



A SYSTEMATIC REVIEW AND META-ANALYSIS

Osteopathic manipulative treatment for low back and pelvic girdle pain during and after pregnancy: A systematic review and meta-analysis



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A B S T R A C T

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Background: Low back pain (LBP) is a common complaint during pregnancy. This study examined the effectiveness of osteopathic manipulative treatment (OMT) for LBP in pregnant or postpartum women. **Methods:** Randomized controlled trials unrestricted by language were reviewed. Outcomes were pain and functional status. Mean difference (MD) or standard mean difference (SMD) and overall effect size were calculated.

Results: Of 102 studies, 5 examined OMT for LBP in pregnancy and 3 for postpartum LBP. Moderate-quality evidence suggested OMT had a significant medium-sized effect on decreasing pain (MD, −16.65) and increasing functional status (SMD, −0.50) in pregnant women with LBP. Low-quality evidence suggested OMT had a significant moderate-sized effect on decreasing pain (MD, −38.00) and increasing functional status (SMD, −2.12) in postpartum women with LBP.

Conclusions: This review suggests OMT produces clinically relevant benefits for pregnant or postpartum women with LBP. Further research may change estimates of effect, and larger, high-quality randomized controlled trials with robust comparison groups are recommended.

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1. Background

Low back pain (LBP) and posterior pelvic pain (PPP) are common during pregnancy (Vermani et al., 2010) and often remain a disabling problem postpartum (Wu et al., 2004). The prevalence of LBP in pregnancy ranges from 24% to 90%, although it is most commonly estimated at 40%–50% (Gutke et al., 2008b; Vermani et al., 2010; Vleeming et al., 2008). Prevalence increases with the duration of pregnancy and is at the highest point in the third trimester (Ostgaard et al., 1994; Sabino and Grauer, 2008). The prevalence of LBP in postpartum women increases in the year after delivery, with estimates from 28% after 3 months to over 50% after 5

months and 67% after 12 months (Brown and Lumley, 1998; MacArthur et al., 1991; Patel et al., 2007; Saurel-Cubizolles et al., 2000).

LBP is defined as pain in the lumbar region located below the costal margin and above the inferior gluteal folds (van Tulder et al., 2006). PPP has been defined as pain in the symphysis pubis and/or pain in the regions of one or both sacroiliac joints and pain in the gluteal region (Vermani et al., 2010; Wu et al., 2004). Much of the literature on pregnancy-related back pain has not distinguished between LBP and PPP and both will be referred to as LBP in this review.

The cause of LBP during pregnancy is unclear and appears to be nonspecific and may be related to changes in body posture with increased lumbar lordosis to balance the increasing anterior weight of the abdomen. These postural changes, in combination with inefficient neuromuscular control, may contribute to the development of joint, ligament, and myofascial dysfunctions (Gutke et al., 2008a; Majchrzycki et al., 2010; Vleeming et al., 2008). Similarly,

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the cause of PPP is unclear, but the term implies the origin is from a musculoskeletal source, such as the pubic symphysis or sacroiliac joints, rather than pelvic viscera. Mechanical, traumatic, hormonal, and degenerative factors have all been proposed as causes of PPP, but all are speculative (Vermani et al., 2010).

European guidelines recommend that pregnancy-related LBP should be managed by providing adequate information and reassurance to stay active, continue normal daily activities and work, and offer individualised exercises where appropriate (Vleeming et al., 2008). In a recent Cochrane review, Liddle and Pennick (2015) reported that there was low-quality evidence that exercise may reduce pregnancy-related LBP and functional disability. The authors stated there was evidence from single studies which suggested that acupuncture, osteopathic manipulative therapy, and multi-modal interventions (manual therapy, exercise, and education) may be of benefit.

Osteopathy is a health approach that emphasizes the role of the musculoskeletal system in health and promotes optimal function of the tissues of the body by using a variety of manual techniques (DeStefano, 2012; DiGiovanna et al., 2005). Osteopathic manipulative treatment (OMT) typically involves an eclectic range of manual techniques, which may include soft tissue stretching, spinal manipulation, resisted isometric ‘muscle energy’ stretches, and visceral technique. Treatment is characterised by a holistic approach to the patient and may include lifestyle advice and biopsychosocial approaches as part of patient management (Vaughan et al., 2014). OMT is typically applied to many regions and tissues of the body, sometimes remote from the symptomatic area, at the clinical judgement of the practitioner (DeStefano, 2012; DiGiovanna et al., 2005; Vaughan et al., 2014).

