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Polycystic Ovary Syndrome: 1/17

Polycystic Ovary Syndrome:

Syndrome des ovaires polykystiques : évaluation de l'acupuncture

Articles connexes : - conduites thérapeutiques -

1. Systematic Reviews and Meta-Analysis

1.1. Generic Acupuncture

1.1.1. Jin 2025 (network meta-analysis)

Jin Q, Xu G, Ying Y, Liu L, Zheng H, Xu S, Yin P, Chen Y. Effects of non-pharmacological interventions on biochemical hyperandrogenism in women with polycystic ovary syndrome: a systematic review and network meta-analysis. J Ovarian Res. 2025 Jan 20;18(1):8. https://doi.org/10.1186/s13048-025-01595-5

Objective	To systematically evaluate the effectiveness of non-pharmacological interventions (NPIs), including electroacupuncture, exercise, diet, and lifestyle changes, in reducing androgen levels in women with polycystic ovary syndrome (PCOS) through a systematic review and network meta-analysis.
Methods	Comprehensive searches were conducted in PubMed, Embase, Cochrane Library, Web of Science, CNKI, and Wanfang up to June 2024. Randomized controlled trials (RCTs) comparing NPIs with other NPIs or placebo treatments in adult women with PCOS were included. Study selection was independently performed by three authors. Quality assessment followed PRISMA guidelines using the Cochrane RoB2 tool. The confidence of evidence was examined using Confidence in Network Meta-Analysis (CINeMA). Traditional meta-analysis of continuous variables was conducted using Stata 17.0 software with a random-effects model, reporting effect sizes as standardized mean differences (SMD) and weighted mean differences (WMD). Network meta-analysis (NMA) was used to synthesize data, with network diagrams illustrating comparisons between NPIs. We assessed the consistency of the results, performed sensitivity analyses, and examined publication bias to evaluate the influence of individual studies. Furthermore, subgroup analysis and network meta-regression analysis were conducted to explore potential sources of heterogeneity.

Polycystic Ovary Syndrome: 2/17

The review included **21 studies with 1,196 participants**, with meta-analysis focusing on 17 studies involving 1,013 participants. NPIs significantly reduced serum testosterone (SMD = -0.57; 95% CI: -0.86 to -0.29, p < 0.01), A4 (SMD = -1.37; 95% CI: -2.63 to -0.12, p = 0.03), and mFG score (WMD = -0.81; 95% CI: -1.26 to -0.37, p < 0.01). Notably, the reduction in testosterone levels achieved with NPIs met the Minimum Clinically Important Difference (MCID) of 12.47 ng/dL (WMD = -12.57; 95% CI: -18.92 to -6.23; p < 0.01), affirming the clinical relevance of these reductions. No significant effects were observed on Free Androgen Index (FAI), Sex Hormone-Binding Results Globulin (SHBG), Dehydroepiandrosterone (DHEA), DHEA Sulfate (DHEAS), Free Testosterone (FT), or Dihydrotestosterone (DHT) levels (all p > 0.05). The NMA (18) studies, 1,067 participants) identified electroacupuncture combined with diet and exercise as the most effective intervention for reducing serum testosterone (WMD = -21.75; 95% CI: -49.58 to 6.07; SUCRA 72.3%). Evidence certainty for many interventions was low, highlighting the need for higher-guality studies. Sensitivity analysis confirmed the robustness of the findings, and no publication bias was detected. NPIs, particularly electroacupuncture combined with exercise and dietary management, effectively reduce androgen levels in PCOS patients. These findings provide valuable **Conclusions** guidance for clinicians and women with PCOS, with multi-component approaches recommended for more substantial clinical benefit.

1.1.2. Zhang 2025

Zhang GS, Lim ECN, Cheng NCL, Lim CED. Acupuncture for polycystic ovary syndrome. Cochrane Database Syst Rev. 2025 Oct 28;10:CD007689. https://doi.org/10.1002/14651858.CD007689.pub5

Background	Polycystic ovary syndrome (PCOS) is characterised by oligo-amenorrhoea, infertility, and hirsutism. Treatments include pharmacological agents, lifestyle modifications, and surgery. During ovulation in healthy women, the concentration of beta-endorphin, a neuropeptide involved in pain and hormonal regulation, is higher in follicular fluid than in plasma. Acupuncture may improve ovulatory function by stimulating beta-endorphin production, which is hypothesised to enhance gonadotropin-releasing hormone (GnRH) secretion. This is an update of a review first published in 2011 and last updated in 2019.
Objective	To assess the benefits and harms of acupuncture in managing fertility and symptoms in oligo/anovulatory women with polycystic ovary syndrome.
Methods	Search methods: We searched the Cochrane Gynaecology and Fertility Group Specialised Register, CENTRAL, MEDLINE, Embase, PsycINFO, AMED, and three Chinese databases (CNKI, CBM, and VIP). We also reviewed trial registries and reference lists for related papers. The searches in CENTRAL, MEDLINE, Embase, PsycINFO, and CNKI are current to December 2024, the VIP search to November 2024, and the CBM search to November 2015. We also performed reference checking, citation searching, and contacted study authors to identify additional studies. Eligibility criteria: We included randomised controlled trials (RCTs) on the efficacy of acupuncture for oligo/anovulatory women with PCOS. Outcomes: Critical outcomes were live birth rate, multiple pregnancy rate, and ovulation rate. Important outcomes were clinical pregnancy rate, restored regular menstrual period, miscarriage rate, and adverse events. Risk of bias: We used the original Cochrane risk of bias tool (RoB 1). Synthesis methods: Two authors independently selected studies, extracted data, and assessed risk of bias. We calculated risk ratios (RRs), mean differences (MDs), and standardised mean differences (SMDs) with 95% confidence intervals (Cls). Certainty of evidence was evaluated using GRADE. Skewed data and small-study effects were considered, and unreliable results interpreted cautiously.

Polycystic Ovary Syndrome: 3/17

Results	Nine RCTs (one added in this update) with 1606 women were included: acupuncture versus sham acupuncture (3 RCTs), low-frequency electroacupuncture versus exercise/no intervention (1 RCT), acupuncture versus relaxation (1 RCT), acupuncture versus clomiphene (1 RCT), and acupuncture versus Diane-35 (3 RCTs). Evidence remains uncertain regarding fertility and symptom control. Compared with sham acupuncture, acupuncture may result in little to no difference in live birth (RR 0.97, 95% CI 0.76-1.23), multiple pregnancy (RR 0.89, 95% CI 0.33-2.45), ovulation (SMD 0.02, 95% CI -0.15-0.19), clinical pregnancy (RR 1.07, 95% CI 0.85-1.35), and miscarriage (RR 1.10, 95% CI 0.77-1.56). Acupuncture may reduce mean days between menstrual periods at 12 weeks (MD -312.09 days, 95% CI -344.59-279.59; very low-certainty) and is probably associated with more adverse events (RR 1.16, 95% CI 1.02-1.31). Other comparisons (electroacupuncture, relaxation, clomiphene, Diane-35) yielded very low-certainty evidence with inconsistent outcomes.
Conclusion	No clear evidence of a difference between acupuncture and sham acupuncture in live birth, multiple pregnancy, ovulation, clinical pregnancy, miscarriage, or restored menstrual periods. Acupuncture is probably associated with more adverse events. The limited number and quality of RCTs mean that the effectiveness of acupuncture for PCOS remains uncertain.

