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Effect of Pain Relief Measures on Women's Pain Perception during First Stage of Labor

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Abstract: **Non-pharmacological pain relief measures these methods are popular because they emphasize the individual personality, and the interaction between mind, body and environment, these methods reduce pain, increase maternal satisfaction, and improve other obstetric outcomes. *The Aim of the Study* is evaluate the effect of pain relief measures on women pain perception during first stage of labor. *Subjects and Methods*, a quasi-experimental design was conducted in labor room of Al-Ahrar teaching Hospital. A Purposive sample was consisted of one hundred and twenty laboring women divided into two groups; study group 80 parturient women (40 parturient women used massage method and 40 parturient women used warm compresses method) and control group 40women admitted to labor rooms without obstetrical or medical complications. Data collected by using interview questionnaire, visual analogue scale, Partograph. Results highly significant differences between three groups in relation to level of pain after first 30 minute during intervention, after second 30 minute during intervention, after third 30 minute during intervention, and after fourth 30 minute during intervention In addition, the rate of pain is lower in second group who used Lumbosacral Massage than first group who used Warm Compresses. Meanwhile, the rate of pain is higher in third group who didn't use any methods. Conclusion lumbosacral massage and warm compress is a safe and effective intervention to reduce first stage labor pain. Recommendation Providing laboring women with simple instructions pamphlet or brochure about non pharmacological pain relief method dissemination among laboring women for assurance and enhancement their knowledge, Emphasize on the importance of using lumbosacral massage and warm compress as anon pharmacological method for reducing labor pain, Studying the effectiveness of lumbosacral massage and warm compress on first stage labor pain for high risk women.**

Keywords: **labour pain, Non pharmacological measures, visual analogue scale.**

1. INTRODUCTION

Childbirth is one of the most painful occurrence that a woman is likely to endure, the multi-dimensional facet and intensity of which far pass disease conditions. It is therefore not surprising that many pregnant women have concerns about the pain they will face and the techniques of pain relief that are attainable during labor. Women's missing of proper knowledge about the risks and benefits of the various techniques of pain relief can increase anxiety ***(Joanne et al., 2016).***

Given that birth is mainly, a physiological process, one would expect that all women should have the ability to adapt to labor pain in a normal labor. Labor is typically rated very highly when painful life experiences are ranked in order of severity ***(Cunningham et al, 2017).*** Labor pain is considered to be a complex phenomenon in which sensory, emotional and cognitive dimensions are included ***(Lederman et al., 2016).***

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Pain is a subjective sensation include a complex interaction of physiologic, psychosocial, cultural and environmental impacted. The pain of the birthing process from earliest times has been appropriately described as distressing and extremely excruciating. The pain of the first stage labor usually experienced by the parturient as visceral diffuse, abdominal cramps over the lower abdomen, lower back and sacrum originates from the rhythmic uterine contractions and progressive cervical dilatation, transmitted by spinal nerve segments T10-L1. Although, the second stage labor is shorter, the pain transmitted by the spinal nerve segments S2-S4 and resulting from overstretching of the vagina, vulva and the perineum is usually more intense ***(Johnson et al., 2017).***

Studies have demonstrated that fear as a complication of pain encourages mothers to request caesarian section (C/S) which has led to increased C/S rates. In government hospitals in Iran, C/S rate reaches 40 to 50% and 60% of Iranian women are interested in C/S to suffer less pain. Meanwhile, mortality rate of C/S is five times more than normal vaginal delivery, yet suffering severe pain affects women's decision on method of next deliveries ***(Zhila et al., 2016).***

2. SUBJECT AND METHODS

Study design:

Quasi experimental intervention study (Control-lumbosacral-Worm compress) was used.

Research hypothecs:

Women who received non pharmacological pain relief measures will be decrease their perception of pain during first stage of labor.

Study Setting:

This study was conducted in the obstetric labor unit at Al Ahrar hospital in Zagazig city, Sharkia governorate, Egypt.

Inclusion Criteria:

1- Age 18-35 years old

2- Different parity at first stage of labor.

3- Full term gestation (38-40 wks.) without complication

4- Doesn't use any method to relief pain except study method.

Study Subject:

Selection of total number of parturient women according to the previous mentioned criteria the first group is used as control group, while the second group as study group used lumbosacral massage, and third group used warm compresses.

