The Effects of Chiropractic Care and Managing Pain During Pregnancy and the Labor Process

By: Rebecca Sullivan

Faculty Advisor: Dr. Patrick Montgomery

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ABSTRACT

Objective: This article provides an overview of literature of the effects of chiropractic care and managing pain during pregnancy and throughout the labor process. Types of treatments and their outcomes will be analyzed in addition to the mechanisms of back pain during pregnancy.

Methods: A PubMed and MANTIS search was performed using the key terms pregnancy, chiropractic, and back pain. Once obtained, the sources were cross-referenced to obtain further articles and research information on the subject matter.

Results: Twenty-five references were used for this literature review. The current literature obtained reports favorable results on the use of chiropractic care during pregnancy and labor to help decrease back pain.

Conclusion: Chiropractic care during pregnancy proves to be a safe and effective way to reduce pain throughout the pregnancy period. Treatment of common musculoskeletal problems helps reduce pain as well as allow for easy delivery of the baby.

Key Indexing Terms: chiropractic, pregnancy, labor process, Webster Technique

INTRODUCTION

It is not uncommon to find a pregnant female who complains of low back pain, trouble walking, or loss of sleep. The female body changes drastically and at a very rapid pace once a female becomes pregnant. Extra body weight puts stresses on joints in the back and lower extremities that the body is not used to, therefore causing the female extreme pain. Not only do spinal adjustments relieve and manage pain in pregnant women, it has also been shown to have positive effects on the duration and ease of labor. There is not an abundance of research on low back pain during pregnancy and how to treat it. However, of the research found, chiropractic was one of the most suggested treatments. The effects of chiropractic care on back pain and the role it has on labor in pregnant women will be discussed in further detail in this review.

DISCUSSION

Pregnancy can be a very difficult process due to the changes, both physiological and anatomical, that the mother's body is put through. Musculoskeletal changes are among the most common complications from pregnancy, however, more serious complications such as high blood pressure, diabetes, and anemia may also occur [1]. Several different percentages have been found as to how many women experience low back pain during pregnancy. The most common percentage found in the literature was approximately 50% of women experience low back pain at some stage during their pregnancy [2]. Of the 50% of women who experience low back pain, an amazing one third of them report that it inhibits them from their normal activities of daily living, such as housework, childrearing, and job performance [2-3]. When a woman becomes pregnant, many changes occur within her body. Unfortunately, all of the changes can contribute to

a woman experiencing low back pain. In Sweden, low back pain was the most common reason women went on sick leave during pregnancy [4]. Of the changes that occur during pregnancy, the following have been found the most common causes of low back pain: increased ligament laxity, increase in body weight, and forward weight bearing due to the change in the center of gravity [5]. The changes have a domino effect on other parts of the body that are also responsible for low back pain. For example, the ligament laxity is due to a polypeptide hormone called Relaxin. Relaxin is responsible for softening the ligaments and allowing them to expand to accommodate the growing fetus [6]. The sacroiliac joints that connect the sacrum to the ilium of the innominate bone must expand, as well as the pubis symphysis which connect the two pubi of the innominates. These ligaments must become relaxed to increase the size of the pelvic bowl for the carrying and labor of the baby.

As the pregnant female gains weight and the fetus grows, she will have a change in the center of gravity. An increased weight will be on the anterior side, therefore causing increased pressure on the posterior side of the female. A natural lumbar lordosis is normal in the spine. However, due to an increase in weight on the anterior side, the lordotic curve becomes increased, which in turn causes an increase in pressure on the lumbar spine intervertebral discs and facet joints [7]. As the female's weight shifts anterior, the uterus pulls the base of the sacrum anterior as well. This anterior shift causes the pelvis to move anterior and the hips go into flexion. With the shift in the pelvis, the iliopsoas muscles have an increased demand and the piriformis muscles must remain contracted in order to perform it's function of externally rotating the legs [7]. When the intervertebral discs are under stress, they excrete fluid which will cause them to lose

some of their height. When the disc height is compromised, the spine as a whole is compressed which can also cause low back pain [8].

