

Effectiveness of labor support measures on the pain perception of mothers in labor

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ABSTRACT

Background: Childbirth is an anxiety-producing situation for many women and pain is a major concern during labor. Comfort measures help the women to cope with the pain and were considered essential. The term “labor support” refers to continuous non-medical care of laboring women. It includes physical comforting such as back massage, deep breathing exercise, and positioning. **Objective:** The objectives of the study was: (1) To assess the effectiveness of labor support measures by comparing the pain score of mothers with first stage of labor in experimental and control groups and (2) to get the verbal response of mothers in experimental group after 2 h of delivery about the effectiveness of labor support measures. **Materials and Methods:** A quantitative approach with quasi-experimental with multiple time series design was used to study the effectiveness of labor support measures on pain perception of mothers in labor. Sixty mothers in labor were selected using non-probability consecutive sampling technique and randomly assigned into two groups, i.e., experimental group ($n = 30$) and control group ($n = 30$). A demographic questionnaire, numerical pain intensity scale, and verbal response questionnaire to assess the effectiveness of labor support measures were used to collect the data. Intervention was given to the experimental group, i.e., labor support measures such as left lateral position, deep breathing exercise, and sacral (back) massage provided during the first stage of labor. The post-test was conducted after 4 weeks. Pre-interventional pain perception was assessed using numeric pain intensity scale after that researcher administered LSM continuously to the mothers during the first stage of labor and assessed the pain perception at 30 min, 60 min, 90 min, and 120 min, during the first stage of labor. 2 h after the delivery, question on effectiveness of LSM asked to the mothers in experimental group. **Results:** There was a significant difference in experimental and control groups. $F = 3.931$ is more than $F(1, 58) P < 0.05 = 1.534$ to table value which shows that it was statistically significant at 0.05 levels. **Conclusion:** Thus, it concludes that labor support measures were effective in reducing the labor pain.


KEY WORDS: Labor Support Measures; Labor; Mothers; Pain

INTRODUCTION

Childbirth represents the most painful event in women's lifetime. During labor, women have some degree of stress

responds to physical changes that prepare to give birth, so labor support at delivery is an essential part of health care. The term “labor support” refers to continuous non-medical care of laboring women. It includes physical comforting such as back massage, deep breathing exercise, and positioning.^[1]

During labor, every woman experiences some degree of pain, but perception of pain is different from one individual to another. Pain is the unpleasant sensory and emotional experience and it begins with stimuli but influenced by physiological and psychological factors. During childbirth, as fear and anxiety heighten leads to increase muscle tension

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which inhibiting the effectiveness of contraction and increase discomfort. Non-pharmacological and pharmacological pain management strategies increase the control over pain.^[2] A wide array of non-pharmacological pain relief measures as well as pharmacological interventions is presently available to women in labor. Relaxation, breathing techniques, positioning, massage, hydrotherapy, and music are some comfort measures that women may initiate during labor to achieve an effective coping level for their labor experience.^[2]

Touch conveyed to the woman a “message of caring, of comfort, of wanting to be with her and to help her.” The most commonly reported types of touch during childbirth included effleurage, holding hands, back rubs, and massage. To avoid tension and exhaustion during labor process, a mother should be taught some relaxation and breathing exercises which will help her to cope with the stress during labor.^[3]

Relaxation thought to increase the pain tolerance through a number of mechanisms, including the reduction of anxiety, decreased catecholamine response, increased uterine blood flow, and decreased muscle tension, and this relaxation is mainly enhanced by a specific breathing pattern during contraction and by touch.^[4]

Nabb *et al.* (2006) conducted an experimental study to assess the effectiveness of massage coupled with breathing exercises on labor process. The results of this study indicated that massage therapy reduced stress and pain during labor. The intervention group reported less depressed mood than the control (MT: Decrease of 7.1 and control: Increase of 0.5; $P < 0.05$). The intervention group felt better (MT: Increase of 1.2 and control: Increase of 0.1; $P < 0.05$) and had lower stress levels. In terms of labor pain, only the massage therapy group experienced a decrease in labor pain ($P < 0.001$). This study concluded that massage therapy when given with breathing exercise reduces the stress during labor and increase the quality of women’s experience of childbirth.^[5]

