The Effects of Chiropractic Care and Alternative Medicine on Lumbosacral and Pelvic Disorders in Pregnant Women: A Literature Review

By: Natalie Brooke Pendergrass

Faculty Advisor: E.J. Powers, D.C.

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ABSTRACT

Objective: The purpose of this study is to review the literature on the occurrence of low back and pelvic pain during pregnancy and the different complementary and alternative medicine (CAM) options for treatment. The main treatments focused on are chiropractic care, exercise/ physical therapies, and acupuncture.

Methods: A Pub Med search was performed using the terms *pregnancy* and *chiropractic*. Further searches were performed using the terms *pregnancy* and *low back pain*; and *pregnancy* and *SI pain*. Sources were cross-referenced to obtain more articles on these subjects.

Results: Twenty-six articles were used in this review. The articles include literature reviews, case studies, and research studies. The literature supports low back and pelvic pain being commonly experienced during pregnancy. The literature also supports chiropractic care and CAM therapies as safe and effective treatments during pregnancy.

Conclusion: Complementary and alternative medicine is becoming a more popular option of treatment for pregnant women. Chiropractic care, exercise, and acupuncture all appear to be safe and effective treatments for low back and pelvic pain during and after pregnancy. More research needs to be conducted in the fields of chiropractic care and CAM therapies for their validity to be conclusive.

Key Indexing Terms: *pregnancy; chiropractic; SI pain; low back pain; CAM treatments; acupuncture; exercise*

INTRODUCTION

Low back pain is a common problem for women both during and after pregnancy. Lumbosacral and pelvic pain seem to be the most common and most debilitating forms of low back pain. There are many different theories on what causes women to experience this pain in relation to pregnancy; it is possible that many issues contribute. A woman's body goes through many changes during the pregnancy duration: including hormonal changes and musculoskeletal changes. Therefore, it is difficult to find the exact cause of the pain; but it is important to understand that it is a real problem and to attempt to find ways to alleviate it.

With natural, non-invasive medicine growing in popularity; many women are trying to find more natural options for their healthcare. Complementary and alternative medicine is a rapidly growing field; chiropractic being a part of this field. It is important for pregnant women to have different options available to them. Chiropractic care, exercise, complementary and alternative medicine (CAM) therapies, and acupuncture are natural forms of pain relief. The aspects of these therapies needs to be evaluated to make sure that they are safe and effective for the treatment of pregnancy-related pain.

METHODS

The Pub Med search engine was used to search the literature for peer-reviewed articles relating to pregnancy- related back conditions and chiropractic care. The main key words used were *chiropractic* and *pregnancy*. Other related key words were *CAM treatments*, *exercise*, *acupuncture*, *low back pain*, and *SI pain*. The searches were all limited to peer-reviewed articles, including literature reviews, case studies, and three research studies; all written in the English

language. There was not a limitation on the date of publication. All articles were cross-referenced to obtain more articles on these subjects. Twenty-six articles were found for review in this study.

DISCUSSION

Lumbosacral Pain

Pregnancy-related low back pain is a very common symptom experienced among pregnant women. Studies state anywhere between 48-56% of pregnant women will experience some sort of low back pain during their pregnancy [1,2]. The major causes of low back pain during pregnancy are structural and mechanical changes to the body, having a previous history of low back pain, low back muscle weakness, and being overweight, [1,3,4,5]. In MacEvilly and Buggy's review of the literature on back pain and pregnancy, they address these major causes along with the mechanical and structural changes that occur. The mechanical and structural changes lead to postural alterations for an increase in the lumbar lordosis. This increase in the curvature of the spine can increase the shearing forces on the lumbar intervertebral discs and compression on the zygopophyseal joints. This combination can lead to a higher risk of lumbar disc herniation [1].