There is growing evidence that OMT may be beneficial for treatment of women with pregnancy-related or postpartum LBP (Franke et al., 2014; Majchrzycki et al., 2015). Majchrzycki et al. (2015) reviewed the literature and concluded that OMT appears to be safe and effective treatment for pelvic and spinal pain in pregnant women. However, this review mixed studies of different designs, included duplicate data from the same study (Licciardone and Aryal, 2013; Licciardone et al., 2010), and included both OMT and non-osteopathic manual therapies, so the conclusions should be viewed with caution. In a systematic review of the effectiveness of OMT for nonspecific LBP, Franke et al. (2014) reported low-quality evidence (downgraded due to inconsistency and imprecision) supporting OMT for LBP pain and functional status in pregnant women and moderate-quality evidence for pain and functional status in postpartum women. However, this evidence was limited by the low number of available studies, low participant numbers, inconsistency in the results, and different comparison groups between studies (Franke et al., 2014).

The aim of the current review is to update the evidence for the treatment of pregnancy-related and postpartum LBP with OMT since the last review (Franke et al., 2014). As recommended by the Cochrane Collaboration (Higgins and Green, 2011), the current review searched the non-published ‘grey’ literature and was not restricted by language in order to retrieve all available studies.

2. Methods

2.1. Criteria for considering studies for the current review

2.1.1. Types of studies

Only randomized controlled trials (RCTs) were included in the current review. Potential studies could be published or unpublished (grey literature) in any language.

2.1.2. Types of participants

We included studies with pregnant or postpartum adults (older than 18 years and with postpartum defined in these studies from 3 to 24 months following delivery) with nonspecific LBP (i.e., pain between the lumbo-pelvic region and the 12th rib) and/or PPP (pain in the symphysis pubis and/or pain in the regions of one or both sacroiliac joints and pain in the gluteal region) without any limitation of the duration of the pain period (acute, subacute, or chronic back pain). We excluded studies which included participants with specific LBP or PPP (back pain with a specific cause, e.g., compression fracture, a tumour or metastasis, ankylosing spondylitis, infection).

2.1.3. Types of interventions

Treatment was required to be an ‘authentic’ OMT intervention where the practitioners were identified as osteopaths or osteopathic physicians and had a choice of manual techniques and judgment was required for the treatment selection, without any technique restrictions or standardized treatment protocols. The techniques chosen were based on the treating examiner’s opinion of what techniques would be most appropriate for a given patient. This eclectic, pragmatic approach best represents ‘real-world’ osteopathic practice (Fryer et al., 2010; Johnson and Kurtz, 2003; Orrock, 2009), as opposed to treatment following an established study protocol that applies an isolated manual technique or set of techniques.

Therefore, our inclusion criteria were RCTs of OMT for nonspecific LBP in pregnant or postpartum women where the treating practitioner was an osteopath or osteopathic physician who used clinical judgment to determine the treatment performed. Only studies where an effect size could be assigned to the OMT intervention were considered. If co-interventions were used, they also had to be performed in the control group. Studies were excluded that used an intervention of a single manual technique, such as high-velocity manipulation.

2.1.4. Types of comparisons

Studies with any type of comparison group (e.g., manual therapy, usual care, sham treatment, untreated) were included.

2.1.5. Types of outcome measures

Only patient-reported outcome measures were evaluated.

2.2. Primary outcomes

The primary outcomes were pain and functional status. Pain was measured by visual analogue scale (VAS), number rating scale (NRS), or the McGill Pain Questionnaire. Studies measured functional status using the Roland-Morris Disability Questionnaire, Oswestry Pain Questionnaire, Pelvic Girdle Pain Questionnaire, or another valid instrument. For the meta-analysis, the outcome measure (pain or functional status) of the last treatment time point was used.

2.3. Secondary outcome

These outcomes included any kind of adverse event.

2.4. Data sources and searches

A systematic literature search was performed in December 2016 in the following electronic databases: Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, Embase, CINAHL, PEDro, OSTMED, DR, and Osteopathic Web Research. The following search terms were used: low back pain, back pain, lumbopelvic pain,

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