Acupuncture for pregnancy-related pain in the lower back and posterior pelvic girdle

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INTRODUCTION

Low back pain and pelvic pain are common conditions during pregnancy, and they can persist even after delivery[1]. The etiology of this phenomenon is complex, likely involving mechanical, circulatory, hormonal, and psychosocial factors[2]. Although there are no organic or specific diseases in most cases, the effects of pain can be considerable, negatively affecting sleep quality, physical condition, work performance, social life, and leisure activities, as well as leading to economic losses due to absenteeism[1,3].

The experience of pain during pregnancy is widespread, and its treatment poses significant challenges[4]. Some pain-relieving medications can pose dangers to both the fetus and the mother, while inadequate pain management can lead to severe maternal consequences such as depression and high blood pressure[4].

Due to limitations concerning pain management, acupuncture becomes an important treatment[5]. Acupuncture has been increasingly integrated into Western medicine as a complementary therapy for various conditions, especially pain, and has been shown to have analgesic, anti-inflammatory, and neuromodulatory effects[6]. Several studies have suggested that acupuncture can relieve pregnancy-related pain in the lower back and posterior pelvic girdle by improving blood circulation, relaxing muscles, reducing inflammation, and regulating hormones[7–9].

OBJECTIVE

The main objective of this review article was to update scientific knowledge regarding the use of acupuncture for back pain in pregnancy.

METHODS

A literature review was performed in the following scientific databases: Medline/PubMed, EMBASE, SciELO, LILACS, and Cochrane. The following terms were used: acupuncture AND low back pain in pregnancy, acupuncture AND pelvic pain, acupuncture AND pregnancy pain.

This review included randomized controlled trials (RCT) or quasi-RCT studies with patients who received only acupuncture (defined as the insertion of needles into acupoints, including traditional acupuncture, Western, segmental, and trigger point), as well as comparative studies with patients in other groups who received conservative treatment with sham, analgesia, and kinesiotherapy. Included studies had at least one of these primary outcomes: pain or functionality. Studies of laser acupuncture and auricular acupuncture without body acupuncture were excluded.

The articles were selected and evaluated independently by two authors (MYBPP and AH). The authors met to reach a consensus on the inclusion and exclusion of articles in the review.

Only human clinical studies were included. Articles in Portuguese and English were included. The search was limited to articles published between 2000 and 2022. Repeated articles in databases, animal experimentation studies, and case reports were excluded.

RESULTS

A total of 85 articles were initially identified through electronic search. After review of the title and abstract, 23 full-text papers were reviewed, with 8 articles fulfilling the inclusion criteria. Duplicate articles were manually removed. The included studies comprised 1,087 patients. All articles

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were published in English. A flowchart of the study selection process is shown in Figure 1.

Tables 1 and 2 summarize the characteristics and main findings of the eight included trials.

Acupuncture versus waiting lists or standard care

Bishop et al. compared acupuncture with standard care (SC) for pelvic girdle and low back pain during pregnancy, enrolling 386 women to receive either SC or SC plus five acupuncture sessions. Acupuncture was more effective for reducing pain and improving functional status at 4 weeks, but not at 12 weeks. Acupuncture was also more cost-effective when accounting for employer costs[10].

Kvorning et al. assessed the pain-relieving effect of acupuncture in the last trimester of pregnancy. They involved 72 women who received either standard treatment (physiotherapy, exercises, and/or analgesics) or SC plus acupuncture. The acupuncture group had a 60% reduction in pain intensity and a 44% reduction in days with pain per week, compared to 14 and 9%, respectively, in the control group (p<0.001)[8].