1.1.3. Li 2022 ☆☆

Li P, Peng J, Ding Z, Zhou X, Liang R. Effects of Acupuncture Combined with Moxibustion on Reproductive and Metabolic Outcomes in Patients with Polycystic Ovary Syndrome: A Systematic Review and Meta-Analysis. Evid Based Complement Alternat Med. 2022 Mar 31;2022:3616036. doi: 10.1155/2022/3616036. PMID: 35399633; PMCID: PMC8991411.

In this systematic review, the effects of acupuncture combined with moxibustion on

Objectives	reproductive and metabolic outcomes in patients with polycystic ovary syndrome (PCOS) were evaluated.
Methods	Randomized controlled trials (RCTs) assessing acupuncture combined with moxibustion + basic treatment (experimental group) versus basic treatment alone (control group) for treating PCOS were identified from English and Chinese databases up to November 3, 2021. Outcomes related to pregnancy, ovulation, miscarriage, sex hormones, and metabolic disorders were of interest. In the meta-analysis, risk ratios (RRs) and mean differences (MDs) and their 95% confidence intervals (CIs) were used as effect measures.
Results	Twenty-five RCTs (n = 1991) were included. The pooled results showed that the experimental group had significant increases in the pregnancy rate (RR 1.81, 95% CI 1.58 to 2.08) and ovulation rate (RR 1.31, 95% CI 1.22 to 1.40) and decreases in the miscarriage rate (RR 0.45, 95% CI 0.28 to 0.73), and ovarian volume (MD -0.75 cm3, 95% CI -1.30 to -0.20). In the experimental group, improvements in the luteinizing hormone (LH) level, the LH-to-follicle-stimulating hormone (FSH) ratio, total testosterone level, fasting insulin level, and body mass index, but not in FSH, oestradiol, or dehydroepiandrosterone sulfate levels, were significantly greater. All reported adverse events were mild. Based on the limitations of risk of bias, inconsistency, imprecision, and/or publication bias, the level of evidence was judged to be moderate for the pregnancy rate, ovulation rate, miscarriage rate, LH level, and LH/FSH ratio and very low for the other outcomes.
Conclusion	Among patients with PCOS, using acupuncture combined with moxibustion as a complementary therapy to basic treatments can improve pregnancy, ovulation, and miscarriage rates, the levels some sex hormones, and metabolic indicators, with good safety. Additionally, this combination therapy may have no effect on the FSH, oestradiol, or dehydroepiandrosterone sulfate level.

Polycystic Ovary Syndrome: 4/17

1.1.4. Wu 2020 ☆

Wu J, Chen D, Liu N. Effectiveness of acupuncture in polycystic ovary syndrome: A systematic review and meta-analysis of randomized controlled trials. Medicine (Baltimore). 2020;99(22). [210017]. doi

Objective	To evaluate the effectiveness of acupuncture in reproductive-age females with polycystic ovary syndrome (PCOS).
Methods	We searched the Pubmed, Web of Science, Embase, Cochrane, China National Knowledge Infrastructure (CNKI), Wanfang Data, and Chongqing VIP databases for the relevant literature. The meta-analysis was performed with a random-effects model with RevMan 5.3. The primary outcomes of interest included the rate of live birth, pregnancy and ovulation, and the secondary outcomes included the recovery of menstrual period and hormone levels. Results were expressed as the relative risk (RR) for the discrete data and the mean difference (MD) for the continuous outcomes with a 95% confidence interval (CI).
Results	Twenty-two studies with 2315 participants were included in this systematic review and meta-analysis. A pooled analysis showed a recovery of the menstrual period (5 trials; 364 participants; SMD, -0.52; 95% CI [-0.89, -0.14]; I=67%; P=.0007; low certainty) in the acupuncture group. Furthermore, there were significant decreases in the luteinizing hormone (LH) (13 trials; 917 participants; MD, -0.92; 95% CI [-1.43, -0.41]; I=60%; P=.0004; very low certainty) and testosterone (13 trials; 923 participants; SMD, -0.46; 95% CI [-0.73, -0.20]; I=75%; P=.0006; very low certainty) in the acupuncture group. No significant differences were observed in the rates of live birth, pregnancy, and ovulation, and no significant differences were observed in the LH/follicle-stimulating hormone (FSH) ratio.
Conclusions	There was insufficient evidence to support that acupuncture could promote live birth, pregnancy, and ovulation. However, acupuncture could promote the recovery of menstrual cycles as well as downregulate the levels of LH and testosterone in patients with PCOS.

1.1.5. Lim 2019

Lim CED, Ng RWC, Cheng NCL, Zhang GS, Chen H. Acupuncture for polycystic ovarian syndrome. Cochrane Database Syst Rev. 2019. [201949]. doi

Background	Polycystic ovarian syndrome (PCOS) is characterised by the clinical signs of oligoamenorrhoea, infertility and hirsutism. Conventional treatment of PCOS includes a range of oral pharmacological agents, lifestyle changes and surgical modalities. Betaendorphin is present in the follicular fluid of both normal and polycystic ovaries. It was demonstrated that the beta-endorphin levels in ovarian follicular fluid of otherwise healthy women who were undergoing ovulation were much higher than the levels measured in plasma. Given that acupuncture impacts on beta-endorphin production, which may affect gonadotropin-releasing hormone (GnRH) secretion, it is postulated that acupuncture may have a role in ovulation induction via increased beta-endorphin production effecting GnRH secretion. This is an update of our previous review published in 2016.
Objectives	To assess the effectiveness and safety of acupuncture treatment for oligo/anovulatory women with polycystic ovarian syndrome (PCOS) for both fertility and symptom control.

