



International Journal of Obstetrics and Gynaecological Nursing

E-ISSN: 2664-2301
P-ISSN: 2664-2298
IJOGN 2024; 6(1): 44-48
www.gynaecologicalnursing.com
Received: 13-12-2023
Accepted: 17-01-2024

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Effectiveness of massage therapy in reducing labor pain compared with other alternative therapies among pregnant women: A systematic review

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DOI: <https://doi.org/10.33545/26642298.2024.v6.i1a.134>

Abstract

Background: Childbirth is one of the most painful events that a woman experiences in her life, the pain is so severe that it exceeds chronic disease conditions. Even though, delivery is a natural process, the pain which the laboring women undergoes is considered severe in most of the cases. To alleviate labor pain, several alternative therapies are emerging and this study focuses on the effectiveness of massage therapy.

Methods: Systematic review method was used in this study. The main electronic databases used were DISCOVER, MEDLINE, SCIENCE DIRECT, CINAHL PLUS, Psych INFO, PubMed, Web of science, PubMed, EMBASE and the Cochrane Library for the systematic review. The first search produced 2,227 results. On rigorous analysis and based on inclusion and exclusion criterion 17 studies were found to be adequate. In addition, CASP tool was applied to check the validity and reliability of the studies. Finally, 8 studies were chosen for systematic review.

Results: The main themes identified in this systemic review were majority of the pregnant women in the studies need pain relief during labor irrespective of caste, creed, race and is directly related/proportional to their satisfaction in childbirth experience. The socio-demographic and biologic variables which includes age, parity, race, ethnicity and psychological factors are directly related to variations in pain perception among pregnant women. The massage therapy is effective in reducing labor pain among pregnant women especially stressed and anxious women. Massage therapy compared with other complementary / alternative therapies such as acupressure, music therapy and aromatherapy are effective in reducing labor pain and massage therapy is very effective among depressed women.

Keywords: Effectiveness, massage therapy, alternative therapies, systematic review

Introduction

Childbirth is a distressing experience with severe pain, fatigue, fear and negative emotions reaching high levels as labor progresses. Labor pain is defined as the rhythmic pain of increasing frequency and severity due to contraction of the uterus during childbirth. According to the recent evidences, increasing numbers of women prefer planned caesarean section in the absence of a medical indication due to the fear of managing labor pain. The studies claimed that women without any obstetric complications prefer primary planned caesarean section and it compromises 4-18% of all caesareans and 14-22% of all planned caesarean sections. Women can avoid unnecessary planned caesarean section and pursue mind and body therapies or natural products for symptom and pain management during labor. During labor, the pain that women's experiences are influenced by multidimensional physiological and psychological factors and the intensity varies greatly. Most of the women in labor need pain relief. Reduction of labor pain is one of the most vital aspects of effective obstetric care. Labor pain management is an essential significant component of obstetric care and also a major goal of intra partum care. The pain management strategies include pharmacological and non-pharmacological interventions. Many women prefer to avoid pharmacological/invasive methods of pain management. A wide range of complementary therapies to reduce labor pain are readily available to women in labor such as massage therapy, music therapy, patterned breathing, intra cutaneous sterile water injections, relaxation and biofeedback. These are some of the comfort measures which aid women in achieving an effective coping level in their overall labor experience. Hence, there is no doubt

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that pain relief services would add value to obstetric care, but awareness of health care workers, identification of ideal method of pain relief, positive attitude of midwives in provision of pain relief services can open a window of opportunity to introduce and deliver these services in a systematic manner. Massage therapy seems to be a well-researched field of therapy within complementary and alternative medicine (CAM). However, there are key knowledge gaps in the literature that need to be addressed. Further studies need to be conducted on the evidence behind the relationship between massage therapy and labor pain

reduction and the cost-effectiveness of massage therapy in labor.

Materials and Methods

Identification of studies

The Identification of appropriate studies are achieved with two-way inclusive methods. The first one is "PICOS" and the second one is the inclusion and exclusion criteria.

PICOS

P	Pregnant women at term pregnancy undergoing natural childbirth without any underlying complications
I	Massage therapy
C	Women who are exposed to alternative therapies such as acupressure, music therapy, aromatherapy, intra cutaneous sterile water injections
O	Effectiveness of massage therapy in reducing labor pain among pregnant women
S	Quantitative studies - Randomized controlled trial, Randomized clinical trial, cross-sectional studies, A one group pre-test, post-test quasi experimental study and prospective cohort study.