Aaza and Hafez conducted a study to evaluate the effect of relaxation technique on maternal and fetal outcome in primi mothers in selected hospitals in West Bengal. Experimental group mothers were taught the Lamaze method of relaxation technique and breathing exercises. The findings showed that behavior score of mothers for experimental group was higher and duration of labor was higher in control group, frequency of normal vaginal delivery was significantly higher in experimental group, and frequency of occurrence of maternal complications was significantly lower in experimental group than that of control group. Frequency of the use of pain-relieving drugs was found to be significantly higher in control group as compared to experimental group mothers.^[6]

The investigator in her clinical experience has witnessed that mothers who are going through labor process experience labor pain which is described by them as severe pain, and as the

labor proceeds, they become exhausted and have no strength to expel the fetus out. Due to this, number of cesarean section is increasing. The investigator felt that a warm touch and relaxation will make them comfortable, as it is a natural human instinct to rub away hurt and pain, especially true during labor. This has motivated the investigator to take up this study.

Objectives

The objectives of the study was: (1) To assess the effectiveness of labor support measures by comparing the pain score of mothers with first stage of labor in experimental and control groups and (2) to get the verbal response of mothers in experimental group after 2 h of delivery about the effectiveness of labor support measures.

MATERIALS AND METHODS

A quantitative approach with quasi-experimental with multiple time series design was used to study the effectiveness of labor support measures on pain perception of mothers in labor. Sixty mothers in labor were selected using non-probability consecutive sampling technique and randomly assigned into two groups, i.e., experimental group ($n = 30$) and control group ($n = 30$). All the mothers admitted in labor room going through labor process and are in first stage of labor, willing to participate in the study, and available at the time of data collection were included in the study. Mothers those who are posted for elective cesarean section and high-risk mothers were excluded from the study. Women were explained the procedure and purpose of the study, and written informed consent was taken. A demographic questionnaire, numerical pain intensity scale, and verbal response questionnaire to assess the effectiveness of labor support measures were used to collect the data. Before beginning with the study, administrative and ethical permission taken from concerned authority. Mothers were explained the procedure and purpose of the study, and written informed consent was obtained. Pre-interventional data were collected by completing a questionnaire related to baseline characteristics. Intervention was given to the experimental group, i.e., labor support measures such as left lateral position, deep breathing exercise, and sacral (back) massage provided during the first stage of labor. The post-test was conducted after 4 weeks. Pre-interventional pain perception was assessed using numeric pain intensity scale after that researcher administered LSM continuously to the mothers during the first stage of labor and assessed the pain perception at 30 min, 60 min, 90 min, and 120 min, during the first stage of labor. 2 h after the delivery, question on effectiveness of LSM asked to the mothers in experimental group.

RESULTS

Table 1 shows that most of the mothers (86.66%) in experimental group and 73.33% in control group were in

the age group of 21–30 years. All (100%) mothers were in the first stage of labor. 33.33% mothers in experimental group and 36.66% in control group had primary education.

Table 1: Frequency and percentage distribution of the respondents ($n=60$)

Personal variable and obstetrical history	F (%), ($n=30$)	
	Experimental group	Control group
Age		
21–30	26 (86.66)	22 (73.33)
31–40	04 (13.33)	08 (26.66)
Educational status		
Primary	10 (33.33)	11 (36.66)
Secondary	4 (13.33)	8 (26.66)
High secondary	6 (20.00)	5 (16.66)
Graduate	7 (23.33)	6 (20.225)
Postgraduate	3 (10.00)	-
Occupation		
Skilled	7 (23.33)	5 (16.66)
Unskilled	23 (76.66)	25 (83.33)
Parity		
Primipara	18 (60.00)	14 (46.66)
Multipara	11 (36.66)	15 (50.00)
Grand multipara	1 (3.33)	1 (3.33)
Period of gestation (week)		
36–37	13 (43.33)	14 (46.66)
38–39	17 (56.66)	16 (53.33)
Type of delivery		
Normal vaginal delivery	29 (96.66)	28 (93.33)
Caesarean section	1 (3.33)	2 (6.66)