Polycystic Ovary Syndrome: 5/17

Methods

SEARCH METHODS: We identified relevant studies from databases including the Gynaecology and Fertility Group Specialised Register, CENTRAL, MEDLINE, Embase, PsycINFO, CNKI, CBM and VIP. We also searched trial registries and reference lists from relevant papers. CENTRAL, MEDLINE, Embase, PsycINFO, CNKI and VIP searches are current to May 2018. CBM database search is to November 2015. SELECTION CRITERIA: We included randomised controlled trials (RCTs) that studied the efficacy of acupuncture treatment for oligo/anovulatory women with PCOS. We excluded quasi- or pseudo-RCTs. DATA COLLECTION AND ANALYSIS: Two review authors independently selected the studies, extracted data and assessed risk of bias. We calculated risk ratios (RR), mean difference (MD), standardised mean difference (SMD) and 95% confidence intervals (Cis). Primary outcomes were live birth rate, multiple pregnancy rate and ovulation rate, and secondary outcomes were clinical pregnancy rate, restored regular menstruation period, miscarriage rate and adverse events. We assessed the quality of the evidence using GRADE methods.

Main

Results

We included eight RCTs with 1546 women. Five RCTs were included in our previous review and three new RCTs were added in this update of the review. They compared true acupuncture versus sham acupuncture (three RCTs), true acupuncture versus relaxation (one RCT), true acupuncture versus clomiphene (one RCT), low-frequency electroacupuncture versus physical exercise or no intervention (one RCT) and true acupuncture versus Diane-35 (two RCTs). Studies that compared true acupuncture versus Diane-35 did not measure fertility outcomes as they were focused on symptom control. Seven of the studies were at high risk of bias in at least one domain. For true acupuncture versus sham acupuncture, we could not exclude clinically relevant differences in live birth (RR 0.97, 95% CI 0.76 to 1.24; 1 RCT, 926 women; low-quality evidence); multiple pregnancy rate (RR 0.89, 95% CI 0.33 to 2.45; 1 RCT, 926 women; low-quality evidence); ovulation rate (SMD 0.02, 95% CI -0.15 to 0.19, I2 = 0%; 2 RCTs, 1010 women; low-quality evidence); clinical pregnancy rate (RR 1.03, 95% CI 0.82 to 1.29; I2 = 0%; 3 RCTs, 1117 women; low-quality evidence) and miscarriage rate (RR 1.10, 95% CI 0.77 to 1.56; 1 RCT, 926 women; low-quality evidence). Number of intermenstrual days may have improved in participants receiving true acupuncture compared to sham acupuncture (MD -312.09 days, 95% CI -344.59 to -279.59; 1 RCT, 141 women; low-quality evidence). True acupuncture probably worsens adverse events compared to sham acupuncture (RR 1.16, 95% CI 1.02 to 1.31; I2 = 0%; 3 RCTs, 1230 women; moderate-quality evidence). No studies reported data on live birth rate and multiple pregnancy rate for the other comparisons: physical exercise or no intervention, relaxation and clomiphene. Studies including Diane-35 did not measure fertility outcomes. We were uncertain whether acupuncture improved ovulation rate (measured by ultrasound three months post treatment) compared to relaxation (MD 0.35, 95% CI 0.14 to 0.56; 1 RCT, 28 women; very low-quality evidence) or Diane-35 (RR 1.45, 95% CI 0.87 to 2.42; 1 RCT, 58 women; very low-quality evidence). Overall evidence ranged from very low quality to moderate quality. The main limitations were failure to report important clinical outcomes and very serious imprecision.

Polycystic Ovary Syndrome: 6/17

Authors' Conclusions

For true acupuncture versus sham acupuncture we cannot exclude clinically relevant differences in live birth rate, multiple pregnancy rate, ovulation rate, clinical pregnancy rate or miscarriage. Number of intermenstrual days may improve in participants receiving true acupuncture compared to sham acupuncture. True acupuncture probably worsens adverse events compared to sham acupuncture. No studies reported data on live birth rate and multiple pregnancy rate for the other comparisons: physical exercise or no intervention, relaxation and clomiphene. Studies including Diane-35 did not measure fertility outcomes as the women in these trials did not seek fertility. We are uncertain whether acupuncture improves ovulation rate (measured by ultrasound three months post treatment) compared to relaxation or Diane-35. The other comparisons did not report on this outcome. Adverse events were recorded in the acupuncture group for the comparisons physical exercise or no intervention, clomiphene and Diane-35. These included dizziness, nausea and subcutaneous haematoma. Evidence was very low quality with very wide Cis and very low event rates. There are only a limited number of RCTs in this area, limiting our ability to determine effectiveness of acupuncture for PCOS.

1.1.6. Zheng 2019

Zheng Shuzhen, Tang Shunli, Zhang Jiabi, Li Kexin, Zou Xiaoqiu, Wu Liqun, Liu Jianbo, Li Yuemei. [Systematic Review of Acupuncture in Treatment of Polycystic Ovary Syndrome in China]. Chinese Journal of Information on Traditional Chinese Medicine. 2019;1:105-109. [201728].

目的 系统评价针刺治疗多囊卵巢综合征(PCOS)临床疗效和安全性. 方法 计算机检索中国知识资源总库(CNKI)[]中国学术期刊数据库(万方数据)、中国生物医学文献数据库(CBM)[]中文科技期刊数据库(维普网)建库至2017年6月收录的针刺治疗PCOS随机对照试验文献. 2名评价员独立按照纳入与排除标准筛选文献、提取资料,采用[]Cochrane系统评价员手册》偏倚风险评估工具进行文献质量评价,采用RevMan5.3软件进行Meta分析. 结果 最终纳入8项研究,共494例受试者.Meta分析结果显示:针刺治疗PCOS在降低黄体生成素[SMD=-0.55,95[]CI (-0.76,-0.35)][]睾酮[SMD=-0.72,95[]CI(-1.03,-0.41)][]黄体生成素与卵泡刺激素比值[SMD=-0.52,95[]CI (-0.90,-0.14)][]体质量指数(BMI)[SMD=-0.38,95[]CI(-0.66,-0.10)]方面均明显优于单用西药(P[]0.01),在提高有效率[RR=1.04,95[]CI (0.94,1.16),P=0.44][]降低卵泡刺激素[SMD=-0.09,95[]CI (-0.31,0.12),P=0.40]方面与单用西药疗效相当. 结论 针刺治疗PCOS临床疗效确切,且安全性较好.由于纳入研究样本量较少,质量普遍偏低,尚需要大样本、多中心、高质量随机对照研究支