When the fetus grows and the uterus expands, the abdominal muscles must stretch. The abdominal muscles act as some of the postural muscles of the human body. They stabilize and support the body in the upright position. Once they stretch and aren't as effective as usual, the lumbar spine must take on an extra load to keep the body erect which can be the cause of back pain [8]. The growing fetus may also cause an increase in pressure on the nerve roots of the lumbar spine as well as the aorta and vena cava which can have a direct relationship to back pain and pain radiating into the legs [2].

There are several risks that can be associated to an increase in low back pain during pregnancy. Women that have a past history of acute or chronic back pain during a previous pregnancy or just overall are said to have an increased risk of developing low back pain during future pregnancies [9]. Women who have a high demand of activity in their occupation and women who smoke have also been shown to be at a high risk of low back pain during pregnancy [4]. However, women who live a moderately sedentary lifestyle are at a higher risk of low back pain as well as women who have a higher than normal body mass index [8].

Low back pain can occur at anytime during a pregnancy. Most low back pain is brought on by musculoskeletal changes which usually do not occur until the fifth month of gestation. Stuber et al report that the fifth through seventh months is the most common time frame that pregnant females report back pain [9]. However, Forrester reports that it may occur in the first trimester [4]. Low back pain that is reported in the early stages of

pregnancy is most likely due to the hormonal changes brought on by the hormone, Relaxin.

Women seem to think that low back pain is just a normal thing that comes along with being pregnant. Many women do not report their low back pain to their obstetrician and only a select few seek treatment for the pain. Of the 50% who report low back pain, only 21% seek treatment [7]. This could be due to the lack of research and knowledge by the primary care physicians or obstetricians as to the preventative care and treatments options that are available.

Several different conservative alternative treatment options are available to pregnant women who experience low back pain. Among those options are: exercise, facilitating proper ergonomics, hot/cold therapy, massage therapy, over the counter pain relieving medications, acupuncture, and chiropractic [9]. Tiffany Field reports that the most common conservative treatments include massage therapy (61%), acupuncture (45%), relaxation (43%), yoga (41%), and chiropractic care (37%) [10].

Chiropractic care consists of several different treatments that have proven effective in treating low back pain during pregnancy. Spinal adjusting, joint mobilization, soft tissue manipulation, acupuncture, and other therapeutic modalities will be discussed in further detail.

Spinal adjusting involves thrusts by a chiropractor to manipulate a joint in order to restore motion and correct alignment between to adjacent bones. Joint mobilization can be achieved through spinal adjusting or through therapeutic exercises. Soft tissue manipulation such as active release technique (ART) is a technique used to relieve any adhesions within the soft tissue and allow entrapped nerves to become free [11]. Post-

Isometric Relaxation is another soft tissue technique that can be used to help restore maximum muscle function and loading [11].

Acupuncture is defined as the "activation and movement of 'vital energy' that increases the flow of energy and clears stagnation in painful areas through the placement of needles" [12]. Chiropractors are eligible to become licensed in acupuncture, however, it is not a requirement in order to be a practicing doctor of chiropractic.

The TENS (transcutaneous electrical nerve stimulation) unit is another therapeutic modality than can be used by a chiropractor to relieve low back pain during pregnancy. The TENS unit consists of high-frequency, low-intensity electrical stimulations that are applied onto the patient in the area that they are experiencing pain [12].

A trochanteric belt can be used to relieve pain as well. The role of the belt is to wrap around and support the female's abdomen, pelvis, and spine [12]. Hot and cold therapies can also be used to reduce inflammation and ease pain within muscles of pregnant women.

Many women hesitate to seek care for low back pain due to the fear of harming the fetus. However, as reported in a case series study, 17 patients were treated by a chiropractor for low back pain and of those 17, 16 women showed clinical improvement [13]. The relief was usually after the first treatment and the time between treatment and relief was approximately 4 days. There were no side effects reported from the treatment, which supports that chiropractic treatment is safe during pregnancy.