The intervention group1 (warm compresses) the researcher started intervention in the first stage of active phase with cervix dilatation between 4 and 8 cm, the investigator applied warm packs to the participants' sacral perineal area at a temperature of roughly 45 C was used as a warm pack ***(Simin et al, 2016).*** Pain scores were recorded by the investigator every 30 min till the dilation has reached 8 cm.

The interventional group2 (lumbosacral massage) the researcher started intervention at the beginning of the active phase of labour, during the period of 4–5 cm of cervical dilation and during uterine contractions for 30 minutes. The intensity of the massage was determined by the participant. The technique was applied between T10 and S4 (***Rubneide, 2013***).

The pain score was recorded by using Visual Analogue Scale (VAS) before the intervention and every 30 min in two groups until full cervical dilatation.

The control group was not received any pain relief measures and complete pretest data collection form at enrollment in the study as (baseline data). They asked to complete posttest data after the intervention.

Tools of Data Collection was include: Three tools was used in this study it was in an Arabic language designed by the researchers after reviewing of the related literature, to find out the Effect of Pain Relief Measures on Women's Pain Perception during First Stage of Labor it consists of the following:

I- Structured interviewing questionnaire:

The questionnaire was written in simple Arabic language in the form of close questions. It consisted of three parts:

A- Socio-demographic data such as: age, occupation, education level, residence.....ect.

B- Obstetrical history: such as gravidity, parity ...etc.

C- Present pregnancy history as: it included data about history of receiving antenatal care, LMP.

II- Partograph:

Partograph acts as a simple and accurate tool for early detection of abnormalities during labor, it contain the following point:

1- General examination such as; vital signs, weight, height, BMI, and any signs mark as complications.

2- Local abdominal examination to determine the fetal position, level of the funds, and presentation as well as the fetal heart rate.

3- The characteristics of uterine contractions; frequency, intensity and duration were also recorded.

4- Vaginal examination to determine the onset of labor and exclude any abnormality. It gave description about the condition of vulva and vagina, cervical effacement and dilatation.

5- The condition of the membranes intact or ruptured was also recorded.

6- Diagnosis of labor was determined and adequacy of the pelvis was assessed.

7- Bishop Score that estimated which include; cervical dilatation, effacement, station of the fetal head, cervical consistency, and position.

III- Visual Analogue Scale (VAS) adopted by American College of Obstetricians and Gynecologists, 2015:

The most commonly used tool for measuring pain intensity is the visual analogue scale (VAS), a continuous scale comprised of a 100 mm horizontal or vertical line, that are labeled as (0-3) no pain, (4-7) Moderate pain, and (8-10) Sever pain with descriptive facial expression. Pain scores were recorded by the investigator every 30 min till the dilation has reached 8 cm. During first stage of labor **(American College of Obstetricians and Gynecologists, 2015).**

In addition to illustrated booklet: - (Appendix IIII)

Booklet was given to each parturient women .The booklet used simple Arabic language and different illustrated pictures in order to facilitate the parturient women understanding: which included explanation of how and when to use the pain relief measures (warm compresses and back massage). Parturient women instruct about the 30 minute duration that used for every methods.

Tools validity and reliability:

Content validity was done by panel expertise .The developed tool was reviewed for appropriateness of items and measuring the concepts through 3 expert jury panels in the same specialty to assure content validity.

Ethical considerations:

- The aim of the study was explained to parturient women before applying the tools to gain their confidence and trust.

- An oral consent was obtained from parturient women to participate in the study; withdrawn is permissible at any time.

- The researcher informs the parturient that the study tools neither embarrass their modesty not to cause any harm for them.

- The data are collected and treated confidentially.

Pilot study:

The pilot study was carried on 10% (20 parturient women) of sample size before starting the data collection. These parturient women were excluded from the study sample.

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Field work:

The actual field work is carried out from the beginning of October 2016 to the end of January 2017 covering 4 months. The study setting was visited three times/week, and throughout the visits: - At the beginning of interview the researcher greeted the parturient women, introduced herself to parturient women participating in the study, explained the purpose of the study, and filled a structured interviewing schedule, the researcher interviewing each women and teach how do Lumbosacral massage or warm compresses technique on the back takes about 30 minutes.

Instructions for each group of lumbosacral massage and warm compresses technique:- As soon as labor pain of first stage of labor starting each parturient women was instructed to mark in level of her sense of pain on Visual Analogue Scale before apply the procedure and every 30 minute for every once.

