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# Effects of acupuncture on clinical pregnancy rate in women undergoing in vitro fertilization (IVF): a narrative review

## Abstract

Infertility is recognized as a significant global public health issue, affecting approximately one in six individuals during their reproductive lifetime. Despite advances in assisted reproductive technologies, the success rates of *in vitro* fertilization (IVF) remain limited, which has stimulated the search for adjunctive therapies capable of improving reproductive outcomes. In this context, acupuncture has been increasingly investigated as a complementary intervention that may positively influence female reproductive physiology. The aim of the present study was to critically analyze scientific evidence published between 2020 and 2026 regarding the effects of acupuncture on clinical pregnancy rates in women undergoing IVF. This study consists of a narrative literature review conducted through searches in the PubMed/MEDLINE and LILACS databases using descriptors related to acupuncture, *in vitro* fertilization, and clinical pregnancy. After applying eligibility criteria, nine studies were included in the analysis, including randomized controlled trials, systematic reviews, and meta-analyses. Overall, the findings suggest that acupuncture, particularly when applied during the peri-embryo transfer period or as part of pre-treatment protocols, may be associated with increased clinical pregnancy rates in IVF cycles. Proposed mechanisms include neuroendocrine modulation of the hypothalamic–pituitary–ovarian axis, improvement of uterine blood flow, hormonal regulation, and enhanced endometrial receptivity. However, methodological heterogeneity among studies limits the comparability of results. In conclusion, acupuncture appears to have potential as an adjunctive therapy in assisted reproduction, although further well-designed randomized controlled trials are necessary to confirm its effects on reproductive outcomes.

**Keywords:** acupuncture, *in vitro* fertilization, assisted reproduction, clinical pregnancy rate, reproductive medicine

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## Introduction

Infertility is recognized as a global public health issue, affecting approximately one in six individuals during their reproductive lifetime, according to recent estimates from the World Health Organization.[1] The impact of infertility extends beyond the biological dimension, involving significant psychological, social, and economic consequences.[1,2]

In this context, *in vitro* fertilization (IVF) has become one of the main assisted reproductive technology (ART) techniques and is widely used in the treatment of various etiologies of female and male infertility.[3] Despite technological, laboratory, and pharmacological advances, IVF success rates remain limited.[1,4]

Clinical pregnancy is defined as the presence of a gestational sac visualized by ultrasound with embryonic cardiac activity and constitutes an objective outcome widely used in assisted reproduction studies.[5] The clinical pregnancy rate per embryo transfer varies according to factors such as maternal age, ovarian reserve, embryo quality, and endometrial conditions, showing a progressive decline with advancing female age.[3,4] Moreover, even under optimal conditions, a substantial proportion of IVF cycles do not result in clinical pregnancy,[4] which has motivated the search for adjunctive strategies that may potentially optimize reproductive outcomes.

In this regard, acupuncture has been widely investigated as an adjunctive intervention in IVF cycles, with a growing number of clinical trials evaluating its influence on reproductive outcomes.[6,7] Based on the principles of Traditional Chinese Medicine, this therapy consists of stimulating specific points with filiform needles in order to modulate physiological functions.[8]

Experimental and clinical studies have demonstrated that acupuncture may modulate neuroendocrine and vascular mechanisms relevant to reproduction, including regulation of the hypothalamic–pituitary–ovarian axis, improvement of uterine and ovarian blood flow, reduction of sympathetic nervous system activity, and modulation of inflammatory mediators.[6,9,10]

Additional studies suggest a possible increase in clinical pregnancy rates when acupuncture is performed on the day of embryo transfer or during the ovarian stimulation phase.[7,11] Some studies have also reported statistically significant benefits when compared with control groups, although considerable methodological heterogeneity among protocols has been observed.[6,12]

Variations in the timing of acupuncture application, number of sessions, techniques employed, and the use of *sham* control groups make protocol standardization difficult and contribute to the heterogeneity of results reported in the literature. In this context, a critical analysis of recent evidence regarding its specific influence on clinical pregnancy rates in IVF cycles is necessary, as well as an evaluation of methodological limitations identified in recent studies.