Inclusion and exclusion criteria

The inclusion criteria were as follows i. The language of preference is English, ii. Research with well-designed and rigorous approach throughout the study, iii. The main outcome measures were pain, relief, relaxation and increased coping level of women in labor, iv. Recent studies (last 10 years), V. Massage therapy was viewed as an independent therapeutic intervention for labor pain relief, but combinations with other manual alternative therapies were eligible. The exclusion criteria were studies on alternative therapies with the exception of massage therapy, older studies and studies in other languages are not eligible.

Resources of literature search

In order to acquire recent primary research articles, the following electronic databases are used. Discover (Advanced search engine - customized electronic database for the University of Bedfordshire), CINAHL PLUS (Cumulative index to nursing and allied health literature), Science Direct, PubMed, Medline, British Nursing Index, Google, Psycinfo, Cochrane Collaboration.

Search strategy and key words

The keywords used to identify relevant articles for the reviews were: Massage therapy, pregnant women, labor pain, alternative therapies, complementary therapy, music therapy, pain relief, relaxation, laboring mother. The literature search was filtered by combining the keywords together to acquire more new data. In addition, the Boolean operators searching strategies were used to combine the keywords to include certain studies and exclude some studies. The three Boolean operators used were: "AND", "OR" and "NOT".

Literature search results

The significant purpose of this literature search is to identify the most relevant studies in the review. The first search using the methods mentioned above produced 2,227 results. In order to collect appropriate articles, an inclusion criterion was applied and the result reduced from 2,227 to 554. It was again filtered by applying the exclusion criteria in which still several studies on alternative therapies other than massage therapy were found, those studies were filtered producing 428 results. 25 studies were highlighted because they were not published in English. On thorough analysis of the 403 results, within the topic of the search some of them were found to be of less importance like several studies were found which explored the effects of massage therapy on various aspects apart from labor pain which further led to 154 articles being removed and resulting in 250 articles. 198 articles were excluded as they were not primary research articles. Other unwanted studies were also eliminated. Finally, 52 studies were collected for further assessment and analysis. On careful reading of these articles, 22 results did not contain full text and so they were eliminated. Thus, the number of studies reduced to 30 and on rigorous analysis and based on inclusion and exclusion criterion, only 17 studies were found to be adequate.

Scrutiny of the literature results

The 17 primary research studies were selected for the final selection of data. 'PICOS' was utilized to further refine the studies by checking the quality and analyzing whether the studies met all the required objectives. In addition, CASP tool was applied to check the validity and reliability of the studies. Finally, 8 studies were chosen for systematic review. The selection strategy of the primary articles is expressed in the flowchart below.

