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Does Dance Therapy During Active Labor Reduce Labor Pain?

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A SELECTIVE EVIDENCE BASED MEDICINE REVIEW

In Partial Fulfillment of the Requirements For

The Degree of Master of Science

In

Health Sciences – Physician Assistant

Department of Physician Assistant Studies
Philadelphia College of Osteopathic Medicine
Philadelphia, Pennsylvania

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ABSTRACT

OBJECTIVE: The objective of this selective EBM review is to determine “Does dance therapy during active labor decrease labor pain?”

STUDY DESIGN: A systematic review of two randomized control trials and a cohort study that were published in English between 2014 and 2020.

DATA SOURCES: Three studies were obtained from PubMed, Alt HealthWatch, and AMED. They were all published in peer-reviewed journals and chosen based on their relevance to the clinical question proposed.

OUTCOMES MEASURED: The main outcome measured in all three studies is pain during active labor. Pain was measured in all studies using the visual analog scale (VAS). Participants were administered the VAS multiple times throughout active labor.

RESULTS: In the RCT by Abdolhain et al., there was significant reduction in pain when labor dance was performed compared to the control group. The mean pain difference at 60 minutes was 0.43 with a statistically significant p-value of 0.036. The RCT by Gönenç et al. demonstrated a reduction in pain with labor dance compared to the control. This study reports a mean pain difference of 1.59 at 60 minutes and a statistically significant p-value of <0.05. The cohort study by Akin et al. demonstrated a mean pain difference of 0.46 at 9cm of cervical dilation when comparing the labor dance to control groups, with a statistically significant p-value <0.014.

CONCLUSIONS: All three studies reviewed demonstrated statistical significance based on calculated p-values. The results show labor dance is an effective strategy to reduce active labor pain. Future studies could be conducted in different geographical regions, cultures, focused on dance throughout pregnancies’ effect on labor pain, and evaluation of participants’ previous pain tolerance before labor.

KEY WORDS: Dance, labor, pain

INTRODUCTION

Active labor can be diagnosed when there is cervical dilation of 3-6cm or more in the presence of regular uterine contractions. Contractions become more frequent, stronger, and longer as labor continues. Labor pain is a subjective feeling described as intense pain and pressure in the abdomen, back, and in some women, thighs.

Current methods of treating labor pain include medical therapies such as local analgesic block, pudendal block, spinal anesthesia, epidural analgesic, and epidural anesthesia. Alternative techniques utilized for pain management include meditation, walking, hot and cold therapies, and breathing techniques. The CDC reports that in 2019 there were 3,309,514 births occurring in a hospital and out of the total 3,747,540 births for the year, 2,848,281 used epidural or spinal anesthesia during labor.¹ The cost for a vaginal delivery using an epidural in the United States is \$3,455, where the cost of the epidural itself was on average \$2,132 in 2016.^{2,3} Good pain control can be achieved during labor with standard medical treatments, but some women are looking for alternative therapies for pain management to lower hospital costs, more pain relief options, and engagement in their medical decision-making.⁴

This paper aims to look at the effectiveness of dance therapy during the active phase of labor to aid in the management of labor pain. Dancing causes the body to release endorphins, the body's natural painkillers, which leads to increased pain tolerance. Another theory in addition to the endorphin theory of decreasing labor pain is the gate control theory. Gate control theory suggests non-painful input blocks painful stimuli from reaching the brain.⁶ In the situation of labor dance, the dance input will block labor pain signals from reaching the brain. Dance is shown to decrease pain intensity, duration, and anxiety, as well as help the fetus descend during labor.⁵ Labor dance can be defined as remaining in an upright position while performing pelvic

movements and leaning on a partner, with or without the addition of sacral massage. Dance therapy during active labor could help reduce pain and provide another method of relief, but it is unknown if it is proven to be effective at decreasing labor pain significantly.

OBJECTIVE

The objective of this selective EBM review is to answer the question “Does dance therapy during active labor reduce labor pain?”.

METHODS

The articles were researched via PubMed, Alt HealthWatch, AMED, and CINHAL and selected based on if they were relevant to answer the proposed clinical question, and if they discussed patient-oriented outcomes (POEMs). Keywords used in searches include “labor”, “dance,” and “pain.” All the articles were published in peer reviewed journals in the English language with inclusion criteria of publication between 2010-2020. Exclusion criteria included publication before 2010 and use of analgesics in dance therapy patients. Summary statistics reported by the articles include p-values, mean values, and frequency (F^n). Table 1 below reports the demographics of the populations studied.

The criteria utilized for selection of the studies discussed in this systematic review included the investigation of dance therapy in pregnant women during the active stage of labor for pain management. The studies include two randomized controlled trials (RCTs) and a cohort study. The studies compared dance therapy to standard medical care and measured the outcome of pain level experienced during active labor.