Therefore, the present study aims to critically analyze the scientific evidence published between 2020 and 2026 regarding the effects of acupuncture on clinical pregnancy rates in women undergoing in vitro fertilization, discussing the main findings, possible physiological

mechanisms involved, and methodological limitations identified in the contemporary literature.

## Methodology

The present study consists of a narrative literature review, developed with the aim of analyzing the effects of acupuncture on clinical pregnancy rates in women undergoing *in vitro* fertilization (IVF). This type of study design was chosen because it allows for a qualitative, critical, integrative, and contextualized analysis of the available scientific evidence, considering its clinical implications. Although it does not follow the quantitative rigor of systematic reviews, the narrative review is widely recognized as appropriate for synthesizing emerging areas of knowledge and exploring conceptual and clinical gaps.[13]

In order to ensure greater transparency and reproducibility in the study selection process, a flowchart based on the PRISMA[14] guidelines was used, describing the stages of identification, screening, eligibility, and inclusion of articles, a practice recommended even in non-systematic reviews when a structured database search is conducted.[14]

The literature search was conducted in the PubMed/MEDLINE and LILACS (Latin American and Caribbean Literature in Health Sciences) databases, selected due to their relevance and coverage in the fields of reproductive medicine, integrative practices, and women's health. To identify relevant studies, standardized descriptors from the Medical Subject Headings (MeSH) were used and combined using Boolean operators, including the following terms: (Acupuncture OR Electroacupuncture) AND (In Vitro Fertilization OR IVF OR Assisted Reproductive Techniques) AND (Clinical Pregnancy OR Pregnancy Rate OR Embryo Transfer).

Search strategies were adapted to the specific characteristics of each database, maintaining the use of terms in English, Portuguese, and Spanish in order to increase the sensitivity of study retrieval. However, despite including search terms in three languages, only scientific articles published in English were retrieved from the databases.

Studies were included if they evaluated acupuncture as an intervention during IVF cycles, at any stage of treatment, and reported clinical pregnancy rate as either a primary or secondary outcome, defined as the presence of a gestational sac confirmed by ultrasound, with or without embryonic cardiac activity.[5]

The search primarily included studies published between 2020 and 2026; however, earlier studies considered relevant for scientific contextualization were also included. Eligible study designs included randomized controlled trials, systematic reviews and meta-analyses, clinical trial protocols, and controlled comparative studies. Studies comparing acupuncture with standard IVF care, *sham* acupuncture, or other control groups commonly used in Chinese medicine research were also included, as well as studies using systemic acupuncture or electroacupuncture as therapeutic interventions.

The exclusion criteria included studies conducted exclusively in animal models, case reports, prospective or retrospective cohort studies, publications that did not report clinical pregnancy rate as an outcome, studies evaluating only biochemical pregnancy without ultrasound confirmation, research focusing exclusively on male infertility, and non-original publications such as editorials, letters to the editor, opinion articles, or conference abstracts without complete data. Studies using other acupuncture-related techniques, such as laser acupuncture, were also excluded.

After removing duplicates, titles and abstracts were screened according to the previously established eligibility criteria. Potentially relevant articles were subsequently assessed in full text. Due to variability in acupuncture protocols, IVF treatment stages, characteristics of the study populations, and the way results were reported, a qualitative narrative synthesis was conducted.

In addition, a summary table was developed and presented in the Results and Discussion section. The included studies were analyzed according to sample size, timing of acupuncture application during IVF cycles, number of treatment sessions, type of acupuncture technique used (systemic acupuncture or electroacupuncture), characteristics of the study populations, and main outcomes, particularly those related to clinical pregnancy rate, with the aim of comparing findings and identifying methodological limitations in the recent literature.

## Results and discussion

The search strategy conducted in the PubMed and LILACS databases initially identified forty-six articles, including twenty-nine from PubMed and seventeen from LILACS. After applying the eligibility filters, removing eight duplicates, and analyzing the studies according to the previously established inclusion and exclusion criteria, nine studies were considered eligible for inclusion in this narrative review (Figure 1). The main methodological characteristics of these nine studies, including sample groups, treatment protocols, and main outcomes, with emphasis on clinical pregnancy rates in *in vitro* fertilization (IVF) cycles, are summarized in Table 1.