Having a previous history of low back pain seems to be a strong predictor of experiencing low back pain during and after pregnancy [1,2,4]. Ostgaard and Anderson conducted a study where 429 women who had back pain prior to pregnancy and 375 pregnant women without prior back pain were followed from the 12^{th} week of pregnancy until delivery. They found that the prevalence of back pain in weeks 12, 24, 30, and 36 was three times higher

in the women who had a previous history of back pain [3]. This is similar to a study that Noren, et al performed that was a three-year cohort study of women with back pain during pregnancy. This group found that 231 women, out of 799 who attended the antenatal clinic, experienced back pain during the pregnancy. Out of 203 women who stayed in the study, 41 still experienced pain three years later [4]. Noren et al. concluded that: "Some 5% of all pregnant women, or 20% of all women with back pain during pregnancy, had pain 3 years later. The key problem may be poor muscle function in the back and pelvis" [4].

Poor muscle function and weakness is a factor in the etilology of pregnancy-related low back pain. Sihvonen et al. conducted a study to assess low back pain intensity and subjective disability during pregnancy and compare the pain scores with lumbar motion patterns [5]. The study consisted of 32 pregnant women with low back pain; and a control group of 21 healthy pregnant women. This group used a visual analog scale to measure back pain intensity; Oswestry Low Back Disability Questionnaire to subjectively measure disability; and electromyography and movement sensors to measure back muscle activity. They found that the lower the back muscle activity, the more pain and disability was experienced during the pregnancy. It was concluded that "the function pattern of back extensors seems to predict, and is related to, future back pain" [5].

Being overweight before pregnancy can put a woman at higher risk for developing low back pain. A study by Breen et al. found an association between postpartum back pain and being overweight and of shorter stature [1,6]. While Sihvonen et al. found that the more overweight the women were before pregnancy, the more pregnancy-related low back pain occurred. However, during this study, three women of normal weight developed low back pain and the same poor muscle functions were noted [5]. Therefore, low back pain can occur in both overweight women

and women of normal weight; however, being overweight can put a woman at a higher risk for developing back pain, and an even greater risk if she has a previous history of back pain.

Pelvic Girdle Pain

Pregnancy-related pelvic girdle pain is another common symptom that is experienced during pregnancy. Studies indicate that a wide range of between 6%-76% of all pregnant women will experience this type of pain [7,8]. According to van Keesel-Cobelens et al., pelvic girdle pain is "considered as pain in the lower back and pelvic region and the symphysis, with or without radiation, which can develop during pregnancy and until 3 weeks after delivery" [7]. There are two main causes for developing pelvic girdle pain: hormonal cause and mechanical cause. There are many different hormonal changes that occur during pregnancy, one of them being an increase of relaxin. It is speculated that relaxin weakens the cartilage and the ligaments of the sacroiliac joint, leading to sacroiliac joint and pubic symphysis dysfunction [7]. The mechanical cause of pelvic girdle pain can be contributed to either asymmetric mobility of the joint or asymmetric laxity of the joint; or both. The study conducted by Damen et al. looked at 123 women with pregnancy-related pelvic pain; their sacroiliac joint laxity was measured using Doppler imaging. The study found that "in subjects with moderate to severe pregnancy-related pelvic pain during pregnancy, sacroiliac joint asymmetric laxity was predictive of moderate to severe pregnancy-related pelvic pain persisting into the postpartum period in 77% of the subjects" [8].

Diagnosing pregnancy-related pelvic girdle pain can be a difficult process. The imaging tools are limited due to possible adverse effects on the fetus, and the ones that are safe can be

expensive. Therefore, the majority of the diagnosis must come from the history and physical examination. The review article by Vleeming et al. highlights six pain provocation tests used to diagnose pelvic girdle pain: Posterior pelvic pain provocation, Patrick Fabere, Palpation of the long dorsal ligament/psis/SI joint, Compression, Separation, and Menell's test [9]. The problem with these tests is the results can vary depending on the examiner. A study conducted by van Kessel-Cobelens et al. investigated the intertester reliability of three pain provocation tests for pelvic girdle pain: the thumb-posterior superior iliac spines test, the heel-bank test, and the abduction test. The conclusion of this study was: "This study of 3 tests used to determine asymmetry of the sacroiliac joints in women with pregnancy-related PGP showed them to have a poor intertester reliability" [7]. Vleeming also describes this problem with the six tests in his review. Saying that "the validity of SIJ tests in difficult to describe due to the lack of a gold standard" [9]. Therefore, physicians need to understand all of the elements that are associated with pelvic girdle pain in order to make an accurate diagnosis.