There are a few circumstances in which the chiropractor should be cautious to adjust the pregnant patient. Those contraindications include but are not limited to: vaginal

bleeding, ruptured amniotic membranes, cramping, sudden onset of pelvic pain, premature labor, placenta previa, placenta abruption, ectopic pregnancy, and moderate to severe toxemia [7]. This particular author states that the use of electrical stimulation should be avoided when pregnant along with ultrasound therapy and magnetic resonance imaging [7].

Other studies have reported that 75% of women who sought chiropractic care for low back pain during pregnancy found relief after the care. The study also found that women who received chiropractic care during their pregnancy were at a lower risk for developing "back labor". Back labor is caused during labor when the baby is pushing against the mother's spine causing extreme pain. Borggren reports that if a female experienced low back pain during her pregnancy then she is three times more likely to experience back labor [7].

In a study done by Mantero and Crispini, 120 pregnant females were given an average of 15 spinal manipulations. The ages of the females ranged from 20 to 40 years old. The end result of the study demonstrated that all but 10% of the women found that their low back pain improved, 50% reported that they felt very well, and 25% reported complete resolution of their low back pain [14].

Skaggs et al completed a study that involved 58 pregnant females seeking treatment by a chiropractor. The study only consisted of one treatment which included education, manipulation, soft tissue therapy, and/or stability exercises. The measure they used to determine the outcome was the Bournemouth Questionnaire. Before the females received treatment, the average baseline score on the questionnaire was a 45. After the first treatment the average baseline score went down to a 34 [15].

Twenty-one out of 25 patients reported relief from low back pain in a study done by Diakow et al. In this study, 25 patients received spinal manipulations, but the number of manipulations is uncertain [16]. Fallon reports that after 103 women received chiropractic care, all of them reported greater than a 50% decrease in low back pain. The number and types of treatment is uncertain [17].

Kruse et al reports a study where the chiropractic technique, Cox flexion-distraction, was used and proven to be effective and safe for the pregnant patient. Cox flexion-distraction is a technique that focuses on opening the vertebral canal and relieving pressure on the facet joints [18]. There are two protocols used in the Cox flexion-distraction technique. Protocol I is used when the patient is experiencing pain below the knee. Protocol II is used when there is not pain below the knee, which usually means the back pain involves the facet joints of the spine. The study only consisted of one patient who was 24 weeks pregnant. The pregnant patient reported that she had experienced low back pain before pregnancy, however at this point her pain rated a 59 out of 100 on the Visual Analog Scale (VAS). After one treatment of Cox flexion-distraction Protocol I, the patient reported a decrease in her low back pain. At every visit, the pregnant patient reported a decrease in pain, and after four treatments there were no radicular symptoms present. At the seventh visit, the patient reported pain of 7 out of 100 on the VAS. During the eighth treatment, the patient reported complete remission of her pain and rated it as a 0 out of 100 on the VAS. Also noted in the study, was the possibility of the technique reversing the effects of the increased lumbar lordosis that is caused due to the growing fetus[18].

In a case report written by Ducar and Skaggs, they discuss a 32 year old pregnant female who was 21 weeks pregnant and referred to the Musculoskeletal Pain in Pregnancy clinic which is located at Barnes Jewish Hospital in St. Louis, Missouri. Her pain during the first visit was an 8 out of 10 on the Visual Analog Scale. In addition to the low back pain she was experiencing, she also had groin pain on the right side. After a thorough exam, the chiropractic physician in charge of her care gave her Active Release Technique (ART) to her left hamstring, left dorsal sacral ligament, and right adductor muscles. One week after the initial visit and treatment, she returned to the clinic and stated that the groin pain had completely subsided, but she still had right sided low back pain [19].

Due to her lumbar spine extraspinal muscles being hypertonic on the right side, the chiropractic physician performed ART on them. The patient was also shown how to perform cat/camel exercises. These exercises are done in order to create mobilization and stability within the spine [19]. One week later, she returned to the clinic, and all low back pain was gone. This study demonstrates that the chiropractic technique, ART, can be used successfully in treating and preventing low back pain during pregnancy.

