EFFECT OF WARM COMPRESS AND BREATHING TECHNIQUE ON DURATION OF THE SECOND STAGE OF LABOR

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ABSTRACT

Background: The duration of the second stage of labor is a stage of risk for the well-being of the fetus. The average time limit for the second stage in primiparas is less than two hours; in multigravidas, it is less than one hour. Several techniques developed non-pharmacologically are intended to shorten the duration of labor and minimise complications in the mother and fetus.

Objective: To analyse the effect of the warm compress technique with a combination of warm compress and breathing techniques on the duration of the second stage of labor.

Methods: This type of research is done through two measurements, including experiments and observations. The number of samples is 20 women in stage II. Samples were divided into two groups. The control group consisted of 10 people using warm compresses, while the experimental group of 10 people was given warm compresses and breathing techniques. Labor pain instruments use the Numeric Rating Scale (NRS).

Results: The results of paired differents showed that there was an effect of giving warm compresses combined with breathing technique in adapting labor pain (p-value 0.000<0.05) compared to only warm compresses (p-value 0.0965). Moreover, for the findings of equal means, the experimental group's pain scale was lower than the control group (p-value 0.000<0.05). Meanwhile, the results of the Pearson correlation obtained the value of Sig. (0.041), the variable stage I pain scale and stage II duration correlate significantly.

Conclusion: Non-pharmacological techniques with warm compresses and breathing techniques affect a low pain scale. And also a significant correlation between the two variables, namely the pain of the first stage and the duration of the second stage.

1. Introduction

Most women who give birth for the first time experience trauma because of the pain they experience. Giving birth in the second stage is often the most stressful for the mother and fetus and for birth attendants (Kopas, 2014; Pasaribu & Tarigan, 2018). Perceptions of labor pain have changed significantly over the years as our understanding of the adverse effects of pain has evolved. Uncontrolled pain can cause anxiety and adverse postnatal effects. In addition, negative experiences, either resulting from poor service or inadequate pain relief, predisposing factors to develop post-traumatic stress disorder (Farnham, 2020; Türkmen & Oran, 2021).

WHO data for 2018 shows that more than 140 million women give birth yearly. Even so, birth is not a dangerous event in some cases but becomes a period full of pain, fear, suffering, and even death. This is what causes many requests for Sectio Caesaria (SC). The pain sensation will differ for every pregnant woman; some feel excruciating, and others feel pain that does not last too long. Of course, this has many causes, starting from the actions of doctors or midwives in helping deliveries, prolonged labor, unaccompanied women giving birth, fatigue, not being ready to give birth, stress, anxiety, and tension during contractions (Thomson et al., 2019).

Efforts to reduce labor pain can be made both pharmacologically and non-pharmacologically. Pharmacological techniques are the use of analgesics or painkillers, epidural injections, perineal and pudendal nerve blocks, using a Transcutaneous Electrical Nerve Stimulation (TENS) machine to

stimulate the body to produce painkilling compounds (Andriany & Gamayani, 2021). Non-pharmacological techniques used include presenting a birth attendant, changing positions and movements, touching, massage, hypnosis, warm and cold compresses, warm baths, breathing and reflexology acupuncture therapy, visualisation and concentration, and music (Aswitami & Septiani, 2020; Baljon et al., 2022). Thus, non-pharmacological methods are considered cheaper and minimise medical intervention compared to pharmacological methods. Non-pharmacological methods are simpler to carry out by health practitioners, are safe and without adverse side effects, and can increase satisfaction during labor because the mother can control her feelings and strengths (Mascarenhas et al., 2019; Simkin & Bolding, 2004; Thomson et al., 2019).

Therefore, in this article, the author wants to study a nonpharmacological approach to adapting the first stage of pain, which affects the duration of the second stage. The further aim is to analyse the effect of warm compress therapy combined with breathing techniques on the duration of the second stage of labor.

2. Method

This type of research was quasi-experimental with a pretest and posttest group design to assess the effectiveness of the treatment of the pain scale for the first stage. A final assessment of the output of labor was carried out by analysing the relationship between the pain scale and the duration of the second stage. The number of samples is 20 women in the normal criterion delivery process. Samples were divided into two groups. The control group consisted of 10 people using warm compresses, while in the experimental group, ten women were given warm compresses and breathing techniques. Labor pain instruments use the Numeric Rating Scale (NRS).

