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Original research article

EFFICACY OF LOWER BACK MASSAGE FOR IMPROVEMENT OF LABOR PAIN AND PATIENT SATISFACTION

RANI U*, YAMEEN S

Nishtar Hospital Multan, Pakistan
**Correspondence author email address:* drkash123@gmail.com

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Abstract: *Labor pain management is crucial to obstetric care, as it influences the labor experience and overall patient satisfaction. Non-pharmacological interventions like lower back massage have been suggested to alleviate labor pain, but their efficacy requires further evaluation.* ***Objective:*** *To assess the efficacy of lower back massage in improving labor pain and patient satisfaction among pregnant women during labor.* ***Methods:*** *A prospective, cross-sectional study was conducted in the Gynecology and Obstetrics Department of Nishtar Hospital, Multan. A total of 160 pregnant women with single fetuses at full term, cervical dilation of 4 cm or more, and expected to have spontaneous delivery were included. Participants were divided into two groups: the study group (n=80) received sacral massage for 30 minutes at the end of the latent, active, and transition phases during contractions, while the control group (n=80) received standard care. Pain during severe contractions was measured using the Visual Analogue Scale (VAS), and patient satisfaction was rated on a scale from 1 to 10, with 10 being the most satisfactory. Data were collected through face-to-face interviews using a questionnaire. Statistical analysis was performed using appropriate tests, with significance at $p<0.05$.* ***Results:*** *Significant differences were observed between the groups in VAS scores during labor phases. In the latent phase, mean VAS scores were 4.9 ± 1 in the study group and 6.8 ± 1.5 in the control group ($p<0.05$). In the active phase, scores were 7.1 ± 2.0 and 9.4 ± 1.4, respectively ($p<0.05$). During the transition phase, the study group had a lower VAS score of 7.2 ± 3.2 compared to 9.5 ± 2.8 in the control group ($p<0.05$). The mean satisfaction score was significantly higher in the study group (9 ± 0.9) compared to the control group (7.4 ± 1) ($p<0.05$).* ***Conclusion:*** *Lower back massage significantly reduces labor pain and enhances patient satisfaction during labor. Massage in standard obstetric care is recommended to improve maternal comfort and labor outcomes.*

Keywords: Labor Pain; Massage Therapy; Obstetric Labor Complications; Pain Management; Patient Satisfaction; Randomized Controlled Trial; Visual Analogue Scale

Introduction

The incidence of c-sections and drug administration has been increasing rapidly, with a global incidence of 22.4% and 22% in Pakistan. (1, 2). The most commonly recognized cause of this increase is elevated anxiety and fear regarding pain during childbirth or a painful experience previously with vaginal birth. (3) Various factors influence labor pain and act as a defense mechanism to external or internal stimuli. Back pain mostly aggravates the pain in 30% of women who choose cesarean to escape the pain. (4)
Primigravida women who experience more labor pain are 22% more likely to undergo c-section as compared to multigravida women(5). Analgesics are often not sufficient to alleviate this pain. Non-pharmacological interventions are employed in addition to pharmacological interventions to minimize harm to the mother and neonate and reduce pain and anxiety. Somatic stimulation massages mental stimulation like music, yoga, acupuncture, hypnosis, breathing exercises, and relaxation are some of the non-pharmacological interventions.
Massage is a commonly used method to ease women during labor. The literature indicates that it relaxes the mind and reduces pain in the antepartum by increasing dopamine and serotonin and suppressing stress hormones (6). It also increases patient satisfaction and improves the quality of care by strengthening the nurse-patient bond. This study assessed the efficacy of lower back massage in improving labor pain and patient satisfaction.

Methodology

A prospective, cross-sectional study was conducted in the Gynecology and Obstetrics Department of Nishtar Hospital, Multan. A total of 160 pregnant women with single fetuses at full term, 4cm or more dilated, and expected to have spontaneous delivery were included in the study. Women with preterm labor, cesarean section, pregnancy complications, placenta previa, systemic disease, cephalopelvic disproportion, placental abruption, and fetal distress were excluded. All women or their attendants provided informed consent to participate in the study. The ethical board of the hospital approved the study.
Patients were divided into the study group (n=80) and control group (n=80). Data was collected through a face-to-face interview with a questionnaire divided into five sections. The first section included sociodemographic information like age, qualification, profession, BMI, income, and obstetrics information like parity, familiarity with birth stories, witnessed birth, birth preparation training, and preferred techniques to alleviate pain and feelings about labor. The second section included delivery room entry time, labor progression, dilation and effacement, visual analog scale, birth time, mother's vitals, sex, weight, and