In another case report written by Skaggs et al, a 22 year old pregnant female also presented to the Musculoskeletal Pain in Pregnancy Clinic in her fourth month of pregnancy with low back pain, bilateral anterolateral thigh paresthesia, and groin pain that had be present for one month. After a thorough exam, the patient was treated with ART performed on the right sacroiliac joint, the lumbar spine extraspinal muscles, and the proximal hamstring muscle [11]. The case report did not state if ART was applied bilaterally or unilaterally. The patient was also given the cat/camel exercises to provide

her spine with mobilization and stability. The patient returned one week after the first treatment and reported no changes in her symptoms. The following week, after the second treatment she reported a decrease of the low back and groin pain. ART was performed again on the third visit, this time on the iliopsoas muscles and the quadratus lumborum muscles. These two mucles gather in pelvic region and wrap around the lateral femoral cutaneous nerve. At this visit, the patient was also taught abdominal bracing exercises. The abdominal muscles are a core group of muscles that help provide the spine with stability. By strengthening these muscles, the back muscles (specifically the lumbar spine extraspinal muscles) will have to work less to keep the spine stabilized. During the fourth visit, the patient reported a 90% decrease in her low back and pelvic pain. By the patient's sixth visit, she reported that if she experienced any pain, she was able to manage it with the stability and mobilization exercises she was taught by the chiropractor [11].

Caesarean sections are becoming more and more common around the world. Not only can caesarean sections put strain on the baby, they can also cause complications for the pregnant female. The current rate (2002) for caesarean sections in the United States is 15.5% [20]. Women have caesarean sections for many reasons, but one of the reasons is due to the baby presenting in the breech state. Approximately 13% of all caesarean sections are because the baby is in the breech presentation. The breech presentation is when the baby is presenting itself with the buttocks first. In the later months of pregnancy, the baby should naturally turn itself to prepare for the birthing process. If the baby presents itself with the buttocks first, it's close to impossible for the pregnant female to have a vaginal delivery. Of the breech presentations occurring in the United States, 86% of them are required to be delivered by caesarean sections [20].

Dr. Larry Webster, the founder of the International Chiropractic Pediatric Association, developed a technique in 1978 to allow babies in breech presentation to turn naturally[20- 21]. The technique is called the Webster Technique and has been proven many times to be successful at resolving breech presentation babies. When a baby is in the breech presentation, it is due to intrauterine constraint. Intrauterine constraint is due to forces and/or structures that prevent the baby to move [20]. In breech presentation, it prevents them from turning to allow their head to be at the base of the mother's pelvis. Pistolese reports that the "Webster Technique is a chiropractic technique designed to relieve the musculoskeletal causes of intrauterine constraint." [20] He reports that a doctor performs the Webster technique by "analyzing the functional and spatial relationship of the bones of the pelvis, and manually correcting aberrant biomechanics through a light-force chiropractic adjustment of the sacrum." The previously described is the first step of the Webster Technique. The second step involves relieving abdominal muscle tension and/or spasms [20]. The round ligament is the main structure palpated in the second step of the Webster Technique. The role of the round ligament is to support the uterus and keep it from moving too far posteriorly. If the round ligament is taught, or inflammation and adhesions are present, it can cause intrauterine constraint. If it is taught or adhesions are found when the doctor palpates it, a light trigger point therapy is applied to relax the ligament. By performing these two steps on a pregnant female who has a fetus in the breech presentation, it will allow any intrauterine constraints to relax so the baby can turn head-down. The Webster Technique is in no way an invasive practice of obstetrics and is taught at many of the accredited chiropractic schools around the country. Chiropractors who are trained in this technique are practicing very well within their scope of practice.

In a study done on 112 pregnant patients who received the Webster Technique, 102 of them reported that the breech presentation was resolved. Of the 112 patients, 16 of them received the treatment during their 7th month, 51 during their 8th month, and 45 during the 9th month. Out of the 16 patients who received it in month 7, 14 of them were resolved. During the 8th month, 50 out of the 51 were resolved, and in the 9th month, 38 of the 45 were resolved. Of the 102 breech presentations that resolved, 98 of them resulted in an uncomplicated vaginal birth. Twelve of them ended up in caesarean sections, and the last 2 needed assistance extracting the baby from the mother's birth canal. Thirty-four of the breech presentations that resolved, reported that the baby was turned in the head-down position with 24 hours of receiving the Webster Technique [20]. Eighty-two percent of the doctors surveyed in this study reported a high success rate using the Webster technique.