Chiropractic Care

Chiropractic care is a controversial treatment for pregnancy-related low back and pelvic girdle pain among health care providers. However, it is growing in popularity in women that are seeking natural and alternative options, besides conventional allopathic medicine. With the growing popularity, more research is being conducted on the safety and efficacy of this treatment option.

Two literature reviews on chiropractic and pregnancy are being sited here; both finding chiropractic care as a safe and effective form of treatment [10,11]. The first review by Cara Borggren referenced 33 articles using key terms of *pregnancy* and *chiropractic*. She concluded

that chiropractic care is safe and effective in treating the musculoskeletal symptoms of pregnant women [10]. The second review by Stuber and Smith, looked at six different studies. This study concluded that chiropractic care is associated with improved outcomes in pregnancy-related low back pain. However, the authors could not validate the efficacy due to lack of research: "the low-moderate quality of evidence of the included studies preclude any definitive statement as to the efficacy of such care because all studies lacked both randomization and control groups" [11].

Three retrospective studies found describe increased outcomes with chiropractic care. The first study was conducted by chiropractic physician and the study focused on spinal manipulation for the treatment of low back pain in pregnancy. Dr. Anthony Lisi retrospectively examined seventeen cases of pregnant women who underwent chiropractic care. He found that 16 of the 17 cases demonstrated "clinically important improvement." Other findings of the study are: "The average time to initial clinically important pain relief was 4.5 days after initial presentation, and the average number of visits undergone up to that point was 1.8. No adverse effects were reported in any of the 17 cases" [12]. This is similar to the results of the retrospective study performed by Daly et al. This group reviewed the cases of 23 women who met diagnostic criteria for sacroiliac subluxation. Eleven of the 23 women underwent rotational manipulation of the sacroiliac joints. After the treatment period, 91% of the treated women had relief of pain and no longer exhibited signs of sacroiliac subluxation [13].

The third retrospective study was conducted by a group of Osteopathic Physicians who looked at the effects of spinal manipulation on labor and delivery. This study examined the medical records of 160 women who received prenatal osteopathic manipulation treatment and compared them to 161 women who did not receive the same prenatal treatment. They concluded that overall, there is evidence of improved outcomes in labor and delivery for women who

received the prenatal osteopathic manipulation in comparison to the women who did not [14]. This study is important because it describes the benefits of spinal manipulation to other aspects of pregnancy.

Pregnancy-related pain is not always confined to the low back and pelvic regions; pain can radiate into the lower extremities. A case study conducted by Kruse et al. examined a 26 year old pregnant woman in her second trimester that was experiencing severe pain in her lower back that radiated into both hips and into her right leg. She was also experiencing tingling down her right lower leg to the bottom of her foot. Her differential diagnosis included lumbalgia with associated radiculopathy. The woman was treated using the Cox flexion-distraction specialized chiropractic technique. The results of treatment were: "Relief was noted after the first treatment, and complete resolution of her subjective and objective findings occurred after 8 visits" [15]. Chiropractic treatments can be a safe and effective form of treatment for pregnancy-related pains, but more research needs to be conducted for it to be validated among all health care providers.

Exercise

Exercise is of form of physical therapy that can be utilized alone or in conjunction with other treatments. Along with the other treatment options, the safety and efficacy must be considered when prescribing to pregnant women. Four reviewed articles on exercise show mixed conclusions on the efficacy of exercise as a treatment for pelvic girdle pain. One article reviewed the literature on the safety of exercise and found that exercise in moderation is safe during pregnancy [16].