Apgar score of neonates. The third section included the VAS score during labor's latent, active, and transition phases. In the fourth section, the behaviors of women were recorded in an observation form, evaluating emotions of screaming, agitation, crying, and communication. The last section interviewed women two hours after birth about views on labor pain and duration, childbirth, and massage as an intervention. The first four sections of the interview were conducted intrapartum. Women were followed up intrapartum and after birth for an average of 9 hours.

The control group was given standard care, and the VAS score was evaluated. In the study group, sacral massage was performed by placing both hands on each side of the spine while women were instructed to inhale and exhale, audible to the nurse. Hands were moved clockwise and anti-clockwise, depending on the hand. While inhaling, moved hands up to the waist by leaning forward, and while exhaling, the nurse turned the fingers of both hands inwards, moved elbows outwards, and massaged outwardly descending from hips. This process was repeated through contractions in harmony with women's breathing. The massage was performed for 30 minutes each at the end of the latent, active, and transition phases during contractions. After contractions ended, the nurse massaged the upper back, arms, and shoulders, and a sacral massage was added if requested. Pain during severe contractions was measured by VAS score, and women ranked their satisfaction level from 1-10, with 10 being the most satisfied.

All data was analyzed using SPSS version 24. The chi-square and Fisher's exact tests were performed to compare sociodemographic features between both groups. The t-test and Kruskal Wallis test were performed to compare dependent parameters, i.e., VAS scores, satisfaction scores, Apgar scores, maternal blood pressure, pulse, delivery time, and average neonatal weight. Massage was an independent parameter. A p-value <0.05 was significant.

Results

The average age of the study group was 23.2 ± 3.8 years, and of the control group was 27 ± 6.1 years. 30% of women in the study group were employed, compared to 20% in the control group. Twenty percent of women were multiparous in the study group, compared to 40% in the control group. Both groups did not differ significantly with respect to demographics and baseline features (Table I).

A significant difference was noted between groups in VAS scores in labor phases. In the latent phase, the VAS score was 4.9 ± 1 and 6.8 ± 1.5, respectively. In the active phase, the score was 7.1 ± 2.0 and 9.4 ± 1.4, respectively. In the transition phase, the score was 9.5 ± 2.8 in the control group, which was significantly higher than 7.2 ± 3.2 in the study group ($p<0.05$) (Table II). The second phase of labor lasted for 23.5 ± 13.2 minutes in the study group and 32 ± 21.3 minutes in the control group. The mean satisfaction score in the study group was 9 ± 0.9 and 7.4 ± 1 in the control group ($p<0.05$).

The perception of women regarding the duration of labor differed significantly between both groups, as labor was shorter than expected for 46.3% of women in the study group and more prolonged than expected in 65% of women in the control group ($p<0.05$). Regarding labor pain, 60% of women in the study group experienced expected pain, and 90% of women in the control group had a labor experience more pain than expected (Table III).

Women in the study group and control group presented behaviors such as anxiety (35 vs. 40%), silent crying (25 vs. 45%), clenching fists (95 vs. 70%), and grimacing (40 vs. 30%). The difference between groups was insignificant (Table IV). 1-minute Apgar score was 8.2 ± 0.5 and 8.1 ± 0.4, respectively ($p>0.05$).

Table I: Baseline characteristics of both groups

Features	Study group (n=80)	Control group (n=80)	P
Age (years)			
≤25	52 (65%)	40 (50%)	0.438
≥26	28 (35%)	40 (50%)	
Qualification			
Primary education	40 (50%)	56 (70%)	0.189
High school or higher	40 (50%)	24 (30%)	
Employed	24 (30%)	16 (20%)	0.561
BMI			
Normal	24 (30%)	16 (20%)	X^2 =0.5
High	16 (20%)	24 (30%)	0.783
Obese	40 (50%)	40 (50%)	
Social class			
Middle-class	56 (70%)	56 (70%)	1
Upper class	24 (30%)	24 (30%)	
Parity			
Multiparous	16 (20%)	32 (40%)	0.155
Nulliparous	64 (80%)	48 (60%)	
History of spontaneous abortion	-	8 (10%)	0.244
History of elective abortion	8 (10%)	11 (13.8%)	1
Dilation at admission			X^2=6.220
3 cm	4 (5%)	16 (20%)	
4 cm	44 (55%)	52 (65%)	0.099
5 cm	16 (20%)	10 (12.5%)	

