupuncture combined with other methods of traditional Chinese medicine for PCOS-induced infertility was significantly prior to CC alone or CC combined with other therapies. Comparing with CC alone, acupuncture has an significant advantage in improving the FSH, T score, and reducing the LH score. |

### 1.2.3. Fallopian Tube Obstructive Infertility

#### 1.2.3.1. Huang 2023

Huang W, Ling J, Fang X, Ou X, Du X. Comparative efficacy of acupuncture-related interventions for tubal obstructive infertility: A systematic review and Bayesian meta-analysis of randomized controlled trials. Complement Ther Med. 2023 Dec;79:103003. https://doi.org/10.1016/j.ctim.2023.103003

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| **Background** | Tubal obstructive infertility (TOI) is a challenging condition affecting many women worldwide. Acupuncture and herbal medicine have emerged as potential therapeutic options for enhancing fertility outcomes in these patients. However, the evidence regarding their efficacy remains inconclusive, necessitating a comprehensive systematic review and meta-analysis. |
| **Method** | Computer searches were conducted in PubMed, Cochrane, Embase, Web of Science, China National Knowledge Infrastructure (CNKI), VIP Information, Wanfang Database, and China Biology Medicine (CBM) databases to retrieve relevant literature on the efficacy and safety of acupuncture and related therapies for the treatment of tubal obstructive infertility. The search period extended from the inception of the databases to December 2022. Two researchers independently screened the literature based on strict inclusion criteria, extracted relevant data, and utilized Cochrane Collaboration tools and the Jadad scale to comprehensively assess the quality of the included studies. Subsequently, pairwise meta-analysis and network meta-analysis were performed using statistical software such as StataSE and Rstudio, and graphical representations were generated to present the results. |
| **Result** | The network meta-analysis included 1580 articles, with **23 meeting the criteria**. These studies involved **2355 patients** and explored 13 intervention measures. Acupuncture-related therapies outperformed control interventions in improving pregnancy rates, tubal patency rates, and overall effectiveness while demonstrating a lower incidence of adverse events. EA+CHM was identified as the most effective for pregnancy rates, MOX for tubal patency rates, and MOX+AP for overall effectiveness. The safety profile of acupuncture-related interventions was acceptable. These findings support acupuncture-related therapies as effective and safe options for tubal obstructive infertility management. Further high-quality research is needed to validate and expand upon these results. |
| **Conclusion** | These findings offer novel treatment strategies for acupuncture-related interventions, providing practitioners with evidence-based guidance. Addressing limitations through future research is crucial, including diverse literature, emphasizing higher-quality RCTs, and exploring a broader range of interventions with long-term follow-up data. Systematic assessment of adverse events, standardized techniques, and robust ranking methods should be considered. |

#### 1.2.3.2. Hu 2018

Hu Yujiao, Chen Hao, Xia Youbing. [Acupuncture in Treatment of Fallopian Tube Obstructive Infertility: A Systematic Review and Meta-Analysis]. Liaoning Journal of Traditional Chinese Medicine. 2018;12:2469-2473. [201749].

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| **Objective** | To assess the clinical efficacy of acupuncture in treating fallopian tube obstructive infertility systematically. |
| **Methods** | All randomized controlled trial(RCT)of acupuncture for treatment of tubal obstructive infertility was conducted by searching Pubmed, Embase, Cochrane Library, CNKI, CBM and Wanfang database from inception until January 2018.The trial screening and data extraction was conducted independently by two authors. Revman 5.3 was used to perform meta-analysis of the included literature. |
| **Results** | **10 RCTs** were included in the final study. Meta-analysis showed that the total effective rate of the experimental group after treatment was higher than that of the control group [RR=1.47,95%CI(1.26,1.71),P<0.00001].The pregnancy rate of the experimental group was higher than that of the control group [RR=1.53,95% CI(1.31,1.79),P<0.00001],the tubal patency rate was higher in the experimental group than in the control group [RR=1.37,95% CI(1.19,1.57),P<0.00001]. |
| **Conclusion** | :Acupuncture has obvious advantages in the clinical application of tubal obstructive infertility. It has high safety and can significantly increase tubal patency and pregnancy rate,and achieve better clinical therapeutic effect. |