**Table 1** Main findings of the studies included in the present narrative review

| Authors | Participants | Treatment | Main Findings |
|---|---|---|---|
| Feng et al.,[15] | Multicenter randomized controlled trial.<br>Screening: 966; included: 739 (TEAS 367; control 372); losses due to missing data: 5 TEAS and 3 control.<br>Mean age ~31.5–31.7 years.<br>IVF-ET with day-3 embryos (two embryos transferred); included fresh and frozen transfers (~50/50). | Technique: TEAS (transcutaneous electrical acupoint stimulation) using skin pads; 2 Hz; 30 min/session.<br>Sessions: 2 (peri-transfer protocol). Timing: 24 h before ET and 30 min after ET.<br>Intensity: 10 mA (~2× sensory threshold), adjustable to 15–20 mA. Points before ET: SP8 (Diji), ST29 (Guilai), Zigong (EX-CA1/NR19), SP10 (Xuehai).<br>Points after ET: ST36 (Zusanli), KI3 (Taixi), BL23 (Shenshu), RN4 (Guanyuan), RN12 (Zhongwan). Control: standard IVF-ET care. | Clinical pregnancy (primary): 55.1% vs 46.7% (TEAS vs control), P=0.03. Implantation: 37.1% vs 33.9% (P=0.252). Live birth: 44.0% vs 40.0% (P=0.295). Subgroup >35 years: clinical pregnancy 48.9% vs 23.7% (P=0.004); implantation 30.8% vs 13.9% (P=0.001); live birth 34.0% vs 19.7% (P=0.06). Mechanisms: increased pinopodes (51.2±7.8 vs 27.5±4.9), progesterone (29.57±4.36 vs 12.80±1.56), integrins α1β1/αVβ3 and LIF. |

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Table 1 Continued...