Majority of mothers (76.66%) in experimental group and 83.33% in control group were homemakers. Almost two-third of the (60%) mothers in experimental group and half of the (50%) mothers in control group were primiparous and remaining mothers were multigravida. Approximately half of the mothers in experimental group (56.66%) and (53.33%) in control group (53.33%) were having 38–39 weeks of gestation. Most of the mothers in experimental group (96.66%) and in control group (93.33%) had normal vaginal delivery and remaining had cesarean section.

The data presented in Table 2 show that the initial pain score of mothers in experimental group ([5.2] moderate pain) and control ([5.3] moderate pain) was equal. After 30 min, the mean pain score of mothers in experimental group had reduced to 3.9, whereas mothers in control group had continuous rise in labor pain score (5.8). After 60 min, mean pain score (4.3) moderate pain in experimental group which much less than mothers in control group (6.4) severe pain. After 90 min, mothers in experimental group had mean pain score (5.06) which is much less than mothers in control group who had mean pain score (7.13). After 120 min, mothers in experimental group had mean pain score (6.06), severe pain, and mothers in control group had mean pain score (7.7), worst possible pain. It can be interpreted that the labor support measures were effective in reducing the labor pain.

The data presented in Table 3 show the initial mean score was 2.28 ± 0.180 in experimental group and control group 2.31 ± 0.156 . It shows that the mean pain score in experimental and control groups was equal at initial level. Every 30 min, mean pain score shows the difference in the experimental and control groups, i.e., mean pain score in experimental group is less than the control group. After 120 min, the

Table 2: Comparison of level of pain in experimental and control groups ($n=60$)

Type of assessment of labor pain	Experimental group		Control group	
	Mean	Intensity of pain	Mean	Intensity of pain
Initial (min)	5.2	Moderate pain	5.3	Moderate pain
After 30	3.9	Mild pain	5.8	Moderate pain
After 60	4.3	Mild pain	6.4	Severe pain
After 90	5.06	Moderate pain	7.13	Severe pain
After 120	6.06	Severe pain	7.7	Worst possible pain

Table 3: Comparison of pre- and post-intervention perception of labor pain score of mothers in experimental and control groups ($n=60$)

Time of assessment of labor pain	Mean \pm SD	
	Experimental group	Control group
Initial pain	2.28 \pm 0.180	2.31 \pm 0.156
After 30 min	1.98 \pm 0.193	2.41 \pm 0.140
After 60 min	2.07 \pm 0.185	2.54 \pm 0.123
After 90 min	2.24 \pm 0.180	2.66 \pm 0.094
After 120 min	2.45 \pm 0.163	2.77 \pm 0.127

SD: Standard deviation

Table 4: Effectiveness of labor support measures by comparisons of pain score within subject effect and between subject effects ($n=60$)

Group	Sum of square	df	Mean square	F	Significant
Within subject effect	145.313	58	47.225	3.931	$P<0.05$
Between subject effect	185.653	1	185.653		

F (1.58) $P<0.05=1.534$

mean score and standard deviation (SD) was 2.45 ± 0.163 in experimental group and 2.77 ± 0.127 in control group. It shows that in experimental group the mean pain score was much less than to control group. On comparison of mean pain scores at initial, 30 min, 60 min, 90 min, and 120 min between experimental and control groups, it was evident that there was a difference between the mean pain scores of mothers in experimental group and control groups. Therefore, it was concluded that labor support measures were effective in reducing the perception of labor pain.

Table 4 shows that the mean square in within subject effect was 47.225 and between subject effects it was 185.653, so $F = 3.931$ is more than the table value which shows that it was significant at 0.05 levels. Hence, the scores predict the significant difference between experimental and control groups and the mean square of pre-interventional pain assessment and post-interventional pain assessment at $P < 0.05\%$ level. Hence, the null hypothesis was rejected, indicating that the reducing labor pain was not by chance but because of the intervention. Therefore, it can infer that LSM was effective in reducing the labor pain of mothers during the first stage of labor.