### 1.2.4. Luteinized Unruptured Follicle Syndrome

#### 1.2.4.1. Zhang 2025

Zhang R, Lin G, Wang W. Clinical evidence of acupuncture for luteinized unruptured follicle syndrome: a systematic review and meta-analysis of randomized controlled trials. Front Endocrinol (Lausanne). 2025 Aug 29;16:1640820. https://doi.org/10.3389/fendo.2025.1640820

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| **Objective** | This study aimed to systematically assess the efficacy of acupuncture in women with luteinized unruptured follicle syndrome (LUFS) based on existing randomized controlled trials (RCTs). |
| **Methods** | A search of eight databases and one clinical trial database was conducted on May 3, 2025, to identify relevant RCTs examining the benefits of acupuncture for LUFS. The clinical outcomes of interest included two primary outcomes and five secondary outcomes. Forest plots were used to illustrate the pooled results, and sensitivity analyses were performed to verify the robustness of the evidence. Subgroup analysis was conducted to investigate whether the effect of acupuncture on the primary outcomes was related to the number of acupoints used per treatment. In addition, Begg's and Egger's tests were conducted to quantitatively examine publication bias among the studies. |
| **Results** | A total of **15 RCTs from China involving 1,030 participants** with LUFS were included. According to the pooled results, acupuncture intervention effectively increased the ovulation rate by 25% [risk difference (RD) = 0.25, 95%CI = 0.21-0.30, p < 0.00001] and the pregnancy rate by 22% (RD = 0.22, 95%CI = 0.16-0.28, p < 0.00001) compared with the control group. Moreover, acupuncture treatment was more conducive to improving the luteinizing hormone levels [mean difference (MD) = 3.76, 95%CI = 2.27-5.25, p < 0.00001], the estradiol levels [standardized MD (SMD) = 0.47, 95%CI = 0.31-0.63, p < 0.00001], the progesterone levels (MD = 1.50, 95%CI = 1.09-1.91, p < 0.00001), the resistance index (MD = -0.07, 95%CI = -0.09 to -0.05, p < 0.00001), and the pulsatility index (MD = -0.10, 95%CI = -0.15 to -0.06, p < 0.00001) of the ovarian artery. Subgroup analysis indicated a higher ovulation rate with stimulation of more than six acupoints (28%) compared with six or fewer acupoints (19%); however, there was no notable association between the number of acupoints and the pregnancy rate (22% vs. 23%). Furthermore, sensitivity analyses confirmed the robustness of the results, while both Begg's and Egger's tests indicated no significant publication bias across studies. |

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| **Conclusions** | This pooled evidence from Chinese RCTs reveals that acupuncture is a promising complementary therapy for LUFS. However, these findings might not be generalizable outside China, and most trials exhibited deficient methodological reporting. Therefore, further research studies with more rigorous designs and larger sample sizes are needed to confirm the efficacy of acupuncture for LUFS. |

#### 1.2.4.2. Liu 2020 ∅

Liu X, Shi W, Liu Z, Shi S, Ke C, Zhang P, Tan Z, Zhang W. Effects of acupuncture on Luteinized Unruptured Follicle Syndrome: A meta-analysis of randomized controlled trials. Complement Ther Med. 2020. [205773]. doi