- The time needed for apply each procedure is 30 minutes.

- Mark on level of labor pain on Visual Analogue Scale every once repeated procedure

- In warm compresses instruct the parturient women alarm the researcher about level of water temperature that used during procedure.

-In lumbosacral massage procedures instruct the parturient about lumbosacral area on back as a site for procedure.

Assessment phase of labor pain by using Visual Analogue Scale by: - asking the laboring women to mark on the pain that she felling on the level of pain on the visual analogue scale as pre intervention labor pain level.

Intervention phase by applied lumbosacral massage for 30 minute (in the group of lumbosacral massage) on the back of laboring women every 30 minute for 2 hours (during first stage of labor) and reviewing the level of pain by using visual analogue scale every 30 minute for 2hours , and Appling warm compress for 30 minute (in the group of warm compress) on the back of laboring women every 30 minute for 2 hours (during first stage of labor) and reviewing the level of pain by using visual analogue scale every 30 minute for 2hours, and instruct the parturient women alarm the researcher about level of water temperature that used during procedure .

Evaluation phase by using visual analogue scale every 30 minute for 2 hours throughout intervention the researcher can evaluate the level of labor pain perception for study groups and control group.

Statistical Analysis:

Upon completion of data collection, variables included in each data collection sheet were organized and tabulated then coded prior to computer data entry, by using a program of statistical analysis the statistical package for social science (SPSS) version (17). The following tests for significance were used: Mean and standard deviation as well percentage, frequency, F test, paired t test and Probability level of 0.05 was adopted as the level of significance for testing hypothesis.

3. RESULTS OF TH STUDY

Table (1): Distribution of the studded sample according to Socio demographic data of laboring women.

		Method			Total	Test	P
		Warm Compresses (40)	Lumbosacral Massage (40)	No method (40)			
Age	Mean±SD. Deviation	28.08 ± 2.920	28.70±2.990	28.10 ±2.94	120	F 5.675	0.004*
	Range (year)	22-34	22-35	20-35			
Occupation	House wife	26 (65%)	28 (70%)	25 (62.5%)	74 (61.7%)	X^2 0.519	0.77
	Worker	14 (35%)	12 (20.0%)	15 (60.0%)	46 (38.3%)		
	illiterate	10	11	9	30		

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Education		(25.0%)	(40.0%)	(10.0%)	(25.0%)	X^2 10811	0.77
	Secondary	20 (55.0%)	18 (40.0%)	16 (40.0%)	54 (45.0%)		
	University	10 (20.0%)	11 (20.0%)	15 (50.0%)	36 (30.0%)		
Monthly income	Insufficient	13 (32.5%)	14 (35%)	15 (37.5%)	42 (35.0%)	X^2 0.220	0.89
	Sufficient	27 (67.5)	26 (65%)	25 (62.5%)	78 (65.0%)		
Residence	Urban	22 (55%)	24 (60%)	23 (57.5)	69 (59.5%)	X^2 2.105	0.34
	Rural	18 (45%)	16 (40%)	17 (42.5%)	51 (40.5%)		

Table (1): This table illustrate there are in significant differences between three groups in relation to Age, occupation, education, and residence respectively (P=0.004, P= 0.001, P=0.002, P=0.002), and the table represent age of studded sample ranged 22-34 years in warm group, with Mean±SD 28.08 ± 2.990.

Table (2): Distribution of the studded sample according to History of present pregnancy:

		Method			Test	P	
		Warm Compresses 40	Lumbosacral Massage 40	No method 40			
Wight	Mean±Std. Deviation	68.78±3.724	69.60±3.954	70.80±3.443	F 3.008	0.053	
	Range (Kg)	62-75	65-74	65-75			
Height	Mean±SD. Deviation	168.15±3.302	168.60±3.078	168.40±3.241	F 0.198	0.821	
	Range (Cm)	160-172	165-162	162-170			
Gestational Age	Mean±SD. Deviation	37.70±1.856	38.30±1.436	38.70±1.203	F 4.372	0.015*	
Number Of Antenatal Visit	<6Vist	3 (7.5%)	2 (5%)	9 (22.5%)	Total 14 (11.7%)	X^2 6.954	P 0.0309
	>6Vist	37 (92.5%)	38 (95%)	31 (77.5%)	106 (88.3%)		
Initiation of Antenatal Care	First Trimester	25 (62.5%)	16 (40.0%)	0 (0.0%)	41 (34.2%)	75.2	0.00**
	Second trimester	12 (30.0%)	24 (60.0%)	12 (30.0%)	48 (40.0%)		
	Third trimester	3 (7.5%)	0 (0.0%)	28 (70.0%)	31 (25.8%)		

Table (2): This table represents that highly significant difference between three groups in Gestational Age, number of antenatal visit and initiation of antenatal care respectively (P=0.015, P=0.00).