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| | Randomized controlled trial; | Classical body acupuncture; no formal TCM diagnosis. Needles 0.25×25 mm; | Positive β-hCG: 63.9% vs 33.3%, p=0.009. |
| | single center; Turkey (Dec 2017–Jan 2018). Initially 76 randomized (AG 38; CG 38); | depth 1–2 cun; | Clinical pregnancy: 63.9% vs 33.3%, p<0.05. |
| Guven et al.,[16] | final analysis 72 (AG 36; CG 36). | 30 min/session; 3 sessions. Timing: 1 week before ET; 30 min before ET; 30 min after ET. | Ongoing pregnancy: 55.6% vs 30.6%, p<0.05. |
| | Women aged 23–45 with unexplained infertility undergoing IVF with fresh day-3 embryo transfer. | Points: Session 1: HT7, LI4, GV20, auricular Shenmen. Session 2: CV3, CV4, CV6, GV20, LIV3, ST30, SP8. Session 3: LI4, SP6, SP9, ST36. Control: no acupuncture. | Live birth: 52.8% vs 40.3%, p<0.05. Anxiety (STAI-1): decreased from 57.3±9.8 to 28.8±3.3 (AG) vs 57.0±8.0 to 41.1±6.8 (CG), p<0.000. |
| | Systematic review of 12 RCTs including 953 women with PCOS undergoing IVF-ET (2009–2022). Countries: China (11) and Iran (1). | Techniques: manual acupuncture, electroacupuncture, EA + medication. | All high-dose studies showed significant improvement in clinical pregnancy rate. |
| Li et al.,[17] | Primary outcome: clinical pregnancy rate. | Most frequent points: CV4 (Guanyuan), EX-CA1 (Zigong), SP6 (Sanyinjiao). Dose categories: high (10–15 points), medium (6–10), low (6–8). | No benefit in medium-dose studies. |
| | | Frequency: daily or 2–3/week. Duration: high dose (2–3 cycles), medium (1–2 cycles), low (<1 cycle). | One low-dose study showed benefit. Evidence suggests dose-response relationship between acupuncture intensity and pregnancy outcomes. |
| | Multicenter randomized placebo-controlled trial (sham), double-blind for participants, evaluators, and statisticians. | Manual systemic acupuncture with De qi, initiated two menstrual cycles before IVF and continued until oocyte retrieval. | Primary outcome: clinical pregnancy rate (CPR) after first fresh or frozen ET, confirmed by gestational sac and fetal heartbeat 28 days after ET. |
| | n = 300 women with diminished ovarian reserve (DOR), aged 20–39 years, undergoing IVF-ET. Randomization 1:1 (150 acupuncture vs. 150 placebo). | Frequency: 3 sessions/week (~30 sessions over 10 weeks); 20 min/session. Two alternating point sets: Set 1 (supine): CV12 (Zhongwan), KI16 (Huangshu), CV4 (Guanyuan), KI12 (Dahe), SP6 (Sanyinjiao), LR3 (Taichong). | Sample size estimate: expected CPR 38% (acupuncture) vs 22% (placebo). |
| Liu et al.,[18] | Age stratification: <35 vs ≥35 years. | Set 2 (prone): BL23 (Shenshu), BL33 (Zhongliao), KI3 (Taixi). Placebo: non-meridian points ≥1 cun from real points using non-penetrating sham needles; same frequency and duration. | Secondary outcomes: follicles ≥14 mm, E2 levels and endometrial thickness on hCG day, oocytes retrieved, MII oocytes, 2PN fertilization, high-quality embryos, implantation rate, cycle cancellation, biochemical pregnancy, miscarriage, ongoing pregnancy, and live birth. Statistical analysis: intention-to-treat (ITT), multivariate logistic regression (aOR with 95% CI), p<0.05. |
| Liu et al.,[19] | Systematic review and network meta-analysis including >30 RCTs and >4,000 women undergoing IVF-ET. | Interventions: manual acupuncture, electroacupuncture, TEAS. | Clinical pregnancy increased vs control (OR ~1.4–1.6). |
| | | Most frequent points: SP6, ST29, CV4, Zigong, BL23, ST36. | EA and TEAS ranked among the most effective interventions (SUCRA ranking). Evidence for live birth less consistent. |
| Masoud et al.,[20] | Meta-analysis of 9 RCTs, including 3,020 women undergoing IVF (1,515 acupuncture; 1,505 control); mean age ~34 years. Subgroup analysis: China vs. outside China. | Acupuncture with needles as an adjunct to IVF; heterogeneous protocols. Common acupoints: PC6 (Neiguan), SP8 (Diji), LR3 (Taichong), GV20 (Baihui), ST29 (Guilai), ST36 (Zusanli), SP6 (Sanyinjiao), SP10 (Xuehai), LI4 (Hegu). Intervention generally applied around embryo transfer (peri-ET). | Clinical pregnancy (overall): RR 1.14 (95% CI 0.93–1.40), p=0.21 (NS). |
| | | | China: RR 0.80 (95% CI 0.66–0.97), p=0.02 (control favored). Outside China: RR 1.28 (95% CI 1.02–1.61), p=0.03; after removing a heterogeneous study: RR 1.38 (95% CI 1.11–1.71), p=0.003 (acupuncture favored). Live birth: RR 0.87 (95% CI 0.75–1.01), p=0.06 (NS). Miscarriage: RR 1.23 (95% CI 0.89–1.70), p=0.21 (NS). |

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Table 1 Continued...