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| **Purpose** | This meta-analysis aimed to evaluate the comprehensive efficiency and safety of acupuncture on Luteinized Unruptured Follicle Syndrome based on Randomized Controlled Trials (RCTs). |
| **Methods** | Six electronic databases (i.e. Wanfang, VIP, China National Knowledge Infrastructure, Pubmed, Cochrane, and Embase) were searched from inception to July 2019. Randomized controlled trials were eligible to evaluate the effects of acupuncture alone or acupuncture as an adjunct. The primary outcomes were the ovulation rate and pregnancy rate. Two reviewers proceeded study selection and quality assessment of included trials and performed heterogeneity of included studies before meta-analysis.Trial Sequential Analysis was used to assess the risk of random error and estimate required information size. The Grading of Recommendations Assessment, Development and Evaluation was applied for assessing level of evidence. |
| **Results** | **10 studies involving 715 participants** were included Meta-analysis showed acupuncture alone and acupuncture as an adjunct both could significantly improve ovulation, which were confirmed by Trial Sequential Analysis. **The evidence of acupuncture improving pregnancy rate was insufficient**. Improved serum luteinizing hormone and estradiol levels, and decreased pulsatility index and resistance index of ovary artery were shown in both two subgroups. Level of evidence of most outcomes was “low” or “very low”, so the results should be cautiously interpreted. |
| **Conclusions** | Acupuncture alone or be combined with drugs are effective on Luteinized Unruptured Follicle Syndrome especially for improving ovulation . While concurrent evidence is insufficient, and further studies of high quality are needed to strengthen the conclusion. |

### 1.2.5. Poor endometrial receptivity

#### 1.2.5.1. Zheng 2022

Zheng X, Yu S, Liu L, Yang H, Wang F, Yang H, Lv X, Yang J. The Dose-Related Efficacy of Acupuncture on Endometrial Receptivity in Infertile Women: A Systematic Review and Meta-Analysis. Front Public Health. 2022 Apr 28;10:858587. https://doi.org/10.3389/fpubh.2022.858587. https://pubmed.ncbi.nlm.nih.gov/35570887; PMCID: PMC9095926.

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| **Background** | Progress has been achieved by using acupuncture widely for poor endometrial receptivity (PER). However, different acupuncture dosages may lead to controversy over efficacy. |
| **Objective** | To evaluate the evidence-based conclusions of dose-related acupuncture on infertile women with PER. |

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| **Method** | References were retrieved from nine databases from inception to 26 February 2022. This meta-analysis included randomized controlled trials (RCTs) that investigated the dose-related efficacy of acupuncture for PER with outcomes of endometrium receptivity (ER) parameters by transvaginal sonography (TVS) and the subsequent pregnancy outcomes in three acupuncture-dose groups: the high-dosage group (three menstrual cycles), the moderate-dosage group (one menstrual cycle), and the low-dosage group (two or four days). Since there remained sufficient heterogeneity among the three subsets, we prespecified seven subgroup variables (four clinical and three methodological) to investigate the heterogeneities. |
| **Results** | A total of **14 RCTs (1,564 women)** of moderate or low overall quality were included. The results were different when the dosage of acupuncture was restricted. For the moderate or high-dosage group, CPR and part of ER parameters were improved in the acupuncture group (i.e., CPR: OR = 2.00, 95% CI [1.24, 3.22], p = 0.004, I 2 = 0% in one menstrual cycle; OR = 2.49, 95%CI [1.67, 3.72], p < 0.05, I 2 = 0% in three menstrual cycles). However, for the low-dosage group, no statistical difference was observed in CPR (OR = 0.07, 95% CI [-0.10, 0.23], p = 0.44, I 2 = 82%) and a part of the ER parameters. In subgroup analysis, four subgroup variables (the routine treatment, risk of performance bias, duration of acupuncture treatment, and the age of participants) could explain some of the heterogeneities across all trials. |
| **Conclusion** | The finding indicated that the trend of relatively more acupuncture dosage showed better effects for poor endometrial receptivity among PER women. It remains a potential heterogeneity in our studies. Further high-quality trials with a homogeneity trial design need to be conducted. |