[Automatic translation].		
Objective	To systematically evaluate the clinical efficacy and safety of acupuncture in the treatment of polycystic ovary syndrome (PCOS).	
Methods	Computer search Chinese Knowledge Resource Pool (CNKI), Chinese Academic Journal Database (Wanfang Data), China Biomedical Literature Database (CBM) The Chinese Science and Technology Periodical Database (Vip Network) was built to the Acupuncture Treatment PCOS randomized controlled trial literature included in June 2017. Two reviewers independently selected the literature according to the inclusion and exclusion criteria, extracted the data, and adopted the Cochrane System Evaluator's Manual. The bias risk assessment tool was used to evaluate the quality of the literature. Meta-analysis was performed using RevMan5.3 software.	
Results	The results were finally included in 8 studies with a total of 494 subjects. The results of the meta-analysis showed that acupuncture treatment of PCOS reduced luteinizing hormone [SMD=-0.55, 95% CI (-0.76, -0.35)], testosterone [SMD=-0.72, 95% CI (-1.03, -0.41)], ratio of luteinizing hormone to follicle stimulating hormone [SMD=-0.52, 95% CI (-0.90,-0.14)], body mass index (BMI) [SMD=-0.38, 95% CI (-0.66, -0.10)] were significantly better than Western medicine alone (P<0.01). Efficiency [RR=1.04, 95% CI (0.94, 1.16), P=0.44], decreased follicle stimulating hormone [SMD=-0.09, 95% CI (-0.31, 0. 12), P=0.40] is equivalent to the efficacy of western medicine alone.	
Conclusion	Acupuncture treatment of PCOS is effective and safe. Due to the small sample size and low quality, large samples and multi-center are needed.	

Polycystic Ovary Syndrome: 7/17

1.1.7. Jo 2017 ☆

Jo J, Lee YJ, Lee H. Acupuncture for polycystic ovarian syndrome: A systematic review and metaanalysis. Medicine (Baltimore). 2017. 35(3):162-70. [195184].

Background	This systematic review aimed at summarizing and evaluating the evidence from randomized controlled trials (RCTs) using acupuncture to treat polycystic ovarian syndrome (PCOS), specifically focusing on ovulation rate, menstrual rate, and related hormones.
Methods	Fifteen databases were searched electronically through February 2016. Our review included RCTs of women with PCOS; these RCTs compared acupuncture with sham acupuncture, medication, or no treatment. Two reviewers independently extracted data. Data were pooled and expressed as mean differences (MDs) for continuous outcomes and risk ratios for dichotomous outcomes, with 95% confidence intervals (Cis) using a random-effects model.
Results	We found a low level of evidence that acupuncture is more likely to improve ovulation rate (MD 0.35, 95% CI: 0.14-0.56) and menstruation rate (MD 0.50, 95% CI: 0.32-0.68) compared with no acupuncture. We found statistically significant pooled benefits of acupuncture treatment as an adjunct to medication in luteinizing hormone (LH), LH/follicular stimulating hormone (FSH) ratio, testosterone, fasting insulin, and pregnancy rates, but the level of evidence was low/very low.
Conclusion	There is limited evidence to judge the efficacy and safety of acupuncture on key reproductive outcomes in women with PCOS. Large-scale, long-term RCTs with rigorous methodological input are needed.

1.1.8. Lim 2016 Ø

Lim CE, Ng RW, Xu K, Cheng NC, Xue CC, Liu JP, Chen N. Acupuncture for polycystic ovarian syndrome. Cochrane Database Syst Rev. 2016. [186498].

Background	Polycystic ovarian syndrome (PCOS) is characterized by the clinical signs of oligoamenorrhea, infertility and hirsutism. Conventional treatment of PCOS includes a range of oral pharmacological agents, lifestyle changes and surgical modalities. Betaendorphin presents in the follicular fluid of both normal and polycystic ovaries. It was demonstrated that the beta-endorphin levels in ovarian follicular fluid of otherwise healthy women who were undergoing ovulation were much higher than the levels measured in plasma. Given that acupuncture has an impact on beta-endorphin production, which may affect gonadotropin-releasing hormone (GnRH) secretion, it is postulated that acupuncture may have a role in ovulation induction and fertility.
Objectives	To assess the effectiveness and safety of acupuncture treatment of oligo/anovulatory women with polycystic ovarian syndrome (PCOS).
Methods	SEARCH METHODS: We identified relevant studies from databases including the Cochrane Central Register of Controlled Trials (CENTRAL), Ovid MEDLINE, EMBASE, PsycINFO, CNKI and trial registries. The data are current to 19 October 2015. SELECTION CRITERIA: We included randomised controlled trials (RCTs) that studied the efficacy of acupuncture treatment for oligo/anovulatory women with PCOS. We excluded quasi- or pseudo-RCTs. Primary outcomes were live birth and ovulation (primary outcomes), and secondary outcomes were clinical pregnancy, restoration of menstruation, multiple pregnancy, miscarriage and adverse events. We assessed the quality of the evidence using GRADE methods. DATA COLLECTION AND ANALYSIS: Two review authors independently selected the studies, extracted data and assessed risk of bias. We calculated Mantel-Haenszel odds ratios (Ors) and mean difference (MD) and 95% confidence intervals (Cis).

Polycystic Ovary Syndrome: 8/17

We included five RCTs with 413 women. They compared true acupuncture versus sham acupuncture (two RCTs), true acupuncture versus relaxation (one RCT), true acupuncture versus clomiphene (one RCT) and electroacupuncture versus physical exercise (one RCT). Four of the studies were at high risk of bias in at least one domain. No study reported live birth rate. Two studies reported clinical pregnancy and found no evidence of a difference between true acupuncture and sham acupuncture (OR 2.72, 95% CI 0.69 to 10.77, two RCTs, 191 women, very low quality evidence). Three studies reported ovulation. One RCT reported number of women who had three ovulations during three months of treatment but not ovulation rate. One RCT found no evidence of a difference in mean ovulation rate between true and sham acupuncture (MD -0.03, 95% CI -0.14 to 0.08, one RCT, 84 women, very low quality evidence). **Main Results** However, one other RCT reported very low quality evidence to suggest that true acupuncture might be associated with higher ovulation frequency than relaxation (MD 0.35, 95% CI 0.14 to 0.56, one RCT, 28 women). Two studies reported menstrual frequency. One RCT reported true acupuncture reduced days between menstruation more than sham acupuncture (MD 220.35, 95% CI 252.85 to 187.85, 146 women). One RCT reported electroacupuncture increased menstrual frequency more than no intervention (0.37, 95% CI 0.21 to 0.53, 31 women). There was no evidence of a difference between the groups in adverse events. Evidence was very low quality with very wide Cis and very low event rates. Overall evidence was low or very low quality. The main limitations were failure to report important clinical outcomes and very serious imprecision. Thus far, only a limited number of RCTs have been reported. At present, there is insufficient evidence to support the use of acupuncture for treatment of **Conclusions** ovulation disorders in women with PCOS.

1.1.9. Li 2016 ☆

Authors'

LI Ruigen, WANG Wei, XU Xiaobei, BU Weijing, WU Zhaoli. [A systematic review and meta-analysis: the efficacy of integrated acupuncture with medicine for the treatment of polycystic ovary syndrome]. Journal of Practical Traditional Chinese Internal Medicine. 2016;1:1-5. [187014].