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|---|---|---|---|
| Samsami Dehghani et al., 2020 | Randomized controlled trial; n=186; three groups (62 each). Women undergoing IVF. | ACU1: acupuncture 25 min before ET.<br>ACU2: acupuncture before and after ET. Points: HT7, PC6, CV6, GV20, SP6, CV4. | Clinical pregnancy: Control 19.3%; ACU1 43.5%; ACU2 17.7%. ACU1 vs control significant (p=0.006). |
| Yang et al.,[21] | Multicenter randomized controlled trial protocol. n = 338 women (<40 years) with diminished ovarian reserve (DOR): AFC <7, AMH <1.1 ng/mL, or <3 oocytes in a previous cycle. Randomization: 169 intervention / 169 control.<br>Treatment duration: 12 weeks before IVF-ET. Mean follow-up: 1 year.<br>Control group: sham acupuncture. | Electroacupuncture vs sham acupuncture. Frequency: 2–3 sessions/week for 8–12 weeks (max. 24 sessions). Parameters: 2 Hz, 30 min/session, intensity 1.2–3.0 mA.<br>Alternating acupoints: GV20, CV3, CV6, ST29, SP6, ST36, PC4; BL23, BL32, KI3, SP6.<br>Control: superficial needling (<5 mm), no De qi and no electrical stimulation (0 mA). | Study protocol, results not yet available.<br>Planned primary outcome: clinical pregnancy rate per IVF-ET cycle. Sample size based on expected DOR pregnancy rate ~20% and hypothesized increase to 35% ($\alpha$ = 0.05; power = 80%). |
| Zheng et al.,[22] | Randomized controlled trial with three arms.<br>n = 118 women (EA = 38; placebo = 38; IVF control = 38), aged 21–42 years. Intervention performed during the ovarian stimulation phase. | Electroacupuncture (EA): 2/100 Hz, 30 min/session, 3 sessions/week during ovarian stimulation.<br>Main acupoints: GV20, CV4, SP6, Zigong (EX-CA1), BL23, KI3, ST36, SP10, among others.<br>Placebo: non-penetrating needles at non-acupoints. | Clinical pregnancy rate: 50.0% (EA) vs 34.2% (placebo) vs 32.4% (IVF), p < 0.05.<br>Implantation rate increased in the EA group.<br>Live birth: favorable trend without strong statistical significance.<br>Reduced total gonadotropin dose in the EA group. |

AFC, antral follicle count; AG, acupuncture group; AMH, anti-Müllerian hormone; aOR, adjusted odds ratio; BL, bladder meridian; CG, control group; CI, confidence interval; CPR, clinical pregnancy rate; CV (RN), conception vessel; DOR, diminished ovarian reserve; EA, electroacupuncture; ET, embryo transfer; E2, estradiol; IVF, in vitro fertilization; IVF-ET, in vitro fertilization with embryo transfer; Hz, hertz; hCG, human chorionic gonadotropin; ITT, intention-to-treat; KI, kidney meridian; LI, large intestine meridian; LR (LIV), liver meridian; LIF, leukemia inhibitory factor; MA, manual acupuncture; MII, metaphase II oocytes; NS, not statistically significant; OR, odds ratio; PC, pericardium meridian; PCOS, polycystic ovary syndrome; PN (2PN), pronuclear stage fertilization; RCT, randomized controlled trial; RR, relative risk; SP, spleen meridian; ST, stomach meridian; STAI-1, State–Trait Anxiety Inventory (state scale); SUCRA, surface under the cumulative ranking curve; TEAS, transcutaneous electrical acupoint stimulation; TCM, Traditional Chinese Medicine. Acupuncture point nomenclature follows the World Health Organization (WHO) Standard Acupuncture Point Locations. Data are presented as percentages, mean ± standard deviation, or effect estimates (RR/OR) with 95% confidence intervals when available.