3. Results

3.1 Characteristics of Respondents

In the picture below are the characteristics of the female respondents in labor consisting of two groups, namely the control group, or the group that uses warm compresses, and the experimental group, or the group that receives warm compresses combined with breathing techniques, in Table 1 and Table 2, as follows:

Table 1. Characteristics of age and education in the control group and experimental group

Age of year			Level of education		
	CG (%)	EG (%)		CG (%)	EG (%)
< 20	0	0	Junior High School	0	10
20-35	90	100	Senior High School	80	70
> 35	10	0	Bachelor	20	30
Total	100	100	Total	100	100

Note: CG: Control Group, EG: Experiment Group

Table 2. Characteristics of respondent's parity and work in the control group and experimental group

Parity amount			Type of work		
	CG (%)	EG (%)		CG (%)	EG (%)
Nulliparity	30	20	Does not work	20	30
Primiparity	0	0	Civil servants	10	0
Multiparity	60	80	Private employees	50	40
Grand-multiparity	10	0	Self-employed	20	30
Total	100	100	Total	100	100

Note: CG: Control Group, EG: Experiment Group

According to the research results shown in Table 1, the age class in both groups is 20 -35 years (90%; 100%). The most educational level category is senior high school (80%; 70%). Meanwhile, in Table 2. for the number of parity in the two groups, the highest was in multiparity (60%; 80%). As for the job category, private employees in both groups were higher than the others (50%; 40%).

3.2 Univariate Analysis

Pain scale distribution

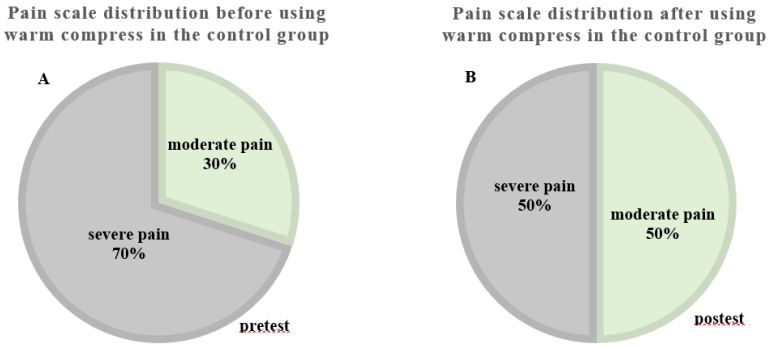

Figure 1. Pain levels before (A) and after (B) using the warm compress

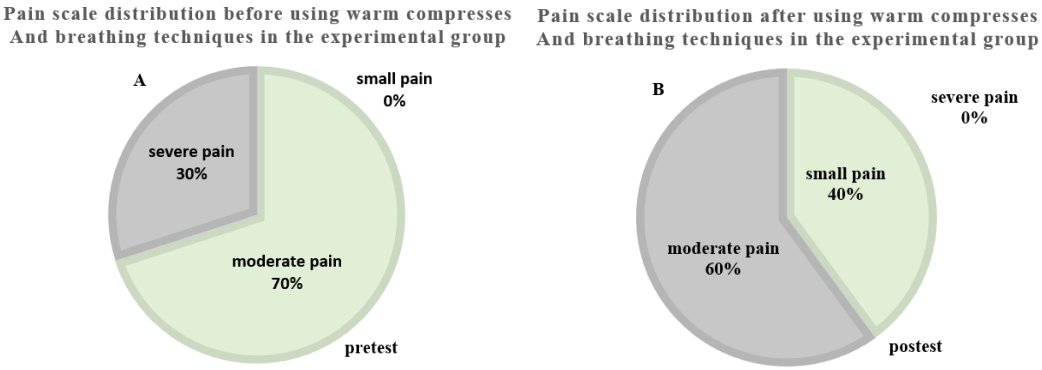

Figure 2. Pain levels before (A) and after (B) using the warm compress combined with the breathing technique

In Figure 1, it can be seen that the scale of pain in the first stage decreased in both groups. The highest pain scale in the control group before (pretest-1A) was given a warm compress was in the 70% severe pain category, and after (post-test-1B) decreased to 50%. For the results shown in Figure 2, the pain scale in the first stage of the experimental group, before (pretest-2A) was given a warm compress combined with breathing technique, was highest in the category of moderate pain (70%) and severe pain (30%). Meanwhile, in the data after (posttest-2B), moderate pain reached 60%, severe pain (0%), and minor pain at 40%.

