

Evaluation of efficacy of acupuncture and physiotherapy in treating lower back pain in pregnancy

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Abstract

Background: Pregnancy is associated with considerable anatomical and physiological alterations in the mother's body in an attempt to nurture and accommodate the developing fetus. Lower back pain is one of the most common complaints amongst women during pregnancy and affects around 50% women. Acupuncture has been considered to be a useful alternative or an adjunct to traditional analgesic methods for low-back pain by the National Institute of Health consensus agreement. **Objectives:** The current study was conducted to evaluate the usefulness or effectiveness of acupuncture therapy in treatment of lower back pain in pregnant women, and its comparison with physiotherapy. **Methodology:** 80 pregnant women with low-back pain with a complaint of pelvic pain for more than 2 weeks were included in the study. They were randomly assigned to 2 groups. Group 1 comprised of 40 pregnant women who were assigned for acupuncture therapy, whereas Group 2 comprised of 40 pregnant women who were assigned for physiotherapy. Acupuncture group was subjected to 2 sessions of acupuncture therapy per week, 30 minutes each, with insertion of needles in auricular region (acupuncture points). Physiotherapy group was assigned for 2 sessions, 30 minutes each. The therapy was carried out for a total of 2 weeks. And the VAS score was recorded to evaluate the pain intensity before and after treatment in both the groups. **Results:** The maximum VAS score pretreatment in Group 1 was 9.3 and minimum was 6.0. The minimum value VAS recorded post treatment was 2.0. The maximum VAS score pre treatment in Group 2 was 9.3 and minimum was 6.0. The minimum value VAS recorded post treatment was 2.4. The results clearly indicate the patients in acupuncture group revealed better results and reduction in pain than the physiotherapy group. **Conclusion:** Acupuncture relieves low-back and pelvic pain without serious adverse effects in late pregnancy.

Key Words: Acupuncture, pregnancy, lower back pain, pelvic girdle pain, physiotherapy.

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Introduction

Pregnancy is associated with considerable anatomical and physiological alterations in the mother's body in an attempt to nurture and accommodate the developing foetus. Pregnancy poses a somber yoke on the female osteo-skeletal system. However, a pregnant woman may suffer from various conditions which could affect the health and development of the infant[1]. Pain may develop anywhere between the 5th and 7th month of pregnancy. It is mostly characterized by pain in the lower back and may be associated with stiffness and limited movement in the back or legs. Majority of the women do not seek treatment as they consider it to be an inevitable part of pregnancy. When sought, they prefer conservative management which may include a wide array of modalities available including physiotherapy, transcutaneous nerve stimulation, pharmacological treatment, acupuncture or chiropractic treatment, and stabilization belts or braces. Lower back pain is one of the most common complaints amongst women during pregnancy (especially during the last trimester) and may have a great brunt on the quality of life. It may also be referred to as *pelvic girdle pain or lumbar pain*. Around 50% of women present with lower back pain during pregnancy during the postpartum phase causing impairment in daily

activities. The pain is mostly nociceptive, increases during sleep[2]. It is alleged to be caused by altered posture, fluid retention in connective tissue and laxity induced by the release of relaxin from the corpus luteum. Alteration in the body posture is the result of gravity centre relocation (shift towards anterior), which affects the musculoskeletal system and results in lardosis. It may also be caused by a combination of mechanical, hormonal, circulatory, and psychosocial factors. Pain may develop anywhere between the 5th and 7th month of pregnancy[3]. It is mostly characterized by pain in the lower back and may be associated with stiffness and limited movement in the back or legs. Pathophysiology behind lower back pain: It has been reported that axial loading on the spine results in expulsion of fluid from the intervertebral discs, causing decrease in height and compression of the spine. Also the abdominal muscles stretch to accommodate the expanding uterus, which results in the disability to maintain body posture, causing the lower back to support the majority of the torso weight[4]. Majority of the women do not seek treatment as they consider it to be an inevitable part of pregnancy. When sought, they prefer conservative management which may include a wide array of modalities available including physiotherapy, transcutaneous nerve stimulation, pharmacological treatment, acupuncture or chiropractic treatment, and stabilization belts or braces[5]. The term acupuncture was coined in the 17th century and has been derived from a Latin word *acus* which refers to "needle". Acupuncture therapy originated in China 3000 years ago and was introduced in India by Dr B. K Basu, the first Indian to learn acupuncture from mainland China in 1959[6]. It is characterized by