Two of the four reviewed articles concluded that exercise is effective in treating pelvic girdle pain. The first of these articles is a randomized controlled trial that evaluated a treatment program focusing on whether specific stabilizing exercises for patients with pelvic girdle pain after pregnancy reduce pain, improve functional status, and improve quality of life. Two different groups were analyzed: one group received physical therapy with a focus on specific stabilizing exercises; and the other group received individualized therapy without exercises. Eight-one women were randomly assigned to the two groups. The results of this study showed: "at 1 year postpartum, the specific stabilizing exercise group showed statistically and clinically significant lower pain intensity, lower disability, and higher quality of life compared with the control group" [17]. The other article favoring exercise consisted of two case reports looking at the effects of manual physical therapy and therapeutic exercise on peripartum posterior pelvic pain. The two patients were referred to physical therapy during pregnancy. They completed self-report measure on the initial visit and again after treatment. The self-report included the Oswestry Disability Index, a body diagram, and the Numeric Pain Rating Scale. Both women were treated with "muscle energy techniques directed at pelvic and sacral positional faults and therapeutic exercise consisting of transverse abdominis, and multifidus neuromuscular re-education; isometric hip abduction and external rotation; and a force closure sacroiliac stabilization program" [18]. The treatment period for one patient was five visits over 51 days; and seven visits over 77 days for the other patient. At the end of the treatment periods, both patients demonstrated a clinically meaningful improvement in their pain levels and their perceived disability [18].

The other two of the four articles reviewed did not show improvement in pain levels with exercise being the main treatment. The first of these articles is a randomized clinical trial with 3,

6, and 12 month follow-up postpartum. It compared three different physical therapy treatments with respect to pain and activity in women with pelvic girdle pain during pregnancy and 3, 6, and 12 months after giving birth. A group of 118 women were randomly assigned to three different treatment groups. The first group was the Information Group: use of a non-elastic sacroiliac belt and oral/written information about pelvic girdle pain. The second group was the Home Exercise Group: same as information group, with the addition of a home exercise plan. The third group was the Clinic Exercise Group: same as information group, with the addition of a clinical training program. The women rated their pain using a visual analog scale and their activity ability was scored using a Disability Rating Index. The results of this study are there was no significant difference between the three groups. Pain levels decreased and activity ability increased in all of the groups between week 38 of gestation and 12 months after giving birth [19].

The second article that does not support exercise as a treatment is a randomized, controlled clinical trial investigating the efficacy of home-based stabilizing exercises as a treatment for postpartum pelvic girdle pain. This study used 88 women who delivered three months prior. They were randomly assigned to two groups: a control (no treatment), and a group that was treated with specific stabilizing exercises targeting the local trunk muscles. The Oswestry Disability Index was used as the primary outcome measure. The conclusion of this study is: "treatment with this home-training concept of specific stabilizing exercises targeting the local muscles was no more effective in improving consequences of persistent postpartum pelvic girdle pain than the clinically natural course" [20].

According to the literature, exercise may have a therapeutic effect on pelvic girdle pain during pregnancy; however, the natural resolution of the pain may produce similar results. There

are some studies that support using exercise more as a preventative measure, rather than for treatment of pain [1]. More research needs to be conducted in this subject as well. Exercise is a broad subject and more needs to be understood about it.

Complementary and Alternative Medicine

Complementary and alternative medicine therapies are a growing field in health care. A pilot study on the use of CAM therapies describes three different categories: 1) medicinal teas, homeopathic remedies, herbs, vitamins; 2) yoga, meditation, spiritual practices; and 3) manual therapies including chiropractic, massage, acupressure. Of these categories, the first was the most often utilized. The practitioners visited most frequently were chiropractors and nutritionists [21]. CAM therapies are also growing in popularity for the treatment of pregnancy-related issues. Three articles were reviewed addressing the use of CAM therapies for low back pain, labor pain, and the potential adverse effects when treating pelvic girdle pain.

The first article reviewed is a cross-sectional study on the use of complementary and alternative medicine for low back pain in pregnancy. This study is a two-part anonymous survey given to two different groups: 1) pregnant women (950 participants); 2) prenatal health care providers (104 participants). This study found that 61% both providers and pregnant women are likely to use CAM therapies as treatment for pregnancy-related low back pain. The most recommended therapies by providers are as follows: massage (61.4%), acupuncture (44.6%), relaxation (42.6%), yoga (40.6%), and chiropractic (36.6%) [22]. This study shows the diversity of CAM therapies and their growing acceptance in the medical field.