Table (3): Distribution of the studded sample according to Uterine Contraction and Method of the Studied Groups:

Uterine Contraction	Method			Total 120	X^2	P
	Warm Compresses (40)	Lumbosacral Massage (40)	No method (40)			

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Uterine Contraction Regularity And Duration	Normal 3-5 minute for 40-60 second	40 (100.0%)	40 (100.0%)	0 (0.0%)	80 (66.7%)	120.0	0.00**
	Abnormal Irregular >10minute for 40second	0 (0.0%)	0 (0.0%)	40 (100.0%)	40 (33.3%)		
Uterine Contraction Frequency 10 minute	Regular 3 contraction /10 minute	37 (92.5%)	40 (100.0%)	0 (0.0%)	77 (64.2%)	108.67	0.00**
	< 3 contraction/10 minute	3 (7.5%)	0 (0.0%)	24 (60.0%)	27 (22.5%)		
	>3 contraction /10minute	0 (0.0%)	0 (0.0%)	16 (40.0%)	16 (13.3%)		
Uterine Contraction Interval	= 1min	32 80.0%	32 80.0%	12 30.0%	76 63.3%	63.8	0.00**
	< 1min	5 12.5%	8 20.0%	0 0.0%	13 10.8%		
	> 1min	3 7.5%	0 0.0%	28 70.0%	31 25.8%		
Uterine Contraction intensity	Mild	3 7.5%	0 0.0%	20 50.0%	23 19.2%	43.17	0.00**
	Moderate	28 70.0%	28 70.0%	20 50.0%	76 63.3%		
	Sever	9 22.5%	12 30.0%	0 0.0%	21 17.5%		

Table (3): This table represents that highly significant differences between three groups in relation to uterine contraction regularity, duration, Uterine contraction frequency 10minute, Uterine contraction interval Uterine contraction intensity respectively (P= 0.00, P= 0.00, P= 0.00, P= 0.00).

Table (4): Distribution of the studded sample according to Pain description throughout the intervention:

Level of pain		Method			Total	X^2	P
		Warm Compresses 40	Lumbosacral Massage 40	No method 40			
Level of pain intervention	ModeratePain5-7VAS	3 7.5%	2 5.0%	0 0.0%	5 4.1%	2.9	0.23
	severpain8-10VAS	37 92.5%	38 95.0%	40 100.0%	115 95.9%		
VAS after First 30 min During intervention	Moderate Pain 5-7 VAS	37 92.5%	40 100.0%	0 0.0%	77 64.2%	107.93	0.00**
	Sever Pain 8-10 VAS	3 7.5%	0 0.0%	40 100.0%	43 35.8%		
VAS after Second 30 min During intervention	Mild Pain 3-4 vas	28 70.0%	40 100.0%	0 0.0%	68 56.7%	96.17	0.00**
	Moderate Pain 5-7 vas	12 30.0%	0 0.0%	20 50.0%	32 26.7%		
	Sever Pain 8-10 vas	0 0.0%	0 0.0%	20 50.0%	20 16.7%		
VAS after Third 30 min During	mildPain3-4vas	37 92.5%	40 100.0%	0 0.0%	77 64.2%		

intervention	Moderate Pain 5-7 vas	3 7.5%	0 0.0%	36 90.0%	39 32.5%	108.06	0.00**
	Sever pain 8-10 vas	0 0.0%	0 0.0%	4 10.0%	4 3.3%		
VAS after Fourth 30 min During intervention	Slight pain 1-3 vas	11 27.5%	32 80.0%	0 0.0%	43 35.8%	153.26	0.00**
	Mild pain 3-4 vas	29 72.5%	8 20.0%	0 0.0%	37 30.8%		
	Moderate pain 5-7	0 0.0%	0 0.0%	24 60.0%	24 20.0%		
	Sever Pain 8-10 vas	0 0.0%	0 0.0%	16 40.0%	16 13.3%		
VAS After intervention	Slight pain 1-3vas	34 85.0%	40 100.0%	0 0.0%	74 61.7%	129.7	0.00**
	Mild pain 3-4 vas	6 15.0%	0 0.0%	0 0.0%	6 5.0%		
	Moderate Pain 5-7 vas	0 0.0%	0 0.0%	24 60.0%	24 20.0%		
	Sever Pain 8-10 vas	0 0.0%	0 0.0%	16 40.0%	16 13.3%		