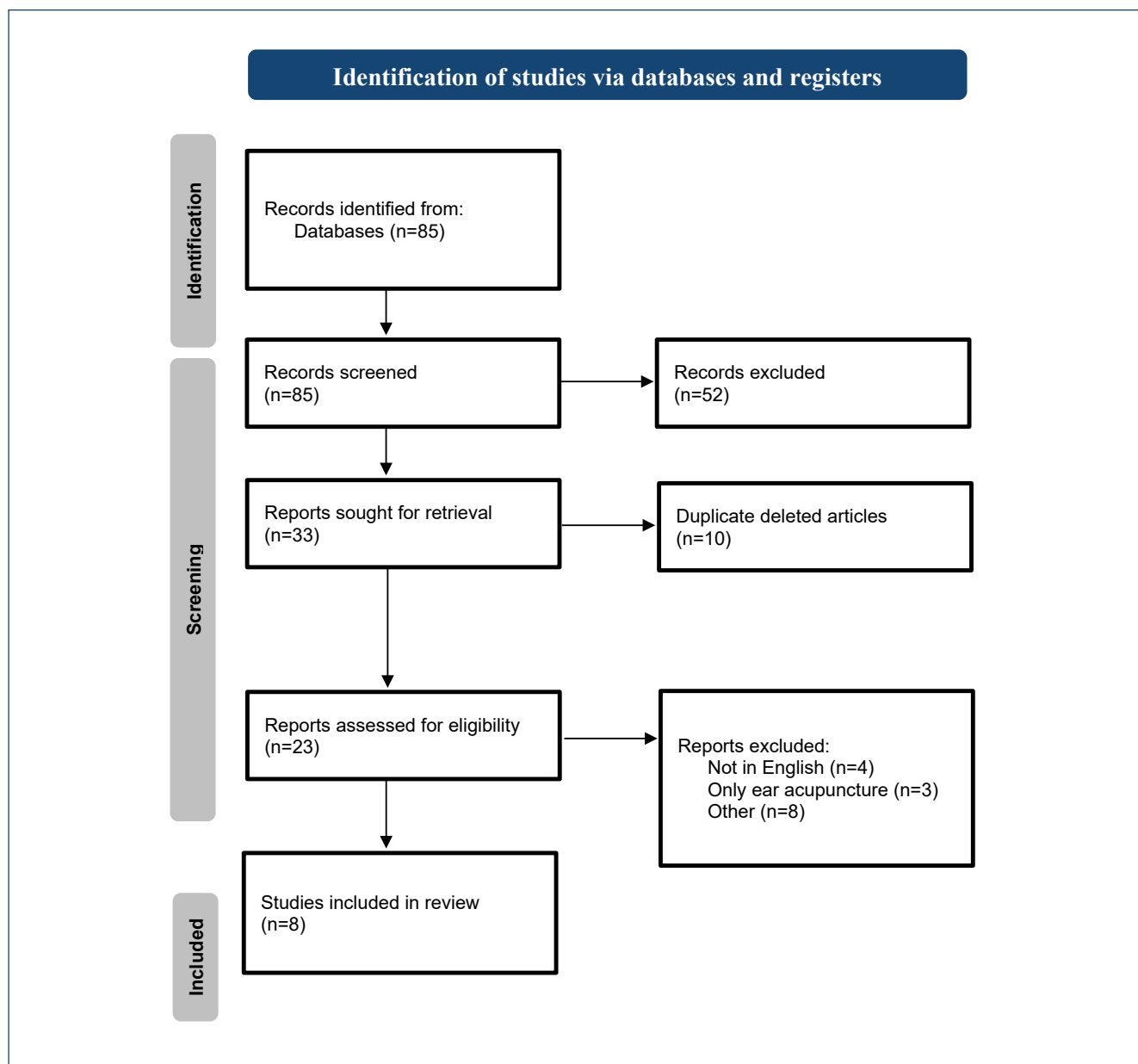**Figure 1.** Flowchart of the study.

Table 1. Randomized controlled trials evaluating acupuncture for pregnancy-related low back pain.