Background	The efficacy of integrated acupuncture with medicine for the treatment of polycystic ovary syndrome is distinct.
Objective	To evaluate the clinical efficacy and safety of integrated acupuncture with Chinese or western medicine for the treatment of Polycystic ovary syndrome. [Search Strategy] Subject headings combined with free words were used to search in the database of CBM_VIP_CNKI, etc. Retrieval time: from the database built time up to April 2015. The Journal of Chinese Acupuncture &Moxibustion and Clinical Acupuncture and Moxibustion were used as manual retrieval. In addition, the bibliography of the included literatures should be taken into account. [Inclusion Criteria] RCT and quasi-RCT of Chinese literatures. 1 Study object: fulfilling the diagnostic criteria with regardless of age and gender. 2Intervention measures: Treatment group: acupuncture + Chinese medicine or acupuncture + western medicine, Control group: blank control (sham acupuncture or placebo) or conventional therapy with Chinese herbal or western medicine. 3 outcomes: clinical curative effect. [Collection and Analysis of Data] According to the inclusion criteria, 4 researcher independently screened the literatures extracted information and evaluated the risk of bias of all-inclusive studies and cross-checked. Asking the third party for help when disagreement during the overall process. The content of extraction table including: 1) general condition of inclusive studies: authors, cases of experimental and control group, intervention measures, publication data etc. 2) basic features of study object. 3) key element for assessing risk of bias. 4specific details to intervention measures.

Main results	removed 462 papers after reading their theme and summary from the primary 476 papers and did further reading the left 14 papers. Compared to the control group, the overall clinical efficacy of the experimental group was remarkably higher (Z=7. 15, P<0. 00001). As to the pregnancy rate, there Also showed a significantly difference between the two groups (Z=4. 55, P<0. 00001), which suggesting the integrated acupuncture with Chinese herbal or western medicine was superior to the control group.
Problem and Prospect	Due to the quality of the methodology of the inclusion literature is not high, its reliability need to be further demonstrated.

1.1.10. Qu 2016

Qu F, Wu Y, Hu Xiao-Yangu, Barry JA et al. The effects of acupuncture on polycystic ovary syndrome: A systematic review and meta-analysis. European Journal of Integrative Medicine. 2016;8(1):12-18. [207265].

Introduction	A systematic review and meta-analysis was carried out to assess the clinical effectiveness of acupuncture in treating polycystic ovarian syndrome (PCOS).
Methods	RCTs that compared either acupuncture with no/sham (placebo) acupuncture or a certain therapy with acupuncture added in the treatment of PCOS were included in the review. Measures of treatment effectiveness were the pooled odds ratios (OR) for women with PCOS having acupuncture compared with women in the control group for the recovery of menstrual cycles, standardized mean difference (SMD) for body mass index (BMI), fasting insulin (FINS), fasting plasma glucose (FPG), luteinizing hormone (LH), follicle stimulating hormone (FSH), and the ratio of LH/FSH.
Results	A total of nine RCTs (531 women) met criteria for inclusion into the systematic review. Using the random effects model, pooling of the effect estimates from all RCTs showed recovery of menstrual cycles (OR = 0.20, 95% CI: 0.09–0.41, P < 0.01), BMI (SMD = -0.63 , 95% CI: -1.04 to -0.21 , P = 0.04), and LH (SMD = -0.39 , 95% CI: -0.65 to -0.12 , P < 0.01) which favored the acupuncture group. No significant differences were observed for FINS, FPG, FSH and the ratio of LH/FSH between acupuncture and control groups (P > 0.05).
	Acupuncture appears to significantly improve the recovery of the menstrual cycles and decrease the levels of BMI and LH in women with PCOS. However, the findings should be interpreted with caution due to the limited methodological quality of included RCTs.

1.1.11. Zhu 2014 ☆

Zhu Yi, Shen Weidong. [Meta-analysis of acupuncture and western medicine in the treatment of polycystic ovarian syndrome]. Journal of Chinese Medicine. 2014;11:1649-165. [186989].

Objective	Use Meta-analysis to compare the therapeutic effect of acupuncture and western medicine in the treatment of polycystic ovarian syndrome.
Methods	Use electronic retrieval of published in the magazine at home and abroad about acupuncture literature for the treatment of polycystic ovary syndrome from 1980 to 2013. In the exclusion of repetition and after a randomized controlled trial, screen into standard randomized controlled trials of acupuncture treatment of polycystic ovary syndrome with the Jadad score evaluating quality evaluation of the literature and Manage 5. 0 software for curative effect evaluation. Use RR value as an index of effect, compared the advantage of acupuncture with western medicine treatment of ovulation disorder infertility and heterogeneity inspection. According to the heterogeneity test results, use fixed or random effects model combined with RR values, P values 95% CI.

Polycystic Ovary Syndrome: 10/17

Results	In accordance with the inclusion criteria of a randomized controlled with 10 references , a total of 823 patients . Compared acupuncture group with the western medicine group, the relative risk was 1. 54, 95% CI (1. 27, 1. 86), the overall effect inspection $Z = 4.38$, $P < 0.000$ 01, the difference was statistically significant, suggesting acupuncture treatment group was superior to western medicine in control group. Compared acupuncture plus Chinese medicine and western medicine group, combined effect was 1. 48, 95% CI (1. 25, 1. 75), the overall effect inspection $Z = 4.49$, $P < 0.000$ 1, the difference was statistically significant, suggesting acupuncture combined with Chinese medicine treatment was superior to western medicine.
	The curative effect of acupuncture treatment in treating polycystic ovary syndrome is superior to western medicine, but the quality of evaluation literature generally is not high, look forward to high quality papers with more sample, randomized controlled method and strict specification.