## 1.3. Special Acupuncture Techniques

### 1.3.1. Combined with traditional Chinese medicine formulas

#### 1.3.1.1. Mo 2023

Mo J, Zhang Y, Jin N, Zhou Y. Effectiveness of traditional Chinese medicine formulas combined with acupuncture in the treatment of ovulation dysfunction infertility: A systematic review and meta-analysis. Medicine (Baltimore). 2023 Jul 7;102(27):e34310.
https://doi.org/10.1097/MD.0000000000034310

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| **Background** | To evaluate the efficacy and safety of traditional Chinese medicine formulas combined with acupuncture for the treatment of ovulation dysfunction infertility (ODI). |
| **Methods** | From January 1, 2018 to March 12, 2023, 7 electronic databases, PubMed, EMBASE, Web of Science, Cochrane Library, CNKI, Wanfang Database, and CBM, were systematically searched to identify eligible randomized controlled trial studies. |

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| **Results** | Meta analysis showed that traditional Chinese medicine combined with acupuncture can more effectively improve sex hormone levels compared to Western medicine alone, including follicle stimulating hormone (FSH) in older patients (standardized mean difference [SMD]: 3.00; 95% confidence interval [CI]: 2.35-3.66; P = .024, I 2 = 28%), FSH in younger patients (SMD: 0.45; 95% CI: -0.15, 1.05; P = .03, I 2 = 71%), estradiol (E2) (SMD: 7.50; 95% CI: v0.47, 15.48; P < .00001, I 2 = 99%), and progesterone (P) (SMD: 2.20; 95% CI: 2.07-2.33; P < .00001, I 2 = 29%). Compared to Western medicine alone, traditional Chinese medicine combined with acupuncture also had a better effect to increase ovulation rate (risk ratio [RR]: 2.46; 95% CI: 1.72-3.52; P < .00001, I 2 = 0%), pregnancy rate (RR: 2.50; 95% CI: 1.96-3.18; P < .00001, I 2 = 0%), maximum follicle diameter (MFD) (SMD: 2.27; 95% CI: 1.37-3.16; P < .00001, I 2 = 91%), and endometrial thickness (SMD: 1.71; 95% CI: 1.31-2.11; P < .00001, I 2 = 87%). The combination of traditional Chinese medicine and acupuncture also had better effects on quality of life (RR: 0.19; 95% CI: 0.15-0.23; P < .00001, I 2 = 0%) and reduced adverse reactions (RR: 0.15; 95% CI: 0.05-0.48; P = .001, I 2 = 0%), compared to Western medicine alone. |
| **Conclusion** | This study shows evidence that traditional Chinese medicine formulas combined with acupuncture are an effective and safe treatment approach. However, this conclusion requires further confirmation due to the insufficient quality of the included trials. |

# 2. Overviews of Systematic Reviews

## 2.1. Li 2026 (PCOS-related infertility)

Li H, Sun C, Zhou Q, Du G. The efficacy and safety of combined traditional Chinese and Western medicine treatment for PCOS-related infertility: an umbrella meta-analysis. Front Med (Lausanne). 2026;13:1877844. https://doi.org/10.3389/fmed.2026.1877844