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penetration of the skin with needles at specific acupuncture points. The irritation of skin by the needle may induce effects on neuropeptides, local circulation, inflammation, and the Central Nervous System. The main effects on neuropeptides are increase in endogenous opioids and a decrease in substance P. Endogenous opioids are associated with analgesic effects, whereas substance P exists in primary afferents that respond to painful stimuli and convey pain signals to the central nervous system [7]. Acupuncture increases the nitric oxide levels in treated regions, resulting in increased local blood circulation which in turn reduces pain. It also reduces inflammation local inflammation and swelling by reducing the levels of pro-inflammatory cytokines in the hippocampus, prefrontal cortex, and serum. It is also associated with an increase in both regional cerebral blood flow and glucose metabolism in the central nervous system [8]. Acupuncture has been considered to be a useful alternative or an adjunct to traditional analgesic methods for low-back pain by the National Institute of Health consensus agreement. It has also shown to alleviate nausea and vomiting, tooth ache, headache, menstrual cramps, tennis elbow, fibromyalgia, myofascial pain, osteoarthritis, carpal tunnel syndrome, and asthma. Immense research suggests that fitness activities, such as physical therapy, physiotherapy in groups, yoga, and water aerobics have an impact on lower back pain, however, there is no strong evidence concerning the effect of these activities on the same [9]. The current study was conducted to evaluate the usefulness or effectiveness of acupuncture therapy in treatment of lower back pain in pregnant women, and its comparison with physiotherapy.

Methodology

80 pregnant women with low-back pain from maternity unit were invited to participate in this study. All women included in the study had a complaint of pelvic pain for more than 2 weeks, and a history of increased pelvic pain by walking, turning from one side to the other in bed, or rising from sitting to standing. Any women with a history of acupuncture therapy in the past, urogenital infection, nerve root syndrome, neurologic deficit, fever, abdominal pain, etc were excluded. They were randomly assigned to 2 groups. Group 1 comprised of 40 pregnant women who were assigned for acupuncture therapy, whereas Group 2 comprised of 40 pregnant women who were assigned for physiotherapy. Acupuncture group was subjected to 2 sessions of acupuncture therapy per week, 30 minutes each, with insertion of needles in auricular region (acupuncture points). Physiotherapy group was assigned for 2 sessions, 30 minutes each. The therapy was carried out for a total of 2 weeks. The VAS score was recorded to evaluate the pain intensity before and after treatment in both the groups. The readings were recorded in master chart, and the data analysis was carried out statistically.

Results

A total of 80 pregnant women were included in the study. All of them presented with a complaint of lower back pain for more than 2 weeks. All the women were between the age group of 26 years to 38 years. They were randomly assigned to 2 groups. Group 1 comprised of 40 pregnant women who were assigned for acupuncture therapy, whereas Group 2 comprised of 40 pregnant women who were assigned for physiotherapy. The VAS score was recorded to evaluate the pain intensity before and after treatment in both the groups. The maximum VAS score pretreatment in Group 1 was 9.3 and minimum was 6.0. The minimum value VAS recorded post treatment was 2.0. The maximum VAS score pretreatment in Group 2 was 9.3 and minimum was 6.0. The minimum value VAS recorded post treatment

was 2.4. The results clearly indicate the patients in acupuncture group revealed better results and reduction in pain than the physiotherapy group.

Discussion

According to the International Association for the Study of Pain (IASP), pain is defined as an unpleasant feeling and mental experience that is associated with potential or actual damage [10]. Lower back pain is one of the most common complaints amongst women during pregnancy. Lower back pain usually occurs between the 12th rib and the gluteal fold or between the posterior iliac crest and the gluteal fold, in the vicinity of the sacroiliac joints, radiating to radiate to the back of the thigh [11]. The current study revealed that the patients in acupuncture group had better VAS score results and reduction in pain than the physiotherapy group. None of the patients reported with any adverse effects apart from soreness at the site of needle insertion (auricular area) which resolved spontaneously without any intervention. Our results were in concordance with the study conducted by *Wedenberg et al* 2000 who showed that auricular and body acupuncture was superior to physiotherapy in relieving the severity of pain and the disability in lower back amongst pregnant women [12]. For a majority of participants in our study, pain relief was substantial and led to improvement of functional status in acupuncture group. Pain associated with physical activity decreased more in acupuncture patients than in physiotherapy patients. Acupuncture is also known to reduce the pain during labor. It has been reported that exercise or physiotherapy during pregnancy tends to increase flexibility, endurance, increase muscle strength, restores injured tissues [13]. Auricular acupuncture is a preferable treatment modality over body acupuncture as the application is easy without having the need to undress the patient. In the present study, the acupuncture points were located unilaterally, preferably on the affected side. In case of bilateral involvement, the more sensitive site was selected. The needles used were 1.5 mm long and 0.20 mm in diameter, applied at an area of the auricle that characteristically represents the lumbar or sacral regions. Before placement of needles, the ear was disinfected with Povidone iodine solution. In our study, we evaluated pain with VAS as the assessment tool; it is not only effective in assessing the improvement of pain in clinical settings, but also helps in assessing the clinical significance of pain reduction [14]. None of the patients in the acupuncture group needed analgesics to alleviate pain during and after the course of treatment. According to research, acupuncture increases the capacity for some physical activities and helps diminish the need for drugs, which is a huge benefit during this period [15]. Drug therapy during pregnancy is exigent due to the uniqueness of the maternal-fetal circulation and the possibility for drug transfer to the fetus.