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6 cm	16 (20%)	2 (2.5%)	
Birth preparation class	4 (5%)	-	0.487

Table II: Mean VAS score in Labor Stages

Labor stage	Study group	Control group	P
Latent phase	4.9 ± 1	6.8 ± 1.5	0.0
Active phase	7.1 ± 2.0	9.4 ± 1.4	0.0
Transition phase	7.2 ± 3.2	9.5 ± 2.8	0.0

Table III: Maternal Perception of Labor Pain and Duration

	Study group	Control group	P
Labor duration			
Longer than expected	24 (30%)	52 (65%)	
As expected	19 (23.7%)	24 (30%)	
Shorter than expected	37 (46.3%)	4 (5%)	0.001
Labor pain			
More than expected	20 (25%)	92 (90%)	
As expected	48 (60%)	8 (10%)	
Less than expected	12 (15%)	-	0.0

Table IV: Behavioral analysis during labor

	Study group	Control group	P
Agitation	40 (50%)	28 (35%)	0.310
Avoided being alone	-	4 (5%)	1
Anxiety	28 (35%)	32 (40%)	0.7
Losing control	4 (5%)	16 (20%)	0.262
Little to no communication	8 (10%)	4 (5%)	1
Loud crying	12 (15%)	28 (35%)	0.1
Silent crying	20 (25%)	36 (45%)	0.191
Change in facial expression	32 (40%)	24 (30%)	0.587
Clenching fists	96 (95%)	56 (70%)	0.009
Clenching anything	92 (90%)	63 (78.8%)	1
Biting lips	24 (30%)	28 (35%)	1
Complaining	2 (2.5%)	16 (20%)	0.106
Screaming	12 (15%)	32 (40%)	0.092
Wandering	4 (5%)	4 (5%)	1

Discussion

This study was conducted to assess the efficacy of lower back massage in improving labor pain and patient satisfaction. The study significantly lower VAS score and high satisfaction score in the study group in which women were given sacral massage during contractions, which indicates the effectiveness of massages during labor.

VAS score was measured in each phase of labor, which was significantly lower in the study group. Another study assessed back pain during latent, active, and transition phases of labor, where 75% of women complained of back pain, which increased with dilation. (7) 65% of women felt comfort after massage and 61% after position shift. A Turkish study also reported the effectiveness of half an hour of massage in reducing pain and exhaustion. (8) A study comparing the effects of music therapy and massage in 100 pregnant women showed lower pain scores in the massage group. (9) In another comparison study of massage as a pain relief and supporting a person as a source of comfort, 97% of women had reduced pain levels by massage, but satisfaction levels of both were similar. (10)

The average first stage of labor duration was 6.9 minutes in the massage group, but this finding was insignificant. This duration was significantly lower than that of another study, with a mean duration of 2.6 hours recorded in women who received massages. (11) However, another study backed up the fact that massage reduced the risk of postpartum depression, anxiety, and extended hospital stays. (12) A Brazilian study administered massages to pregnant women in the active phase, but the labor duration was 1 hour longer than the control group. (13)

Women in the study group and control group presented behaviors such as anxiety (35 vs. 40%), silent crying (25 vs. 45%), clenching fists (95 vs. 70%), and grimacing (40 vs. 30%). The difference between groups was insignificant except for fist clenching. In contrast, studies showed that women in the control group cried loudly, grimed, shouted, and complained significantly more than the study group. (14, 15) Patient satisfaction scores in our study were higher in the study group, similar to other studies. (16, 17)

Our study has a limitation. We only included women undergoing vaginal birth, due to which the effect of massage on cesarean sections could not be estimated.

Conclusion

Lower back massage significantly improves labor duration and patient satisfaction; therefore, massage is recommended as part of the delivery process.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
It is approved by the department concerned. (IRBEC-NIHM-232/22)
Consent for publication
Approved
Funding
Not applicable

Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

UZMA RANI (Head nurse)
Data Analysis & Final Approval of Version
SAIMA YAMEEN (Head nurse)
Revisiting Critically, Drafting, Concept & Design of Study

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