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| **Background** | Polycystic ovary syndrome (PCOS) commonly causes infertility in women of reproductive age. Integrated Chinese-Western medicine is used to improve reproductive outcomes and reduce adverse effects, but its reliability remains uncertain. |
| **Methods** | Efficacy and safety meta-analyses of integrated traditional Chinese medicine (TCM) and Western medicine for PCOS-related infertility were synthesized. PubMed, Embase, Web of Science, the Cochrane Library, the China National Knowledge Infrastructure (CNKI), Wanfang, and the Chinese Science and Technology Periodical Database (VIP) were searched from inception to November 2025. A Measurement Tool to Assess Systematic Reviews (AMSTAR) and Grading of Recommendations Assessment, Development and Evaluation (GRADE) assessed quality and certainty. Outcomes were classified by significance and evidence strength. |
| **Results** | **Twenty meta-analyses included 39 intervention types and 153 outcomes**, 135 outcomes (36 interventions) favored integrated treatment, and 18 (13 interventions) were non-significant. Heterogeneity and publication bias affected 33 and 48.4%, respectively. AMSTAR scores were 4-9. Four outcomes from two interventions met Class I-III criteria. Chinese medicine plus Western medicine using the TCM Cycle Method showed Class I evidence for pregnancy rate (OR: 2.76, 95% CI: 2.43, 3.13) and Class II evidence for total clinical efficiency (OR: 3.78, 95% CI: 3.29, 4.34) and ovulation rate (OR: 2.90, 95% CI: 2.39, 3.50). TCM cycle therapy plus ovulation induction showed Class III evidence for ovulation rate (RR: 1.10, 95% CI: 1.06, 1.14). GRADE ratings were high for 45, moderate for 92, and low for 16 outcomes. |
| **Conclusion** | Integrated therapy showed promising associations, but robust evidence remains limited; only four of 153 outcomes met Class I-III criteria. Rigorous randomized trials are required. |

## 2.2. Fan 2025

Fan H, Zhou J, Tang C, Liu H. The efficacy of acupuncture on endometrial receptivity in infertile women: an overview of systematic review and meta-analysis. Front Med (Lausanne). 2025 Aug 28;12:1609519. https://doi.org/10.3389/fmed.2025.1609519

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| **Background** | Enhancing endometrial receptivity (ER) is critical for improving fertility outcomes. Several systematic reviews (SRs) have explored acupuncture's role in ER improvement, but the evidence remains inconsistent due to variable methodological quality. This overview aimed to assess the rigor, bias, and evidence certainty of existing SRs while summarizing clinical findings on acupuncture's efficacy and safety for ER enhancement in infertility. |
| **Methods** | Seven databases (PubMed, Embase, Web of Science, Cochrane Library, CNKI, VIP, Wanfang) were searched from inception to March 1, 2025. Eligible SRs evaluated acupuncture's effects on ER in infertile women. Two reviewers independently conducted study selection and data extraction. Quality and bias were assessed using AMSTAR 2, ROBIS, PRISMA-A, and GRADE tools. |
| **Results** | **Ten SRs** (2019–2023; each including 7–25 RCTs) were included. AMSTAR 2 indicated all SRs were of critically low methodological quality. PRISMA-A showed >70% reporting completeness but deficiencies in protocol registration (50%) and funding disclosure (10%). Only one SR had low ROBIS-assessed bias risk. Of 55 outcomes, 92.72% were rated low or very low quality (2 high, 2 moderate, 24 low, 27 very low). Descriptive synthesis suggested that combining acupuncture with other treatments (medications, herbal medicine, or IVF-ET) may improve pregnancy and ovulation rates with moderate-quality evidence. |
| **Conclusion** | Evidence supporting acupuncture for enhancing endometrial receptivity remains weak due to pervasive methodological flaws and heterogeneity. Combination therapies show preliminary benefit, but robust, well-designed RCTs using standardized outcomes are needed to confirm efficacy. |

## 2.3. Lee 2021

Lee JW, Hyun MK, Kim HJ, Kim DI. Acupuncture and herbal medicine for female infertility: an overview of systematic reviews. Integr Med Res. 2021;10(3). [217877]. doi