Authors	Study	Participants	Outcomes	Interventions	Results
Wedenberg et al.[9]	RCT	n=60, pregnant women with a gestational age of no more than 32 weeks	VAS, disability (DRI)	Group 1: 10 acupuncture sessions, 3×/week, 30 min/day Group 2: 10 physiotherapy sessions, 1–2×/week, 50 min/day	Acupuncture: ↓ pain and disability versus physiotherapy
Kvorning et al.[8]	RCT	n=72, n=37 acupuncture, n=35 control group	Pain (VAS), assessments of maximal/minimal pain, daily activities, and quality of life	Acupuncture: average of 6 sessions (range 3–11)	Acupuncture: ↓ patient-reported outcomes (pain, function, quality of life). No serious adverse effects
Elden et al.[14]	RCT	n=386, n=125 acupuncture, n=130 SC, n=131 SC+exercises	Pain (VAS), severity of pelvic girdle pain before/after treatment	Acupuncture: 12 sessions, 2×/week over 6 weeks. SC: general information, advice SC+exercises: stabilizing exercises (6 sessions of 1 h for 6 weeks)	Acupuncture: ↓ pain in evening versus SC+exercise, ↓ pain in morning and evening versus SC. Greatest pain reduction versus other groups
Lund et al.[12]	RCT	n=70, n=35 superficial acupuncture stimulation versus n=35 deep acupuncture	Pain (VAS), pain, emotional reactions, and loss of energy (Nottinghan Health Profile Questionnaire)	Acupuncture: 10 sessions 2×/week for 5 weeks, 30 min/day.	Acupuncture: ↓ patient-reported outcomes (pain, function, and quality of life)
Elden et al.[11]	RCT	n=115, n=58 acupuncture+SC versus n=57 nonpenetrating sham acupuncture+SC	Pain (VAS), frequency of sick level, functional status, and quality of life	Acupuncture: 12 sessions, 2×/week for 4 weeks, 1×/week for 4 weeks, 30 min/day Sham: same protocol	Acupuncture: no significant effect on pain or degree of sick leave versus chan. Some improvement in daily activities
Guerreiro Silva[7]	Quasi-RCT	n=61, n=27 acupuncture, n=34 control, women with 15–30 weeks of pregnancy	NRS, disability (general activities, work, and walk)	Group 1: 8–12 sessions, 1–2×/week over 8 weeks Group 2: SC with paracetamol+hyoscine	Acupuncture: ↓ NRS, ↓ disability score, ↓ use of paracetamol
Bishop et al.[10]	Pilot RCT	n=124, 42 acupuncture and SC, 41 nonpenetrating acupuncture+SC, 41 SC	Pain (VAS), Functionality+Global Rating of Change	True acupuncture group: 6–8 sessions over 6 weeks, 20–30 min/day Nonpenetrating needles: 6–8 sessions over 6 weeks SC: self-management booklet	Acupuncture: ↓ patient-reported outcomes (pain, function, and quality of life)
Nicolian et al.[13]	RCT	n=199, n=96 acupuncture, n=103 SC	Efficacy (NRS), disability score, cost-effectiveness	Group 1: 5 acupuncture sessions, 2×/week (1st week, 1×/week (following weeks) Group 2: (pregnancy belt, lifestyle recommendations, and exercises)	Acupuncture: ↓ NRS, ↓ disability score, ↓ average total costs compared to SC

Guerreiro Silva et al. examined the effects of acupuncture on low back and pelvic pain during pregnancy in real-life settings. They enrolled 61 pregnant women and quasi-randomly allocated them to either acupuncture or standard treatment. The acupuncture group had a 54% decrease in pain intensity score and a 65% decrease in analgesics used per week, compared to 12 and 16%, respectively, in the control group[7].

Acupuncture versus sham acupuncture

Elden et al. evaluated superficial versus deep acupuncture using nonpenetrating sham acupuncture. The study found no significant difference between treatments regarding the patients'

pain during movement and the degree of sickness leave. Acupuncture had some degree of improvement in performing daily activities according to "daily activity limitation[11]."

Lund et al. compared superficial versus deep acupuncture. The superficial group had similar changes in pain intensity, while the deep group had more significant changes. The authors concluded that there was no clear difference between the groups[12].

Acupuncture cost-effectiveness

Nicolian et al. found that acupuncture was cost-effective when compared to SC. It was both cheaper (€1512 versus €1452 per

Table 2. Details on acupuncture point selection and type of stimulation for the included studies.