The article addressing the efficacy of CAM treatments for labor pain is less conclusive. This is a review of the literature for randomized controlled trials of any type of complementary

and alternative therapies for labor pain. Twelve articles were analyzed and involved: acupuncture (2), biofeedback (1), hypnosis (2), intracutaneous sterile water injections (4), massage (2), and respiratory autogenic training (1). This study concluded that "there is insufficient evidence for the efficacy of any of the complementary and alternative therapies for labor pain, with the exception of intracutaneous sterile water infections" [23]. This article is limited in the variety of CAM therapies addressed. More research is warranted on CAM treatments' affect on labor pains.

Adverse effects to both the mother and the fetus are of concern when considering different treatment options. A study by Elden et al. investigates the possible adverse effects of using different CAM therapies to treat pelvic girdle pain. This is a controlled, single-blind study that utilized three different treatment groups: 1) standard treatment plus acupuncture, 2) standard treatment and stabilizing exercises, 3) standard treatment alone. Standard treatment consisted of information about pelvic girdle pain, a pelvic belt, and home exercises. A group of 386 women with pelvic girdle pain were randomly assigned to one of the three groups. Adverse effects were recorded during treatment and throughout the pregnancy. Cardiotocography measured influence on the fetus before, during , and after any acupuncture treatment. The neonate was also analyzed after delivery with a series of tests. This group concluded that "there were no serious adverse events after any of the treatments. Minor adverse events were common in the acupuncture group but the women rate acupuncture favorable even despite this" [24]. The study did not specify which minor adverse effects were experienced. This study is limited in its variety as well, but shows promising results for the use of CAM treatments. This type of study will be advantageous to other CAM therapies, such as spinal manipulation.

Acupuncture

Along with the other CAM therapies, acupuncture is a popular natural treatment for pain. There is limited research on its safety and efficacy for pregnancy-related problems, but the research available appears to make it a promising option. A study performed by Wedenberg et al. aims to describe the effects of acupuncture in the treatment of low back and pelvic pain and compare it with physiotherapy. Thirty pregnant women were assigned to an acupuncture group and another 30 pregnant women were assigned to a physiotherapy group. The women's pain was measured using a visual analog scale (0-10), and their activity disability was measured using a disability-rating index (0-10). All 30 women in the acupuncture group completed the study; whereas only 18 women in the physiotherapy group completed the study. The VAS was measured after treatment. In the morning, the VAS for the acupuncture group declined from 3.4 to 0.9; the corresponding VAS for the physiotherapy group declined from 3.7 to 2.3. The evening values for the acupuncture group went from 7.4 to 1.7; in the physiotherapy group the VAS went from 6.6 to 4.5. The disability rating was taken for both groups after treatment. The values for the acupuncture group decreased significantly for 11 of the 12 activities. In the physiotherapy group, there were no significant changes to the disability values. The researchers also state that the overall satisfaction was good in both groups and there were no serious adverse effects in any of the patients [25].

Another group, Ee et al., reviewed the literature for the effectiveness of needle acupuncture in treating pelvic and back pain in pregnancy. This study consisted of analyzing three trials; two small trials on mixed pelvic/back pain, and one large high-quality trial on pelvic pain. The conclusion was "that limited evidence supports acupuncture use in treating pregnancy-related pelvic and back pain. Additional high-quality trials are needed to test the existing promising evidence for this relatively safe and popular complementary therapy" [26].

CONCLUSION

The literature supports low back pain and pelvic girdle pain being significant, and at times debilitating, symptoms of pregnancy. Health care providers need to understand these problems and be able to assist pregnant women suffering from them. Both conditions are complicated and their etiologies can be a result of both hormonal and musculoskeletal changes. There are a wide variety of treatment options available, and complementary and alternative medicine therapies should be considered. However, the safety and efficacy of any treatment should be scrutinized for the well-being of both the mother and unborn child.

Among the many alternative treatments for pregnancy-related low back and pelvic disorders, chiropractic care, exercise, and acupuncture are some of the most popular treatments. All three appear to be safe and effective in treating pregnant women, but they are all still controversial when compared to conventional treatment. More research needs to be performed in order for these treatments to become widely accepted in the allopathic medical community.

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