OUTCOMES MEASURED

The major outcome measured in both RCTs and the cohort study was reduction of pain intensity in women during active labor. All studies measured subjective pain using the Visual

Table 1. Demographics and Characteristics of Included Studies

Study	Type	# Patients	Age (years)	Inclusion Criteria	Exclusion Criteria	W/D	Interventions
Abdolahian (2014) ⁴	RCT	60	18-35	Primiparous, single fetus, cephalic presentation, 38-40 weeks gestation, anticipation of normal birth	Need for analgesic medication, obstetric complication occurred	0, not included if had either exclusion criteria	Dance with partner pelvic and sacral massage vs. standard L&D care
Gonenc (2020) ⁵	RCT	93	18-34	Nulliparity, single fetus, cephalic presentation, 38-42 weeks gestation, estimated fetal weight 2500-4000g, anticipation of normal birth, no analgesic use	Voluntary withdrawal, abnormal fetal heart rate, unexpected complication, use of oxytocin/analgesics/anesthesia, precipitous labor, cesarean delivery	4	Dance and music vs. music vs. standard L&D medical care
Akin (2020) ⁶	Cohort Study	160	18->35	Received labor dance training with their spouses/partner, 37-41 weeks, single fetus, no complications	Cesarean section, labor was induced, narcotic analgesics used	0	Dance with spouse/partner with sacral massage vs. dance with midwife with sacral massage vs. routine L&D care

Analog Scale (VAS). The VAS has participants choose a number on a scale of 0 (no pain) to 10 (most severe pain experienced).⁵ In the study conducted by Abdolahian et al., participants were asked to measure their pain via the VAS before labor and every 30 minutes until cervical dilation was 10cm.⁵ In the study conducted by Gönenc et al., participants were asked to measure their pain using the VAS for a baseline measurement when they reached 4-5cm dilation, again

immediately after the intervention, 30 minutes after the intervention, and 60 minutes after the intervention.⁶ In the cohort study conducted by Akin et al., participants were asked to measure their pain with the VAS when cervical dilation was 4cm and 9cm.⁷

RESULTS

Abdolahian et al. conducted a randomized control trial to evaluate women's pain level during active labor with and without labor dance.⁵ The study, conducted in 2013, included primiparous women aged 18-35.⁵ 60 women were randomly placed in the control group or the intervention group.⁵ The control group received standard labor medical care without pain management interventions. The intervention group was instructed to stand upright for 30 minutes, perform pelvic movements, lean on a partner, and have the partner massage the participants sacral area.⁵ Pelvic movements included pelvic tilt and rocking their pelvis back and forth or in a circular motion. Researchers did not tell women in the intervention group about the possible effects of labor dance before or during the study.⁵ If there was need for analgesic use or an obstetric complication the participant was excluded from the study.⁵

Participants were asked to assess their subjective pain level using the Visual Analog Scale before labor and every 30 minutes until cervical dilation was 10cm.⁵ The data presented by Abdolahian et al. included mean values and p-values.⁵ The mean active labor pain scores for the control group and labor dance group before the intervention are 8.29 and 6.89 respectively, with a statistically significant p-value of 0.008, demonstrating the groups were different before the intervention.⁵ The mean active labor pain scores for the control group and labor dance group 30 minutes after the intervention are 9.56 and 8.73 respectively, with a statistically significant p-value of 0.012.⁵ The mean active labor pain scores for the control group and labor dance group 60 minutes after the intervention are 9.93 and 9.5 respectively, with a statistically significant p-

value of 0.036.⁵ The mean active labor pain scores for the control group and labor dance group 90 minutes after the intervention are 10 and 9.85 respectively, without a reported p-value.⁵

Results from this study are included in Table 2 below.

Table 2. Comparison of Active Labor Pain Scores from Labor Groups (data from Abdolahian et al.)

	Mean before intervention	Mean 30min after intervention	Mean 60min after intervention	Mean 90min after intervention
Control Group	8.29	9.56	9.93	10
Dance therapy Group	6.89	8.73	9.5	9.85
Mean Difference between Control and Labor Dance groups	1.4	0.83	0.43	0.15
p-value	0.008	0.012	0.036	

Gönenç et al. conducted a single-blind, randomized control trial to evaluate women's perceived pain during the active phase of labor.⁶ The study was conducted between February and June 2018, and included nulliparous women ages 18-34.⁶ 93 women were randomly placed in one of three groups, the control group, dance and music group, and only music.⁶ For the purpose of this paper, the group that did not dance and listened to music will not be discussed. The control group received standard nursing care and did not use analgesics. The dance group listened to music and performed pelvic movements for 30 minutes while leaning on the researchers shoulders.⁶ The pelvic movements performed were circular movements of the pelvis and waist, pelvic tilt, moving the pelvis left to right, and a semi-squatting position. Women were excluded from the study after it began if they needed an emergency cesarean section or had a precipitous labor.⁶

Nurses not involved in the study had the participants rate their pain using the visual analog scale when the participants reached 4-5cm cervical dilation for a baseline.⁶ The control group also rated their pain at 30, 60, and 90 minutes.⁶ The dance group rated their pain immediately after the intervention, and at 30 and 60 minutes after the intervention.⁶ The data presented by Gönenç et al. includes mean pain scores, p-value, and frequency (Fⁿ).⁶ The frequency was reported to be 34.012 p<0.001, and a statistically significant p-value of p<0.05 comparing VAS pain scores between the dance and control groups.⁶ Results from this study are reported in Table 3 below.