Authors	Type of stimulation	Needles	Points
Wedenberg et al.[9]	Manual, stimulation 15 min after insertion	2–10 needles, ear-acupuncture+body-acupuncture	Fossa triangularis for ear-acupuncture. BL 26, BL 27, BL 28, BL 29, BL 30, BL 60, CW 20, local points
Kvorning et al.[8]	Manual, stimulated	Periosteal stimulation used when possible, associated with tender points, up to 8 points	R3, GV 20, local tender points (initial), BL 60, SI 3, BL 22-26+tender points
Elden et al.[14]	Manual, stimulation to elicit De Qi every 10 min	Segmental and extra-segmental points	GV 20, LI 4, BL 26, BL 32, BL 33, BL 54, KI 11, BL 60, EX 21, GB 30, SP 12, ST 36
Lund et al.[12]	Manual, stimulation to elicit De Qi 5× during the session	Deep acupuncture: inserted intramuscularly Superficial acupuncture: inserted subcutaneously, minimal manipulation	Local: BL 27, BL 28, BL 29, BL 31, BL 32, BL 54, KI 11, CV 3 Distal: SP 6, LR 2, LI 4
Elden et al.[11]	Manual, stimulated every 10 min	Segmental and extra-segmental points, on tender acupuncture points and/or trigger points. Point selection: clinical experience	Local: EX 21, BL 26, BL 28, BL 32, BL 33, GB 30, BL 54 Distal: KI 11, ST 36, BL 60, GV 20, LI 4
Guerreiro Silva et al.[7]	Manual stimulation to elicit De Qi.	Average of 12 needles. TCM point-based selection	K 13, S 13, BL 62, BL 40, TE 5, GB 30, GB 41 and Huatuojiaji points
Bishop et al.[10]	Manual stimulation to elicit De Qi.	6–10 bilateral points (between 12 and 20 points total). Point selection: Western acupuncture+trigger points	Local points: BL 23-28, BL 54, BL 31-33, GB 30, HJJ L4, HJJ L5. Distal points: GB 34, ST 36, LR 3, LI 4, BL 60, BL 62
Nicolian et al.[13]	Manual stimulation to elicit De Qi.	Points needled bilaterally. Point selection: pain location and TCM	BL 40, 40V, Ah Shi points

patient) and more effective (3.9 more days with visual analog scale [VAS] ≤4 per patient) over 12 weeks[13].

Adverse effects

The selected articles did not report significant adverse effects, such as pneumothorax, neurological, dermatological, or allergic effects. Adverse effects found were minimal local pain, with VAS<3, not requiring interruption of therapy application, and also local erythema.

DISCUSSION

The outcomes of most studies favored acupuncture for pain management. Patients given acupuncture showed significant improvement in pain intensity. The above findings are further validated by the significantly lower use of analgesic drugs and nonacupuncture analgesic techniques in patients given acupuncture compared to control patients[7].

There is significant heterogeneity among acupuncture trials regarding study design, intervention protocol, control group, outcome measures, patient characteristics, and quality assessment tools[13]. Studies included in this review followed different acupuncture point selections, with most based on traditional Chinese medicine (TCM) diagnosis, with local and distal points used[10]. Some protocols followed a standardized point selection, while others allowed extra points based on patients' complaints[8]. This can affect the comparability and consistency of the results.

Within these limitations, our review's main findings are consistent with a recent systematic review and meta-analysis, which also included ear acupuncture[15]. Our results are also consistent with the hypothesis that acupuncture is an effective and safe treatment for back pain in pregnancy and that it is a safe procedure with only a few and minor reported adverse events. Another systematic review found that acupuncture as an adjuvant to SC was more effective than SC alone and physiotherapy in reducing mixed pelvic/back pain. Moreover, women experienced greater pain relief with acupuncture plus standard therapy than with standard treatment alone or stabilizing exercises plus standard treatment[16].

Safety and side effects

While acupuncture is generally considered safe, there are potential risks associated with the treatment. Common, less serious adverse effects can include minor bruising or bleeding, temporary soreness at the needle site, and nausea or dizziness[5]. Serious adverse effects can include infection, punctured organs, and nerve injury, which were not found in any of the reviews included in this study.

Limitations

Blinding of participants, practitioners, and assessors is a significant challenge in acupuncture clinical trials, as the intervention is not easily concealed. Finding an appropriate control group is difficult in acupuncture studies, as sham acupuncture is often

used as a control. Long-term follow-up can be challenging, as participants may become discouraged or lose interest over time. The wide range of patient responses to the treatment and the difficulty in standardizing acupuncture treatments can lead to variability in results from different studies. These issues can make conducting clinical trials in acupuncture difficult, and the results of such studies can be unreliable.

CONCLUSION

Acupuncture is a promising treatment for low back and pelvic pain during pregnancy. The current evidence supports the effectiveness and safety of acupuncture for these conditions, but more high-quality, standardized trials are needed to confirm and strengthen its evidence base. Acupuncture may offer a valuable option for pregnant women who suffer from low back and pelvic pain and who seek a safe and effective non-pharmacological intervention.

AUTHORS' CONTRIBUTIONS

MYBP: Investigation, Writing – original draft. **AH:** Investigation, Writing – original draft. **LC:** Methodology. **MM:** Methodology. **LCSS:** Writing – review & editing. **AWWT:** Supervision.

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