Table (4): Continues Distribution of the studded sample according to Pain description of pre and post intervention:

		N	Mean	Std. Deviation	Minimum	Maximum	F	P
Mean pain score	Warm Compresses	40	8.51	2.423	6	10	2.420	0.08
	Lumbosacral Massage	40	8.44	1.464	6	9		
	No method	40	9.41	1.524	8	10		
VAS after First 30min During Procedure	Warm Compresses	40	6.7	1.47	5	8	23.1	0.00**
	Lumbosacral Massage	40	6.2	1.54	5	7		
	No method	40	9.2	1.02	8	10		
VAS after Second 30min During Procedure	Warm Compresses	40	4.8	0.45	3	7	16.2	0.00**
	Lumbosacral Massage	40	3.5	0.74	3	4		
	No method	40	8.1	1.22	6	9		
VAS after Third 30min During Procedure	Warm Compresses	40	4.5	0.55	3	6	27.2	0.00**
	Lumbosacral Massage	40	3.4	0.35	3	4		
	No method	40	7.98	1.02	6	9		
VAS after Fourth 30min During Procedure	Warm Compresses	40	3.4	0.452	1	4	25.7	0.00**
	Lumbosacral Massage	40	2.2	0.205	1	4		
	No method	40	8.6	1.42	6	10		
VAS After Procedure	Warm Compresses	40	2.41	0.14	1	3	34.4	0.00**
	Lumbosacral Massage	40	1.42	0.09	1	2		
	No method	40	8.81	0.98	6	10		

Table (4): This table shows that highly significant differences between three groups in relation to level of pain after first 30 minute during intervention, after second 30 minute during intervention, after third 30 minute during intervention, and after fourth 30 minute during intervention respectively (P=0.00, P=0.00, P=0.00, P=0.00) In addition, the rate of pain is

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lower in second group who used Lumbosacral Massage than first group who used Warm Compresses. Meanwhile, the rate of pain is higher in third group who didn't use any methods.