Table 3. Comparison of Active Labor Pain Scores from Labor Groups (data from Gönenç et al.)

Mean Pain Score (SD)	Baseline	30 minutes	60 minutes	90 minutes	F ⁿ	p-value
Control Group	6.28 (1.170)	7.03 (1.576)	8.56 (1.366)	9.12 (1.641)	F ⁿ =34.012 p<0.001	p<0.05
Dance and Music Group	6.97 (2.316)	5.00 (2.338)	6.97 (2.549)	6.87 (2.754)		
Difference Between Mean Pain Scores	0.69	2.03	1.59	2.25		

Akin et al. conducted a cohort study to determine the effects of labor dance on perceived active labor pain.⁷ The study occurred between April and October 2017.⁷ 187 women volunteered for the study but only 160 were analyzed.⁷ Participants were split into three groups, those who performed the intervention with their spouse/partner, participants who performed the intervention with a midwife, and the control group.⁷ The control group received routine medical treatment. The dance groups remained upright, leaned on their partner’s or midwife’s shoulders

while they massaged the participants sacral area, had calming music on, and swayed their pelvis from left to right.⁷ The dance started during the active phase of labor and continued until the first stage of labor was complete (cervical dilation of 10cm).⁷ Researchers trained participants how to perform the labor dance to those in the dance groups, but did not inform participants of the aim of the study or the effects of labor dance on labor pain.⁷ Participants were not included in the research if the researcher did not stay with the participant during the dance and labor process, the participant quit the study, the participant did not dance with the midwife, the participant delivered at a different institution, or if a cesarean section was performed.⁷

The visual analog scale was utilized to measure participant's pain and was administered at 4cm and again at 9cm of cervical dilation.⁷ The data presented by Akin et al. include mean, median, and p-values.⁷ At 4cm and 9cm cervical dilation respectively, the p-values comparing the groups were statistically significant at 0.043 and 0.014.⁷ Results from this study are reported in Table 4 below.

Table 4. Comparison of Active Labor Pain Scores from Labor Groups (data from Akin et al.)

	4cm Dilation	9cm Dilation
Control Group Mean (SD)	5.61 (1.34)	9.17 (0.44)
Dance Group Mean (SD)	5.02 (1.14)	8.60 (1.03)
Mean Difference between Control and Dance with Partner Group Pain	0.59	0.57
p-value	0.043	0.014

DISCUSSION

Millions of women go into labor every year. Labor pain has been dealt with in a variety of ways that includes both medical and non-medical therapies. If effective, dance during labor

can add to the strategies utilized by women with uncomplicated pregnancies and labor to reduce their labor pain. Labor dance is not recommended for people with multi-fetus pregnancies or pregnancies and deliveries deemed complicated or at-risk due to higher need for medical therapies and interventions for a successful outcome. This systematic review evaluated the efficacy of labor dance for treating labor pain.

The studies of this systematic review compared a control group who received standard labor care to a labor dance group. All three studies demonstrated labor dance decreased active labor pain compared to the control to a statistically significant degree.⁵⁻⁷ Abdollahian et al. reported p-values <0.05 with a small treatment effect.⁶ Gönenç et al. reported a p-value <0.05 with a large treatment effect.⁶ Akin et al. reported p-values <0.05 with a small treatment effect.⁷

Limitations in the research for this systematic review include the minimal number of recent studies conducted on labor dance, and what studies were on the databases utilized. Limitations of the studies include no evaluation of participant's previous pain tolerance to ensure they were similar in each group and not being able to blind participants to the intervention. Specific limitations of Abdollahian et al. include the small sample size and not conducting an intention to treat analysis; Gönenç et al. participants were not blinded to the intervention; Akin et al. did not conduct an intention to treat analysis.⁵⁻⁷ Compared to the two other studies, Gönenç et al. did not require the persons being leaned on to massage the participants' sacral area.⁵⁻⁷ Similarly, compared to the other studies, Akin et al. did not require participants to be primiparous.⁷

All studies included participants with single-fetus pregnancies because multi-fetus pregnancies are considered higher-risk. Each study evaluated women who were in labor and delivery departments of hospitals being utilized by the researchers.⁵⁻⁷ All studies had participants

excluded from the finalized data due to delivery complications or necessity for cesarean section, but only Akin et al. noted participants removed from the study due to non-compliance of intervention requirements, in this case not dancing with a partner.⁵⁻⁷

CONCLUSION

Through the systematic review of studies by Abdollahian et al., Gönenç et al., and Akin et al., labor dance is shown to reduce active labor pain to a statistically significant degree based on calculated p-values.⁵⁻⁷ Though the studies demonstrate labor dance reduces labor pain to a statistically significant degree, two of these studies show the treatment effect was small, so labor dance may not reduce pain to a clinically significant degree.

All three of these studies were conducted in a similar geographic region, so future studies in different areas of the world and among different cultures would be beneficial. Similarly, future studies on dance throughout pregnancy's effect on labor pain can be recommended. Future studies could also evaluate potential participants' prior pain tolerance to ensure the study groups have similar baseline pain tolerance.

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