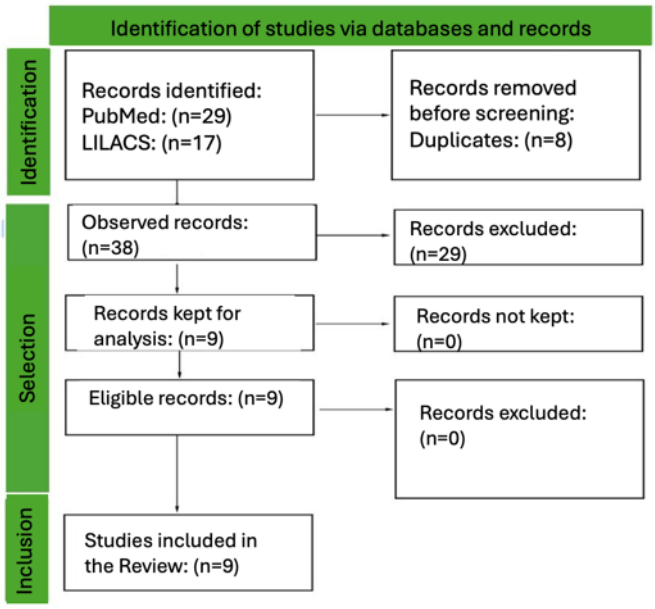


**Figure 1** Flowchart of the research developed by Raisa Arruda de Oliveira (2026), based on Prisma (2020).

In general, the analyzed studies presented methodological diversity, particularly regarding the acupuncture techniques used, number of sessions, duration of treatment, and timing of the intervention during the IVF cycle. Despite these differences, the integrated analysis of the evidence suggests a consistent trend indicating that acupuncture may act as a potentially beneficial adjunct therapy for women undergoing assisted reproduction, especially with regard to improving clinical pregnancy rates.

The multicenter study conducted by Feng et al.[15] presented one of the largest sample sizes, evaluating 739 women undergoing IVF. In this study, transcutaneous electrical acupoint stimulation (TEAS) was applied during the peri-embryo transfer period. The results demonstrated a significant increase in clinical pregnancy rates in the intervention group (55.1%) compared with the control group (46.7%) (p = 0.03). Additionally, subgroup analyses indicated even more pronounced effects among women aged over 35 years, in whom the clinical pregnancy rate reached 48.9% in the TEAS group *versus* 23.7% in the control group (p = 0.004). Since female fertility progressively declines after the age of 35, mainly due to reduced ovarian reserve and oocyte quality, complementary interventions that may improve the endometrial environment and reproductive outcomes become particularly relevant for this age group. In this context, acupuncture may act as a beneficial adjunctive tool for women of advanced reproductive age undergoing IVF.[5] Feng et al.[15] also observed an increase in markers of endometrial receptivity, such as pinopodes and integrin expression, suggesting that acupuncture may favor the embryo implantation windowFeng et al.[15]

Similar results were observed in the clinical trial conducted by Guven et al.,[16] which evaluated systemic acupuncture in 72 women with unexplained infertility undergoing IVF. In this study, the clinical pregnancy rate was significantly higher in the acupuncture group (63.9%) compared with the control group (33.3%). Additionally,

higher rates of ongoing pregnancy and live birth were observed, as well as a significant reduction in anxiety levels among patients receiving acupuncture. These findings suggest that the effects of acupuncture may involve not only physiological mechanisms but also psychosocial components, particularly related to stress reduction, which is frequently associated with assisted reproduction treatments and may indirectly contribute to improved clinical pregnancy rates and reproductive success.[10,16]

Similarly, the study conducted by Samsami Dehghani et al. (2020) demonstrated a significant increase in clinical pregnancy rates when acupuncture was applied before embryo transfer. In this study, the clinical pregnancy rate was 43.5% in the pre-transfer acupuncture group, compared with 19.3% in the control group ($p = 0.006$). Interestingly, the group receiving two acupuncture sessions (before and after embryo transfer) did not show additional benefit, presenting a clinical pregnancy rate of 17.7%, suggesting that the timing of the intervention may play a determining role in therapeutic efficacy.

Furthermore, the systematic review conducted by Masoud et al.,[20] evaluated the effectiveness of acupuncture as an adjunct therapy in IVF cycles and demonstrated that, overall, acupuncture was associated with increased clinical pregnancy rates, although the authors highlighted the presence of methodological differences among the included studies.

Likewise, the systematic review by Li et al.,[17] investigated the relationship between acupuncture dosage and reproductive outcomes in women with polycystic ovary syndrome (PCOS) undergoing IVF. The results suggested that protocols involving a higher number of sessions or longer treatment duration may be associated with better clinical outcomes, indicating a possible dose–response relationship between acupuncture and reproductive outcomes. These findings are consistent with the results reported by Liu et al.,[19] and Masoud et al.,[20] supporting the role of acupuncture in improving IVF reproductive outcomes and clinical pregnancy rates, while also emphasizing the importance of protocol standardization to enhance scientific validation and reproducibility.