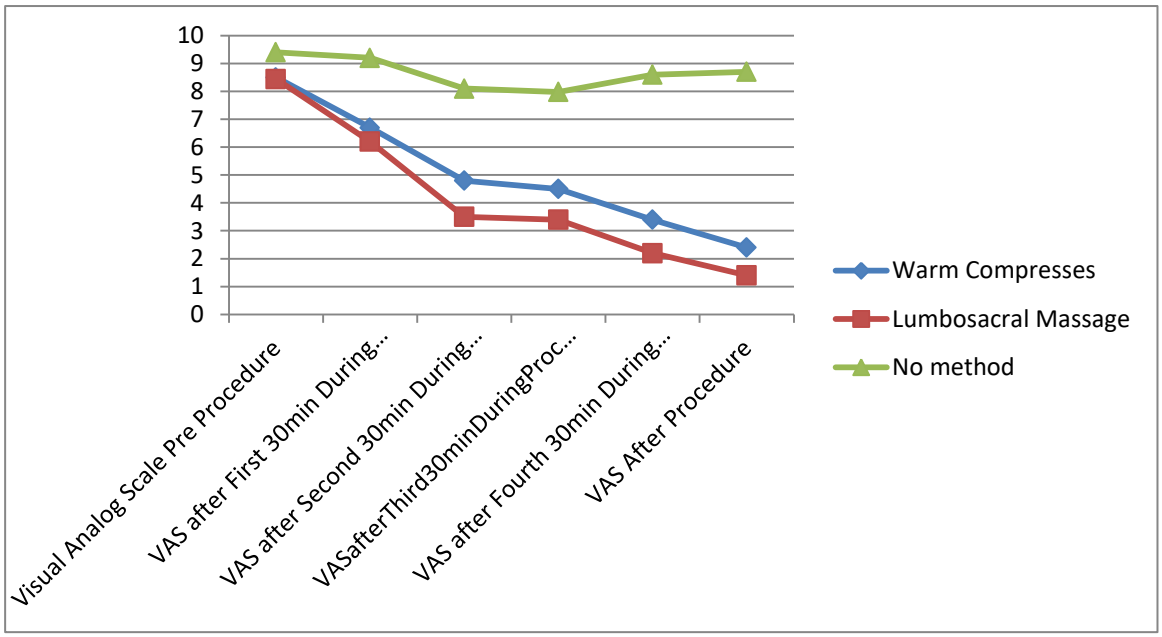

Figure (1): Presentation labor pain level throughout intervention.

4. DISCUSSION

Women's experience of pain during labor varies greatly; some women feel little pain whilst others find the pain extremely painful. A woman's position in labor, mobility, and fear and anxiety or, confidence may influence her experience of pain **Melzack., (2017)**.

The pain that women experience during delivery is affected by multiple physiological and psychosocial factors and its intensity can differ greatly. Most women in labor require pain relief. Pain management strategies include non-pharmacological interventions (that aim to help women adopt with pain in labor) and pharmacological interventions (that aim to relieve the pain of labor)**Lawrence et al., (2016).**

The present result showed that there was a statistically significant association between three groups in relation to women age. Thus women with young age group and gravida 2 were significantly to use non pharmacological intervention as lumbosacral massage and warm compress. This finding is in accordance with **Faezah et al., 2016** study on effects of massage therapy on anxiety and satisfaction of pregnant women during labor in Iran, who reported that younger maternal age and one para was considered as more response to use lumbosacral massage and warm compress to relieve pain during first stage of labor and therefore deserve special attention.

Meanwhile, high educational women were significantly more likely to use non pharmacological procedure to relieve pain during first stage of labor (p=0.077). In the same respect, **(McCrea., 2016)**. Study which examine the non pharmacology procedures relief labor pain, found that educational level and occupation play a role in increase use lumbosacral massage and warm compresses. The researcher views that use non pharmacological procedures common in working mothers might be due to vitality life and increase of activity of working mothers.

The current study showed that there was highly significant differences between three groups as **Chang., (2016),** and **Behmanesh., (2016)** whom found that, the normal progress of cervical dilatation at the first delivery increases by used non pharmacological procedures as lumbosacral massage and warm compress that used to relief labor pain, Concerning descend of presenting part, the present result showed that, high significant relation of women that used lumbosacral massage and warm compresses to relief labor pain in first stage. This finding is agreement with **Allaire., 2017** who reported that births assisted by lumbosacral massage and warm compresses with high chance with normal descend presenting part and have lower rates of most interventions, including episiotomies and perineal tear.

The present finding confirmed highly significant differences between three groups in relation to uterine contraction regularity, duration, frequency, interval, and intensity. Similar findings were also reported by **Smith., 2016** in their studies comparing uterine contraction regularity, frequency, intensity, interval, and duration for first stage of laboring women being normal rate in experimental group that used lumbosacral massage and warm compresses within normal rang progress. These result was on the same line with **Hodnett, 2017** who reported that using back massage and local heat compress it enhance uterine contraction during labor.

On the same line, the current study stated that highly significant differences between three groups in relation to visual analogue scale after first 30 minute during intervention, after second 30 minute, after third 30 minute during intervention, and after fourth 30 minute during intervention, this was similarly with a study done by **Ludington., 2017** in Taiwan, examined the effects of music therapy on the severity of labor pain in 60 primiparous women. The authors observed that listening to music decreased the labor pain, particularly in the latent phase of labor. An earlier study in Iran by **Turk Zahrani., 2017** examined the effect of massage on the intensity of pain during the first stage of labor and also reported a similar finding, where in the results showed that back massage decreased the intensity of labor pain.

5. CONCLUSION

Non pharmacological pain relief measures (Lumbosacral massage and warm compress) have positive effect on decreasing pain perception during first stage of labor. The present study showed that study group had highly significant difference regarding pain relief compared to control group related to labor pain.

6. RECOMMENDATION

- Providing laboring women with simple instructions pamphlet or brochure about nonpharmacological pain relief method dissemination among laboring women for assurance and enhancement their knowledge.

- Emphasize on the importance of using lumbosacral massage and warm compress as a nonpharmacological method for reducing labor pain.

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