1.1.12. Ren 2014

Ren LN, Guo LH, Ma WZ, Zhang R. [A Meta-Analysis on Acupuncture Treatment of Polycystic Ovary Syndrome]. Acupuncture Research. 2014;39(3):238-46. 174756

Objectifs	To evaluate the effect and safety of acupuncture treatment of polycystic ovary syndrome (PCOS) by using systematic review in view of evidence-based medicine (EBM).
Méthodes	Original articles about acupuncture treatment of PCOS published from the database-established year to November of 2013 were searched from the Chinese National Knowledge Infrastructure Database (CNKI), Chongqing VIP Chinese Science and Technology Periodical Database (VIP), Chinese Biomedical Library (CBM), Wanfang Data, PubMed, and the Cochrane Library and the associated references-indicated papers by using keywords of polycystic ovary syndrome, randomization, acupoint, acupuncture, acupuncture plus moxibustion, acupuncture plus acupoint-embedment of catgut, and acupuncture plus otopoint application. Those articles about treatment of PCOS with simple abdominal acupuncture, simple acupoint-embedment of catgut, simple otopoint-pellet-pressure, and simple moxibustion treatment, and simple abstracts were excluded. If the articles re-published in both Chinese and English and in academic conferences and journals, one of them with higher quality was included. Two independent reviewers extracted data from located articles in a pre-defined structured way, and the Metanalysis was conducted using software RevMan 5.2, otherwise using the qualitative analysis.
Résultats	A total of 31 articles (28 in Chinese, 3 in English) containing 2,321 cases of PCOS patients met the included criteria. Meta-analysis showed that the clinical efficacy of simple acupuncture was the same as that of western medicine, and the efficacy of acupuncture combined with Chinese herbal medicine interventions was obviously higher than that of western medicine ($P < 0.05$). In addition, simple acupuncture intervention and acupuncture combined with Chinese herbal medicines or with moxibustion treatment have advantages in reducing serum luteinizing hormone/follicle-stimulating hormone (LH/FSH), insulin resistance (IR), testosterone (T), and body mass index (BMI). However, the quality of the collected articles is generally lower due to unclear bias, no sample quantity estimation, incorrect randomization methods, no follow-up survey, etc.
Conclusion	Acupuncture therapy may be effective for PCOS, but needs to be confirmed further by

1.1.13. Lim 2011 Ø

Lim DC, Chen W, Cheng LN, Xue CC, Wong FW, O'Sullivan AJ, Liu JP. Acupuncture for polycystic ovarian syndrome, Cochrane Database Syst Rev. 2011. [160670].

Polycystic Ovary Syndrome: 11/17

Background	Polycystic ovarian syndrome (PCOS) is characterised by the clinical signs of oligoamenorrhoea (infrequent or very light menstruation), infertility (failure to conceive), and hirsutism (excessive hair growth). Whilst Aleem 1987 revealed the presence of beta-endorphin in the follicular fluid of both normal and polycystic ovaries, Petraglia 1987 demonstrated that the beta-endorphin levels in ovarian follicular fluid of otherwise healthy women who were undergoing ovulation were much higher than the levels measured in plasma. Given that acupuncture has an impact on beta-endorphin production, which may affect gonadotropin-releasing hormone (GnRH) secretion, it is postulated that acupuncture may have a role in ovulation induction and fertility.
Objectives	To assess the efficacy and safety of acupuncture treatment for women with polycystic ovarian syndrome (PCOS).
Methods	Search strategy: Relevant studies were identified from the Menstrual Disorders and Subfertility Group Specialised Register, Cochrane Central Register of Controlled Trials (CENTRAL) (The Cochrane Library), Ovid MEDLINE® In-Process and other non-indexed citations, Ovid MEDLINE® Daily and Ovid MEDLINE(R), EMBASE, PsycINFO, AMED, Chinese National Knowledge Infrastructure (CNKI) (including the Chinese journal full-text database (CJFD)), Chinese BioMedical Literature Database (CBM), VIP database for Chinese Technical Periodicals, China's important Conference Papers Database, and the China dissertation database. Selection criteria: Truly randomised controlled trials (RCTs) that studied the efficacy of acupuncture treatment for infertility in women with PCOS. We excluded quasi- or pseudo-RCTs. Data collection and analysis: We aimed to extract data independently by three authors using a piloted data extraction form. Data on study characteristics including methods, participants, interventions, and outcomes would be extracted. Crossover trials were not included unless there were first-phase data provided. Non-randomised controlled studies have been excluded.
Main results	No truly randomised controlled trials of acupuncture for PCOS were found.
Authors' conclusions	The current conventional medical treatments for women with PCOS are prescription medications, surgery, and lifestyle changes. Associated problems with current western therapies are the cost, risk of multiple pregnancies, undesirable side effects, and inconsistent effectiveness. Non-randomised acupuncture studies in PCOS have suggested a low associated adverse events rate, no increased risk of multiple pregnancies, and that it is inexpensive. However, there no RCTs have been performed in this area thus far. Therefore, properly designed RCTs are required before a conclusive statement can be drawn to support the use of acupuncture in the management of PCOS.

1.1.14. Lim 2010

Lim CE, Wong WS. Current evidence of acupuncture on polycystic ovarian syndrome. Gynecol Endocrinol. 2010;16:. [155287].

Objective. This paper aims to provide a literature review on evaluating the efficacy of acupuncture therapy in the treatment of polycystic ovarian syndrome (PCOS) by reviewing clinical trials; randomised and non-randomised and observational studies on PCOS. The paper will also determine the possible mechanism of acupuncture treatment in PCOS, limitations of recruited studies and suggest further improvements in future studies. Design. A comprehensive literature search was conducted through the databases Medline, PubMed, EMBASE, Cochrane, AMED (Allied and Complementary Medicine), NCCAM (The National Centre for Complementary and Alternative Medicine) to identify relevant monographs. Results. Four studies were recruited. Several studies showed that acupuncture significantly increases beta-endorphin levels for periods up to 24 h and may have regulatory effect on FSH, LH and androgen. beta-endorphin increased levels secondary to acupuncture affects the hyperthalamic-pituitary-adrenal (HPA) axis through promoting the release of ACTH through stimulation of its precursor pro-opiomelanocortin synthesis. Inclusion criteria. All available acupuncture studies on human subjects with PCOS from June 1970 to June 2009. Exclusion criteria. Studies not meeting the inclusion criteria, published in languages

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other than English or animal studies. ^Conclusion. Acupuncture is a safe and effective treatment to PCOS as the adverse effects of pharmacologic interventions are not expected by women with PCOS. Acupuncture therapy may have a role in PCOS by: increasing of blood flow to the ovaries, reducing of ovarian volume and the number of ovarian cysts, controlling hyperglycaemia through increasing insulin sensitivity and decreasing blood glucose and insulin levels, reducing cortisol levels and assisting in weight loss and anorexia. However, well-designed, randomised controlled trials are needed to elucidate the true effect of acupuncture on PCOS.

1.2. Special Acupuncture Techniques

1.2.1. Catgut embedding

1.2.1.1. Yu 2017

Yu Chao-Chao, Ma Chao-Yang, Xiong Yuan, Wu Miao, Shen Feng, Zhou Yi-Lun, Kong Li-Hong, Tang Lei. Effectiveness of acupoint catgut embedding therapy for polycystic ovary syndrome: a systematic review and meta-analysis World Journal of Acupuncture-Moxibustion. 2017;27(4): 41-51. [102339].