Additionally, the meta-analysis conducted by Liu et al.,[19] evaluated different non-pharmacological interventions in patients undergoing IVF/ICSI, demonstrating that modalities based on electrical acupoint stimulation, such as electroacupuncture (EA) and TEAS, showed promising performance in relation to clinical pregnancy rates, ranking among the non-pharmacological interventions with the highest probability of benefit.

Another relevant aspect observed among the nine analyzed studies refers to the most frequently used acupuncture points in therapeutic protocols. Among them, CV4 (*Guanyuan*), SP6 (*Sanyinjiao*), and *Zigong* stand out, points traditionally associated with the regulation of female reproductive function. In addition, the points ST36 (*Zusanli*), LR3 (*Taichong*), KI3 (*Taixi*), BL23 (*Shenshu*), GV20 (*Baihui*), and HT7 (*Shenmen*) were also frequently used. The selection of these points suggests a therapeutic strategy aimed at regulating the hypothalamic–pituitary–ovarian axis, improving uterine circulation, and modulating the autonomic nervous system, factors that may directly influence endometrial receptivity and embryo implantation.[10,15,21]

From a physiological perspective, experimental studies suggest that acupuncture may act through different mechanisms, including neuroendocrine modulation, increased uterine blood flow, regulation of inflammatory cytokines, and reduction of sympathetic nervous system activity.[6,9,10] These effects may contribute to improving the endometrial microenvironment, favoring embryo implantation and consequently increasing the likelihood of clinical pregnancy in assisted reproduction cycles.[15,17]

However, despite the promising results observed in the studies, some methodological limitations should be considered, including the variability of acupuncture protocols, differences in the number of sessions, diversity of techniques used, and heterogeneity in the studied populations, which make direct comparisons among studies difficult. In addition, some studies presented small sample sizes or lacked adequate control groups, factors that may influence the interpretation of the findings.

Thus, although the evidence analyzed in this narrative review suggests that acupuncture may exert beneficial effects on clinical pregnancy rates in women undergoing IVF, especially when used as an adjunct therapy at different stages of treatment, further well-designed randomized clinical trials with standardized protocols, longer follow-up periods, and greater methodological rigor are needed to confirm these findings and establish more consistent therapeutic protocols.

Overall, the studies included in this review indicate that acupuncture presents therapeutic potential in reproductive medicine, possibly acting through neuroendocrine, vascular, and psychosocial mechanisms.[7,9,11] These findings support the hypothesis of this study that acupuncture may benefit the reproductive health of women undergoing IVF cycles, contributing to improvements in clinical pregnancy rates, although the magnitude of this effect may depend on factors such as treatment protocol, timing of the intervention, and individual patient characteristics.[15,17,20]

The evidence analyzed in this review indicates that acupuncture may play a beneficial role as an adjunctive therapy in *in vitro* fertilization (IVF) cycles, particularly with regard to clinical pregnancy rates. Different acupuncture techniques appear to influence key aspects of female reproductive physiology, including neuroendocrine modulation, uterine blood flow, hormonal regulation, and endometrial receptivity.

However, variability among studies, including differences in protocols, populations, and study designs, limits the strength and comparability of the evidence. Overall, these findings support a favorable trend toward the use of acupuncture as a complementary approach in assisted reproduction, while highlighting the need for further well-designed randomized controlled trials with standardized methodologies to confirm these effects and improve scientific reproducibility.

## Conclusion

In summary, the findings of this narrative review suggest that acupuncture may be a promising adjunctive therapy in *in vitro* fertilization (IVF) cycles, particularly in relation to clinical pregnancy rates.

Overall, acupuncture appears to be associated with improved reproductive outcomes; however, the available evidence remains inconsistent across studies. These findings reinforce the potential role of acupuncture as a complementary approach in assisted reproductive techniques.

Nevertheless, the heterogeneity of acupuncture protocols and variations in study design limit the strength and generalizability of the current evidence.

Therefore, further well-designed randomized controlled trials with standardized methodologies are necessary to clarify the effectiveness

of acupuncture and to support its integration into clinical practice in reproductive medicine.

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## Conflicts of interest

Author has no conflicts of interest to declare.

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