In a smaller study reported by Kunau, six pregnant patients received the Webster Technique. Of the six females who received the technique, five of the breech presentations were resolved and the deliveries were vaginal and uncomplicated. At the date of publications, the last baby had not been born [22].

In a research study approved by the International Review Board of Life University, 81 pregnant females had pregnancies that resulted in abnormal presentation of the fetus. Chiropractors treated all of them, however at the time of publication, only 63 were available to be evaluated. The chiropractors reported that the Webster Technique was only 69% effective in this particular study [23].

Although the studies previously mentioned had some limitations, the success rate of using the Webster Technique was rather high and showed the most success when performed on the patient during the eighth month of her pregnancy [20].

Chiropractic has been proven to be successful in relieving low back pain during pregnancy as well as allow a breech presentation to resolve. However, there is very little research or evidence of the effects it has on labor and the amount of time spent in labor. One study found that claims chiropractic care was helpful during labor involved a 26 year old who had not given birth previously. At the beginning of her labor, the contractions were strong and 4-5 minutes apart [24]. After being in labor for 12 hours, the female's cervix was only dilated 4-5 centimeters. Her cervix reached 7 centimeters after being in labor for 20 hours, however her contractions were not as strong as in the beginning of her labor. The midwives assisting the patient with the labor, tried an inversion technique with the patient to try to improve the fetus position, however there was no change in the position or in the contractions of the patient. A chiropractor was then asked to perform the Webster Technique on the patient. In addition to the Webster Technique, the chiropractor manually adjusted the left side of the sacrum in order to correct a posterior rotation. The chiropractor also did a release on the psoas muscle to relieve tension on it [24]. The role of the psoas muscle is to flex the thigh at the hip and is also pulls on the lumbar spine to flex it onto the thigh [25]. Contraction of this muscle can prevent the pelvis from opening and being in a relaxed state At the conclusion of the chiropractic treatment, the pregnant female reported that she felt the fetus move, and shortly after her contractions became stronger and more frequent. However, fourteen hours later, the patient still had not given birth. The chiropractor performed the psoas release for the second time and

within thirty minutes, the patient had a fully dilated cervix. One hour after the Webster Technique was performed, the baby was born vaginally without assistance [24]. Although this study was limited and did not report much evidence, it supports that chiropractic care can aid in the ease of labor.

CONCLUSION

Throughout a female's pregnancy, many changes occur within her body. Over the years, low back pain has been perceived as something that just comes along with pregnancy. Women have ignored the fact that they are experiencing low back pain because they believe that it's normal to have it.

There can be many different causes of low back pain within the pregnant patient. Ligament laxity, increase in anterior weight gain, and an increased lumbar lordosis are among the most common causes of low back pain during pregnancy. Some women will report to their primary care physician that they are experiencing low back pain, however, not many pregnant women will seek care to relieve the pain.

Although there is a substantial amount of research articles reporting chiropractic management of low back pain during pregnancy, many of the studies are limited. All studies reported in this literature review showed that chiropractic treatment was successful in relieving or completely resolving low back pain.

There are several different chiropractic techniques available to use on pregnant patients, however, the most commonly reported were different types of chiropractic adjustments. With patients becoming more commonly interested in conservative alternative treatment, chiropractic care for pregnant patients has a great potential to

increase. There is a great need for more research on the subject matter to better analyze the results it has on low back pain during pregnancy as well as labor.

Definitely lacking in research is the effectiveness of the Webster Technique on breech presentation babies. Only one study found showed evidence of the Webster Technique working on a large population of pregnant females. Further research in the results of this technique would make the research more credible.

The facts of this literature review were limited due to the limited research that has been completed on the subject matter. However, there are many reports of success when using chiropractic as a treatment to relieve low back pain in pregnant females. Further research should also be considered on the different types of chiropractic approaches that can be used to treat low back pain and which one proves to be the most successful.

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