Objective	This review aimed to systematically evaluate the evidence on the effects of acupoint catgut embedding(ACE) therapy for patients with polycystic ovary syndrome(PCOS).
Methods	Five databases (CBM, CNKI, Wanfang Database, VIP Database, and Pub Med) were searched to identify relevant studies published before June 2017. The outcomes were resumption of menstruation and serum levels of testosterone(T). The methodological quality of the included studies was judged using the Cochrane risk of bias tool. The overall level of evidence was judged by the Grading of Recommendations Assessment, Development, and Evaluation(GRADE) criteria.
Results	Twenty-five randomized controlled trials were included. ACE therapy significantly lowered serum T levels, and patients receiving ACE treatment reported resumption of menstruation. However, these results should be interpreted with caution due to a high risk of randomization and blinding bias, and likely publication bias. The level of evidence for resumption of menstruation and serum T levels was assessed as "low" and "low", respectively, using GRADE.
Conclusion	The current evidence on ACE therapy for PCOS is insufficient to draw firm conclusions due to the poor methodological quality. Future well-designed trials are needed to validate the therapeutic efficacy, safety, and mechanisms of ACE in patients with PCOS.

1.3. Specific outcome

1.3.1. Glucose Metabolism and Lipid Profiles

1.3.1.1. Zheng 2021

Zheng R, Qing P, Han M, Song J, Hu M, Ma H, Li J. The Effect of Acupuncture on Glucose Metabolism and Lipid Profiles in Patients with PCOS: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Evid Based Complement Alternat Med. 2021. [218000]. doi

Objective	To evaluate the effectiveness of acupuncture on glucose metabolism and lipid profiles in
Objective	patients with polycystic ovary syndrome (PCOS).

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Methods	Databases, including the China National Knowledge Infrastructure (CNKI), the China Science and Technology Journal Database (VIP), Wanfang, PubMed, and the Cochrane Library were searched for the relevant literature, with the retrieval deadline being February 2020. Two reviewers independently screened, selected, and extracted the data and validated the results. The methodological quality of the included studies was evaluated with the risk of bias tool, and the meta-analysis was performed using the RevMan 5.3.5 software.
Results	A total of 737 patients with PCOS from 10 randomized controlled trials were included in the meta-analysis. A pooled analysis showed significant decreases in body mass index (mean difference (MD) = -1.47 , 95% CI -2.35 to -0.58 , P < 0.001) and waist-to-hip ratio (MD = -0.04 , 95% CI [-0.06 , -0.02], P < 0.001) in the acupuncture group along with significant improvements in fasting plasma glucose (MD = -0.38 , 95% CI [-0.70 , -0.07], P = 0.02), homeostasis model assessment of insulin resistance (MD = -0.22 , 95% CI [-0.41 , -0.02], P = 0.03), and triglycerides (MD = -0.26 , 95% CI [-0.48 , -0.04], P = 0.02). No significant differences were observed in the Ferriman-Gallwey score, 2 h fasting plasma glucose, fasting insulin, 2 h fasting insulin, serum total cholesterol, low-density lipoprotein cholesterol, or high-density lipoprotein cholesterol.
Conclusion	Acupuncture is relatively effective and safe in improving glucose metabolism and insulin sensitivity in patients with PCOS. The included studies were generally of not bad methodological quality, but further large-scale, long-term randomized controlled trials with rigorous methodological standards are still warranted.

1.3.2. Endometrial lesions in patients with polycystic ovary syndrome (PCOS)

1.3.2.1. Hu 2021

Hu J, Shi W, Xu J, Liu S, Hu S, Fu W, Wang J, Han F. Complementary and Alternative Medicine for the Treatment of Abnormal Endometrial Conditions in Women with PCOS: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Evid Based Complement Alternat Med. 2021. [211697]. doi

Background	Endometrial lesions in patients with polycystic ovary syndrome (PCOS) exhibit complex pathological features, and these patients are at risk of both short-term and long-term complications. Complementary and alternative medicine (CAM), which is gradually becoming more accepted and is believed to be clinically effective, claims to be promising for treating PCOS, and thus its effect on the abnormal endometrium of PCOS patients should be assessed. The present meta-analysis sought to evaluate the efficacy and safety of CAM in treating endometrial lesions in patients with PCOS.
Methods	Randomized trials on CAM were identified in four Chinese and seven English-language databases from their establishment to January 2020. The present study included patients diagnosed with PCOS and abnormal endometrial conditions who underwent CAM therapy independently or in combination with traditional western medicine. Data were extracted, and the Cochrane "risk of bias" tool was used to assess methodological quality. Effects were expressed as the relative risk (RR) or mean difference (MD/SMD) with 95% confidence interval (CI) as calculated with Rev Man 5.3.

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A total of 13 randomized controlled trials were included, involving 1,297 PCOS patients treated for endometrial abnormalities. Methodological quality was generally unclear or had a low risk of bias. The trials tested four different types of CAM therapies (i.e., traditional Chinese medicine treatment, acupuncture treatment, traditional Chinese medicine in combination with western medicine treatment, and acupuncture in combination with western medicine treatment). CAM treatment could significantly reduce the endometrial thickness in PCOS patients compared to western medicine alone (SMD -0.88, 95% CI [-0.12, -0.57]; I 2 = 64%). Compared with clomiphene treatment for the induction of ovulation, CAM treatment showed a clear improvement Results in endometrial thickness during ovulation (SMD 2.03, 95% CI [1.64, 2.02]; I 2 = 48%). Moreover, CAM was more effective than western medicine alone in reducing the endometrial spiral artery pulsatility index. No significant difference was seen between CAM and traditional treatment when these were used to improve traditional Chinese medicine syndrome scores. Acupuncture alone or traditional Chinese medicines (taken orally) in combination with western medicine significantly increased the pregnancy rate of PCOS patients (RR 1.59, 95% CI [1.30, 1.93]; I 2 = 51%, P < 0.00001), and CAM was more effective than western medicine alone for improving hormone levels. No serious adverse events were reported in 11 of the 13 trials. CAM may effectively ameliorate the endometrial condition of PCOS patients, and it can **Conclusions** regulate the level of hormone secretion to increase the ovulation rate and the pregnancy rate. Acupuncture |L'acupuncture est incluse, mais sans données spécifiques

1.3.3. in vitro fertilization

see corresponding item

1.3.4. Infertility

see corresponding item

2. Overview of systematic reviews

2.1. Bai 2024

Bai T, Deng X, Bi J, Ni L, Li Z, Zhuo X. The effects of acupuncture on patients with premature ovarian insufficiency and polycystic ovary syndrome: an umbrella review of systematic reviews and metaanalyses. Front Med (Lausanne). 2024 Nov 25;11:1471243.

https://doi.org/10.3389/fmed.2024.1471243

Previous studies have suggested that acupuncture could improve the clinical outcomes of women with premature ovarian insufficiency (POI) and polycystic ovary syndrome **Backgound** (PCOS). However recent meta-analyses have provided inconclusive findings. This umbrella meta-analysis aimed to explore the effect of acupuncture therapies on PCOS and POI outcomes.