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| **Background** | Acupuncture and herbal medicine have been used as additional treatments for infertility or as an adjuvant treatment of assisted reproductive technology (ART) in infertility. Many systematic reviews (SRs) and meta-analyses (MA) have been published. This paper reviews the SRs and MA of acupuncture and herbal medicine on infertility to provide evidence for clinical decision making. |
| **Methods** | A comprehensive literature search of SRs and MA for the effects of acupuncture and herbal medicine on infertility was conducted using nine databases. Two independent reviewers extracted the data of the selected SR and MA and evaluated their methodological quality using the 'Assessment of multiple systematic reviews 2 (AMSTAR2)'. |
| **Results** | Twenty-one studies were included in this analysis. Eight studies were published in China, and three studies each were published in the USA, UK, and Australia. Conflicting evidence on the efficacy of acupuncture for infertile women has been reported. Herbal medicine for infertile women undergoing ART, women with anovulation, and women with polycystic ovary syndrome helped improve the clinical pregnancy rate. The methodological quality of SRs and MAs evaluated by AMSTAR 2 was low or very low because the protocol or list of excluded studies were omitted. |

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| **Conclusion** | Herbal medicine tended to be effective in infertility, but acupuncture had low evidence of an effect on infertility. The methodological quality of the published SRs and MAs was underestimated because AMSTAR2 is a more rigorous assessment tool than the previous version. |

### 2.4. Hou 2020

Hou Tinghui. [Re-evaluation of Systematic Evaluation of Acupuncture Intervention in Female Infertility]. Modernization of TCM and Materia Medica-World Science and Technology. 2020. [212889].

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| **Objective** | To evaluate the methodological quality and reliability of outcome indicators of systematic evaluation of acupuncture treatment for female infertility. Method Cochrane Library, Pubmed, Web of science, CNKI, CBM, VIP and Wanfang databases were searched by computer to collect systematic evaluation/meta-analysis of acupuncture treatment for female infertility. AMSTAR 2 scale was used to evaluate the methodological quality of the study, and GRADE system was used to classify the outcome indicators. Result A total of **13 systematic reviews** were included. AMSTAR 2 scores showed that the quality of one research methodology was of medium grade, 5 were of low grade and 7 were of very low grade. GRADE rating results showed that there were 5 medium quality outcome indicators, 15 low quality indicators and 15 very low quality indicators. |
| **Conclusion** | Currently, acupuncture treatment of female infertility can improve the clinical pregnancy rate by comparing with blank control, sham/placebo acupuncture and western medicine prophylaxis. In particular, it can increase the clinical pregnancy rate before and after the day of oocyte retrieval or embryo transfer, while it has no obvious advantage over other indicators, but the reliability of systematic evaluation in methodological quality and outcome indicators is relatively low, and more high-quality studies are expected to provide reliable clinical evidence in the future. |

## 3. Clinical Practice Guidelines

⊕ positive recommendation (regardless of the level of evidence reported)
Ø negative recommendation (or lack of evidence)

### 3.1. European Society of Human Reproduction and Embryology (Unexplained infertility) 2023 Ø

- Unexplained infertility. Guideline of European Society of Human Reproduction and Embryology. 2023. 114P. https://www.eshre.eu/-/media/sitecore-files/Guidelines/UI/UI-guideline_-Final.pdf
- Guideline Group on Unexplained Infertility; Romualdi D, Ata B, Bhattacharya S, Bosch E, Costello M, Gersak K, Homburg R, Mincheva M, Norman RJ, Piltonen T, Dos Santos-Ribeiro S, Scicluna D, Somers S, Sunkara SK, Verhoeve HR, Le Clef N. Evidence-based guideline: unexplained infertility†. Hum Reprod. 2023 Oct 3;38(10):1881-1890. https://doi.org/10.1016/j.asjsur.2023.04.107

48. Acupuncture in women is probably not recommended Conditional ⊕⊕ØØ

### 3.2. European Society of Human Reproduction and Embryology (Recurrent Pregnancy Loss) 2023 Ø

Recurrent Pregnancy Loss. Guideline of European Society of Human Reproduction and Embryology. 2022. 179p. URL

Acupuncture. The effectiveness of acupuncture for improving the chance of a live birth in couples with RPL has been described in case reports (Hullender Rubin et al., 2013). However, we did not find any studies systematically evaluating acupuncture as a treatment for RPL.

[1)] 1.20,3.42

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