The data presented in Table 5 show that almost two-third of the mothers (73.33%) had positive response about the effectiveness of LSM and remaining 26.66% mothers had fair response about effectiveness of LSM.

Table 6 shows the association between initial level of pain and selected personal variables in both groups. There was no significant association between initial level of pain and selected personal variables such as age ($t = 0.98, P < 0.05$), educational status ($t = 0.756, P < 0.05$), occupation ($t = 0.166, P < 0.05$), and period of gestation ($t = 0.987, P < 0.05$) except the variable ($t = 2.352, P < 0.05$). Therefore, null hypothesis was rejected. From the above data, it can be inferred that age, educational status, occupation, and period of gestation did not have any influence on the pain perception of mothers.

DISCUSSION

On comparison of mean pain scores and SD at initial, 30 min, 60 min, 90 min, and 120 min between experimental and control groups, it is evident that there is a difference between the mean pain scores of mothers in experimental group and control groups. The result showed that the labor support measures were effective in reducing the labor pain.

Table 5: Verbal response of mothers about effectiveness of LSM after 2 h of delivery in experimental group ($n=30$)

Verbal response of mothers about effectiveness of LSM	Experimental group
	Frequency (%)
Very effective	22 (73.33)
Fairly effective	8 (26.66)

The results were supported with another study by Bharathi (2010) on effective nursing intervention on pain during labor among primi mothers in Chennai and Jaya Bharathi, in which selected nursing interventions such as massage, breathing exercises, and positions were given to primi mothers in experimental group. Results showed that selected nursing interventions to the primi mothers were effective in reducing their labor pain perception and showed that unpaired t -test value was 4.384 which was statistically highly significant at $P < 0.001$.^[1]

Another study conducted by Sylvia *et al.* (2001) evaluates the effectiveness of back massage and breathing exercises on pain relief in primigravida mothers during the first stage of labor in selected government hospital of Delhi. The conclusion of the study based on the basis of findings was back massage, and breathing exercise was found to be an effective non-pharmacological measure for significantly reducing the intensity of labor pain in primi mothers.^[3]

The investigator also observes some significant findings that the primiparous mothers found to have more fear and anxiety related to delivery as compared to multipara. Pain in primiparous mothers may have contributing factors such as fear and anxiety during the delivery. During the study, it was found that mothers with a period of gestation week between 36 and 37 have more pain as compared to mothers in 38–39 weeks of gestation. During pain, mothers were irritated and most of the time was not ready for deep breathing exercise. Due to the study sampling, the investigator had to take each sample either the day or night.

The present study also has few of the limitations. First, the result might be influenced by parity of mothers and pain tolerance by mother, and second, extraneous variables such as treatment by doctors and home remedies for pain relief might be played a role in the study outcomes.

CONCLUSION

Hence, this can be concluded that labor support measures are effective in reducing labor pain of women in the first stage

Table 6: Association of initial pain score of mothers with the first stage of labor with their selected personal variables ($n=60$)

Personal variables	Sample characteristics	Initial pain score (Mean±SD)	t value	df	P value
Age	21–30	5.25±0.758	0.981	58	$P<2.005$
	31–40	5.50±0.798			
Educational status	Primary to high secondary	5.25±0.719	0.756	58	
	Graduate to postgraduate	5.44±0.892			
Occupation	Skilled	5.33±0.778	0.166	58	
	Unskilled	5.29±0.771			
Parity	Primipara	5.48±0.795	2.352	58	
	Multi and grand multipara	5.04±0.662			
Period of gestation	36–37 week	5.41±0.747	0.987	58	
	38–39 week	5.21±0.781			

of labor. These findings of the study will help the nursing professionals working in labor room to implement labor support measures to reduce the labor pain and increase the comfort which may help to avoid unnecessary cesarean section due to pain.

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