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Methods	A systematic literature search was carried out in in PubMed, Scopus, Web of Science, and Chinese databases, including Wan Fang Data Knowledge Service Platform, CBM, CNKI, and VIP up until April 2024 to gather relevant studies. Inclusion criteria were meta-analyses on the effect of acupuncture or combined therapies with standard medications or traditional Chinese medicine (TCM) on PCOS and POI. The outcomes were pregnancy rates, ovulation rates, hormone levels, glycemic indices, resumption of menstruation, endometrial thickness, live birth rates, abortion rates, and body mass index (BMI). Studies with irrelevant interventions, animal studies, reviews without quantitative analysis, and studies with insufficient data were excluded. Standardized mean difference (SMD) with a 95% confidence interval (CI) and relative risk (RR) with a 95% CI were used as effect sizes to pool the data using a random effects model.
Results	A total of 38 meta-analyses, 20 studies (sample size: 27,106 patients) for PCOS and 18 studies (sample size: 19,098 patients) for POI, were included. Overall, in women with PCOS, acupuncture therapies were significantly associated with a higher pregnancy rate, ovulation rate, and reduced serum levels of luteinizing hormone (LH), testosterone, LH/follicle-stimulating hormone (FSH), insulin resistance, and BMI. Moreover, FSH, fasting glucose, and fasting insulin levels were improved in subgroup analyses. For POI, acupuncture significantly improved serum levels of LH, FSH, LH/FSH ratio, and estradiol.
Conclusion	Acupuncture-related therapies improve pregnancy rate, and metabolic and hormonal imbalances in patients with POI and PCOS.

2.1.1. Yang 2023

Yang H, Xiao ZY, Yin ZH, Yu Z, Liu JJ, Xiao YQ, Zhou Y, Li J, Yang J, Liang FR. Efficacy and safety of acupuncture for polycystic ovary syndrome: An overview of systematic reviews. J Integr Med. 2023 Mar;21(2):136-148. https://doi.org/10.1016/j.joim.2022.12.002

Background	Polycystic ovary syndrome (PCOS) is the primary cause of anovulatory infertility, bringing serious harm to women's physical and mental health. Acupuncture may be an effective treatment for PCOS. However, systematic reviews (SRs) on the efficacy and safety of acupuncture for PCOS have reported inconsistent results, and the quality of these studies has not been adequately assessed.
Objective	To summarize and evaluate the current evidence on the efficacy and safety of acupuncture for PCOS, as well as to assess the quality and risks of bias of the available SRs.
Methods	Search strategy: Nine electronic databases (Cochrane Library, MEDLINE, Embase, PsycINFO, CINAHL, Chinese National Knowledge Infrastructure, Wanfang Data, Chongqing VIP Chinese Science and Technology Periodical Database, and China Biology Medicine disc) were searched from their establishment to July 27, 2022. Based on the principle of combining subject words with text words, the search strategy was constructed around search terms for "acupuncture," "polycystic ovary syndrome," and "systematic review." Inclusion criteria: SRs of randomized controlled trials that explored the efficacy and (or) safety of acupuncture for treating patients with PCOS were included. Data extraction and analysis: Two authors independently extracted study data according to a predesigned form. Tools for evaluating the methodological quality, risk of bias, reporting quality, and confidence in study outcomes, including A Measurement Tool to Assess Systematic Reviews 2 (AMSTAR 2), Risk of Bias in Systematic Reviews (ROBIS), Preferred Reporting Items for Systematic Reviews and Meta-analyses for Acupuncture (PRISMA-A), and the Grading of Recommendations Assessment, Development and Evaluation (GRADE), were used to score the included SRs.

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Results	A total of 885 studies were retrieved, and 11 eligible SRs were finally included in this review. The methodological quality of 2 SRs (18.18%) was low, while the other 9 SRs (81.82%) were scored as extremely low. Four SRs (36.36%) were considered to be of low risk of bias. As for reporting quality, the reporting completeness of 9 SRs (81.82%) was more than 70%. Concerning the confidence in study results, 2 study results were considered to have a high quality of evidence (3.13%), 14 (21.88%) a "moderate" quality, 28 (43.75%) a "low" quality, and 20 (31.24%) considered a "very low" quality. Descriptive analyses suggested that combining acupuncture with other medicines can effectively improve the clinical pregnancy rate (CPR) and ovulation rate, and reduce luteinizing hormone/follicle-stimulating hormone ratio, homeostasis model assessment of insulin resistance, and body mass index (BMI). When compared with medicine alone, acupuncture alone also can improve CPR. Further, when compared with no intervention, acupuncture had a better effect in promoting the recovery of menstrual cycle and reducing BMI. Acupuncture was reported to cause no adverse events or some adverse events without serious harm.
Conclusion	The efficacy and safety of acupuncture for PCOS remains uncertain due to the limitations and inconsistencies of current evidence. More high-quality studies are needed to support the use of acupuncture in PCOS.

2.1.2. Luo 2018

Luo YN, Zheng QH, Liu ZB, Zhang FR, Chen Y, Li Y. Methodological and reporting quality evaluation of systematic reviews on acupuncture in women with polycystic ovarian syndrome: A systematic review. Complement Ther Clin Pract. 2018;:197-203. [181359].

Purpose	To evaluate the methodological and reporting quality of systematic reviews (SRs) on acupuncture treatment for women with polycystic ovarian syndrome (PCOS).
Methods	A comprehensive search on multiple databases was performed. Methodological and reporting quality of reviews were assessed by revised assessment of multiple systematic reviews (AMSTAR 2) and preferred reporting items for SRs and meta-analyses (PRISMA), respectively.
Results	Ten SRs were included. Among the SRs using AMSTAR 2, two achieved a good overall rating (percentage of items with "yes" > 50%) and severe limitation existed in eleven items (percentage of items with "yes" < 50%). Among the SRs using PRISMA, six reviews achieved a good overall rating (percentage of items with "yes" > 50%), while twelve items were poorly reported (percentage of items with "yes" < 50%).
Conclusion	There were many deficiencies in the methodological and reporting quality of SRs assessing acupuncture in women with PCOS.

3. Clinical Practice Guidelines

3.1. World Health Organization (WHO) 2016

Balen AH, Morley LC, Misso M, Franks S, Legro RS, Wijeyaratne CN, Stener-Victorin E, Fauser BC, Norman RJ, Teede H. The management of anovulatory infertility in women with polycystic ovary syndrome: an analysis of the evidence to support the development of global WHO guidance. Hum Reprod Update. 2016. [187945].

There is no clear evidence for efficacy of acupuncture or herbal mixtures in women with PCOS

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