Conclusion

LBP is one of the most common musculoskeletal complaints of pregnant women. It is concluded that nonpharmacologic treatment for lower back pain during pregnancy tends to alleviate pain and decreases the risk of chronic back pain throughout life. Acupuncture relieves low-back and pelvic pain without serious adverse effects in late pregnancy and improves patient's functional status and health-related quality of life. However, the sample size in our study was small. Future studies demand a randomized and placebo-controlled clinical trials or clinical follow-up studies of large populations to further evaluate the efficacy or adverse effects of acupuncture in pregnancy.

Table 1: Statistical analysis of group treated with acupuncture

	N	Min	Max	Mean	Median	SD	Variance	T	P
VAS Score before tmt	40	6.00	9.3	8.15	8.15	0.856	0.7327	- 1.1451	0.2591
VAS Score After tmt	40	2.00	5.5	3.7	3.7	0.83	0.6889	-0.2667	0.7911

Table 2: Statistical analysis of group treated with physiotherapy

	N	Min	Max	Mean	Median	SD	Variance	T	P
VASScore before tmt	40	6.0	9.3	7.99	8.15	0.801	0.6416	0.05916	0.9531
VASScore After tmt	40	2.4	6.5	4.5	4.5	0.79	0.79	0.06	0.9524

References

1. Soma-Pillay P, Nelson-Piercy C, Tolppanen H, Mebazaa A. Physiological changes in pregnancy. *Cardiovasc J Afr.* 2016; 27(2): 89-94.
2. Vleeming A, Albert HB, Ostgaard HC, Sturesson B, Stuge B. European guidelines for the diagnosis and treatment of pelvic girdle pain. *Eur Spine J.* 2008; 17: 794–819.
3. Kristiansson, P., Svardsudd, K. and von Schoultz, B., Back pain during pregnancy: a prospective study, *Spine*, 1996; 21: 702-9.
4. Sabino J, Grauer JN. Pregnancy and low back pain. *Curr Rev Musculoskelet Med.* 2008; 1(2): 137-141.
5. Mogren IM. Previous physical activity decreases the risk of low back pain and pelvic pain during pregnancy. *Scand J Public Health.* 2005; 33(4): 300–6.
6. Kawakita K, Okada K. Acupuncture therapy: mechanism of action, efficacy, and safety: a potential intervention for psychogenic disorders?. *Biopsychosoc Med.* 2014; 8(1): 4.
7. Donkin JJ, Turner RJ, Hassan I, Vink R. Substance P in traumatic brain injury. *Prog Brain Res.* 2007; 161: 97-109.
8. Tsuchiya M, Sato EF, Inoue M, Asada A. Acupuncture enhances generation of nitric oxide and increases local circulation. *Anesth Analg.* 2007; 104: 301-307.
9. Lund I, Lundeberg T, Lonnberg L, Svensson E. Decrease of pregnant women's pelvic pain after acupuncture: a randomized controlled single-blind study. *Acta Obstet Gynecol Scand.* 2006; 85: 12–19.
10. Trout KK. The neuromatrix theory of pain: Implications for selected nonpharmacologic methods of pain relief for labor. *J Midwifery Womens Health* 2004; 49: 482-8.
11. Vas, J., Aranda-Regules, J.M., Modesto, M. et al. Auricular acupuncture for primary care treatment of low back pain and posterior pelvic pain in pregnancy: study protocol for a multicentre randomised placebo-controlled trial. *Trials* 2014; 15: 288.
12. Wedenberg, kaj &moen, berit&nöring. A prospective randomized study comparing acupuncture with physiotherapy for low-back and pelvic pain in pregnancy. *Acta obstetricaet gynecologica Sc and inavica.* 2000; 79: 331-5.
13. Hu, Xiang APb, Ma, Ming, Zhao, Xianghu, Sun, Wudong Liu, Yanli, Zheng, Zengbin, Xu, Liang. Effects of exercise therapy for pregnancy-related low back pain and pelvic pain, *Medicine.* 2020; 99(3): e17318.
14. Wang SM, Dezinno P, Lin EC, et al. Auricular acupuncture as a treatment for pregnant women who have low back and posterior pelvic pain: a pilot study. *Am J Obstet Gynecol.* 2009; 201(3): 271.
15. Katonis P, Kampouroglou A, Aggelopoulos A, et al. Pregnancy-related low back pain. *Hippokratia.* 2011; 15(3): 205-210.

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