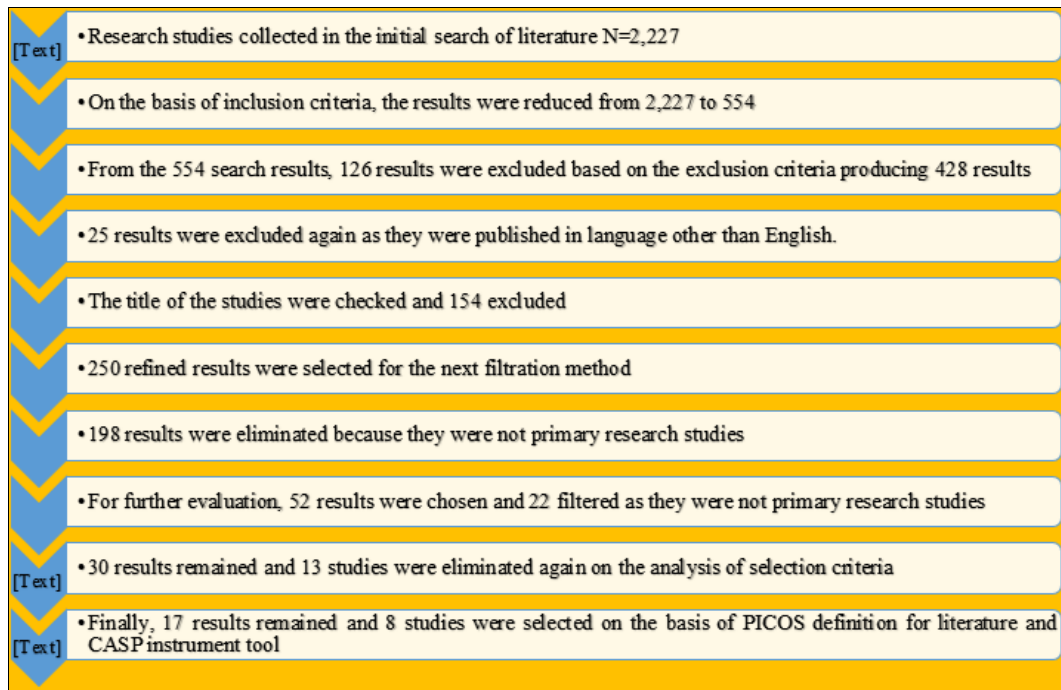


Fig 1: Schematic representation - the selection strategy of the primary articles

Data synthesis

In this data synthesis, the studies were divided into two sections - section A and section B. SECTION A: studies which show the effectiveness of massage therapy in reducing labour pain among pregnant women. SECTION B: studies which compare massage therapy with other alternative/complementary therapies such as acupuncture, aromatherapy, and music therapy to identify the efficient pain relief method among pregnant women.

Thematic analysis: In this review, thematic analysis was applied by identifying significant themes from the research articles and the selected primary studies by analyzing them carefully. The main themes identified from these research articles were the reduction of labor pain experienced by pregnant women by adopting massage therapy and comparison of massage therapy with other alternative therapies to identify the most effective method.

Result and Discussion

Table 1: Presentation of the included studies in the systematic review: (Combines section a & section b)

S. No	Name of the author and Year	Aim	Title	Method	Sample size	Findings
1.	(Mortazavi. <i>et al.</i> , 2012) ^[4]	To investigate the effects of massage and presence of attendant on pain, anxiety and satisfaction during labor	Effects of massage therapy and presence of attendant on pain, anxiety and satisfaction during labor.	Randomized controlled study	120 women	Findings suggested that massage therapy is an effective alternative intervention which decreases pain and anxiety during labor
2.	(Gallo. <i>et al.</i> , 2013) ^[1]	To identify whether massage is effective in Relieving pain in the active phase of labor.	Massage reduced severity of pain during labor: A randomized controlled trial	Randomised controlled trial	46 pregnant women at term pregnancy	The results revealed that pain severity was 52mm in The experimental group and 72mm in control group at the end of intervention. Thus, massage therapy reduced severity of pain in labor.
3.	(Janseen Patricia, Shroff Farah and Jaspaula, 2012) ^[5]	To evaluate the effectiveness of massage therapy in managing pain among pregnant women in labor	Massage and labor outcome s	Randomized controlled trial study	77 healthy nulliparous women in spontaneous labor	The results revealed that scores on McGill Pain Questionnaire were consistently lower in Massage therapy group.
4.	(Chang. <i>et al.</i> , 2006) ^[6]	To compare massage effects on labor pain using McGill Pain Questionnaire	A comparison of massage effects on labor pain using McGill pain questionnaire	Randomized controlled trial study	60 primigravida women	Findings Indicate that massage therapy can effectively reduce labor pain intensity at phase-1 and phase-2 of cervical dilatation during labor
5.	(Zohren Abbasi. <i>et al.</i> , 2009)	To investigate the effects of back massage on pain intensity	Effects of back massage on pain	Randomized controlled trial	62 primiparous pregnant women	The mean pain score was significantly different

		during the first stage of labor	intensity during the first stage of labor	study		($p < 0.001$) for each phase
6.	(Hajiamini <i>et al.</i> , 2012) [2]	To compare the effects of ice-massage and acupressure on labor pain reduction	Comparing the effects of ice- massage and acupressure on labor pain reduction	Quasi-experimental study	90 pregnant women	Findings suggested that ice-massage provided more persistent pain relief when compared to acupressure
7.	(Taqhinejad. <i>et al.</i> , 2010) [8]	To compare the effects of massage and music therapies on the severity of labor pain	Comparison between massage and music therapies to relieve the severity of labor pain.	Randomized controlled study	101 primigravida women	Findings suggest that massage therapy is an effective method for reducing and relieving labor pain compared to music therapy.
8.	(Kimber. <i>et al.</i> , 2008) [3]	To test the effects of a massage practiced program in pain threshold from late pregnancy to birth on women's reported pain measured by Visual analog scale	Massage therapy/ music therapy for pain relief in labor: A pilot randomized placebo controlled trial	Pilot randomized controlled trial	90 Women in total	This study suggested that regular massage with relaxation technique from late pregnancy to birth is an acceptable coping strategy that merits a large trial.

The studies shown that majority of the pregnant women in the studies need pain relief during labor irrespective of caste, creed, race and is directly related/proportional to their satisfaction in childbirth experience. According to Adams (2012) [19], Labor and childbirth create both physical and emotional pressure for most of the pregnant women and symptoms of progressing pain, fear, anxiety, nervousness, nausea and depression can lead to extreme suffering during that period. Hence, Adams (2012) [19] stated that alternative therapies evolved to assist pregnant women with the changes and potentially alleviate the strain which might occur. Similarly, Haines and Kimber (2007) [22] feels that increasing interest in complementary and alternative medicine (CAM) among pregnant women is being significantly reported as most of the women want to refrain from the pharmacological solutions available for labor pain during childbirth.

The socio-demographic and biologic variables which includes age, parity, race, ethnicity and psychological factors are directly related to variations in pain perception among pregnant women. A cross-sectional study conducted by Olayemi *et al.*, (2005) [13] evaluated the factors which were associated with pain perception in labor and also recognized women benefited from analgesia during labor. A structured questionnaire incorporating box numerical scale (BNS) for pain assessment was utilized. Pain scores revealed significant correlation of pain perception with age ($r = 0.08$, $p < 0.01$), parity ($r = 0.0226$, $p < 0.01$), onset of labor ($\rho = 0.195$, $p < 0.01$), mode of delivery ($\rho = 0.160$, $p < 0.01$) and gestational age of delivery ($r = 0.074$, $p < 0.05$). The massage therapy is effective in reducing labor pain among pregnant women especially stressed and anxious women. According to Stager (2009) [23], massage techniques and strategies can relieve stress during labor, relax the muscles and promote overall relaxation for the mother and this therapy decreases stress, improves hormonal functions and speeds the labor. Massage leads to increase in oxytocin levels enhancing feelings of well-being throughout labor. In the study conducted by Mortazavi. *et al.*, (2012) [4], it is perceived that massage therapy can possibly work in two different pathways: Increasing the A-fibers transfer, blocking the pain impulses and also by stimulating the release of endorphins. It is a significant fact that as pressure fibers are longer, they tend to have more myelin membrane which is protective, the pressure from massage therapy tends to overcome the painful stimulus transmission to brain. Reduction of systolic pressure is also considered as

one of the calming effects of massage therapy. (Aourell, 2005) [20].

The current study describes the several potential underlying mechanisms for massage therapy effects. According to Foster and Sweeney (1987) [21], when implementing massage, pressure messages travel more than the pain messages, reaching the brain faster and closing the gate to pain message. The biological explanation of the gate theory is that cells in the dorsal horn of the spinal cord act like a switch between the nerve impulses from the different fibers. Pain is carried slowly by the non-myelinated C neurons whereas myelinated A neurons carries massage signals more rapidly and closes the gate to the C impulses and allows the A impulses through. In this way, gate to the C-fibers (pain stimulus) is closed by A-fibers (Massage stimulation). Massage therapy compared with other complementary/alternative therapies such as acupressure, music therapy and aromatherapy are effective in reducing labor pain. In a study conducted by Dhany. *et al.*, (2012) [24] on aromatherapy and massage intrapartum service showed that one of the significant reasons for using aromatherapy and massage therapy was to reduce fear and anxiety. In a study conducted by (Hajiamani. *et al.*, 2012), the findings suggest that ice-massage and acupressure are fine complementary therapies to reduce labor pain

Studies revealed that massage therapy is very effective among depressed women. In a study conducted by Field. *et al.*, (1999) [17] on non-depressed pregnant women, twenty-six women were exposed to massage therapy/relaxation therapy. At the end of the study, the women in massage group had very less complications during labor, the infants born to them had very less post-natal complications during labor and there was significantly lower pre-maturity rate. (0% versus 17%). In depressed women, massage therapy increases serotonin levels and decreases cortisol levels. Serotonin reduces back pain and pain in extremities. Massage therapy also increases dopamine and decreases norepinephrine. Both these different pathways lead to decreased fetal activity and better neonatal outcome.

Conclusion

The main focus of the study is on the evidence for the effectiveness of massage therapy for pregnant women to relieve labor pain compared to other alternative/complementary therapies. Labor presents a physiological and psychological challenge for women. As labor progresses, this can be a period of conflicting

emotions which may contribute to women's perception of pain and also affect their labor experience. Hence, to avoid this, effective and satisfactory pain management need to be individualized for each woman. This systematic review supports the use of massage therapy to manage labor pain when compared with other alternative therapies.

Conflict of Interest

Not available.

Financial Support

Not available.

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How to Cite This Article

Paulraj P. Effectiveness of massage therapy in reducing labor pain compared with other alternative therapies among pregnant women: A systematic review. *International Journal of Obstetrics and Gynaecological Nursing.* 2024;6(1):44-48.

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