Duration of stage II

Table 3. Distribution of the duration of stage II in the control group and experimental group

	Control Group		Experiment Group	
	Duration (minute)		Duration (minute)	
	Nulliparity	Multiparity	Nulliparity	Multiparity
1	60	-	-	17
2	-	20	58	-
3	-	40	-	30
4	-	30	-	25
5	-	40	-	30
6	-	50	55	-
7	-	30	-	25
8	65	-	-	20
9	75	-	-	30
10	-	35	-	25
Average	66,6	35	56,5	25,5

Source: Primary Data, 2022;

Table 3 shows that the average duration of the second stage in the experimental group with nulliparity was 56.5 minutes. In multiparity, the average duration of the second stage was 25.5 minutes. This concluded that the duration was shorter than the control group's (nulliparity 66.6 minutes; multiparity 35 minutes).

3.3 Bivariate Analysis

Results of Paired Sample T-Test Pain Scale

Table 4. Pain scale different analysis before and after the control group treatment

	Description		Correlations		Paired Differents				
	Mean	SD	Correlations	Sig.	Mean	Lower	Upper	t	Sig. (2-tailed)
Pretest	7.30	2.002	0.907	*0.000*	0.50	-1.1079	1.1079	0.50	*0.096*
Postest	6.80	1.932							

Data processed by SPSS 25, 2022

Table 5. Pain scale different analysis before and after the experiment group treatment

	Description		Correlations		Paired Differents				
	Mean	SD	Correlations	Sig.	Mean	Lower	Upper	t	Sig. (2-tailed)
Pretest	3.60	1.173	0.821	*0.004*	2.60	1.9967	3.2132	9.75	*0.000*
Postest	6.20	1.475							

Data processed by SPSS 25, 2022

Table 4 shows the descriptive mean value of the pretest and posttest, namely the average pretest value of 7.30 > posttest of 6.80, meaning that there is no difference in the average pain scale between the pretest and posttest values. Alternatively, significant correlation coefficient test results of 0.907 with a significance value of 0.096 have no relationship between the pre-test and post-test.

While table 5 shows the descriptive mean value of the pretest and post-test, an average pretest of 3.60 < post-test of 6.20, which means that there is an average difference between the scale of labor pain in the first stage of the pretest and post-test. The results of the correlation coefficient test were 0.821 with a sig. 0.004, which means a relation between the pre-test and post-test.From the results of

the paired different analysis, the value of Sig. (2-tailed) p-value is <0.001, meaning that it has the effect of a warm compress and breathing technique in reducing the first-stage pain scale.

Results of Independent Sample T-Test Pain Scale

Table 6. Analysis of the effect of treatment between the control group and experimental group in the first stage pain scale

		Levene's test for equality of variances		t-test for equality of means					
		F	*Sig.*	t	df	Sig. (2-tailed)	Mean Difference	95% CI of the difference	
								Lower	Upper
Pos test	*Equal variances assumed*	3.686	*.071*	-4.476	18	*.000*	3.20000	-1.69801	-4.70199
	Equal variances not assumed			-4.476	14.847	.000	3.20000	-1,67481	-4,72519

Data processed by SPSS 2.5, 2022

Based on Table 6, that the data variance is homogeneous, then the equal variances assumed column is selected, and in the t-test for equality of means row, the value of t = -4.476, df = 18, and Sig. (2-tailed) is <0.001, and that is -4,476 > -2,042. In other words, the lower and upper values are each negative, then Ho is rejected, and Ha is accepted. At 95% CI, it was proven that there was a difference in the scale of labor pain in the first stage of the experimental group, which decreased more than in the control group, which was given a warm compress without applying breathing techniques.

Results of Pearson Product Moment Correlation between Stage I Pain Scale and Stage II Duration

Table 7 describes the results of the non-parametric statistical analysis. Data obtained from both variables in two groups (N = 20), as follows:

Table 7. Correlation analysis between pain scale of stage I and duration of stage II

Variable	Results	Pain Scale of Stage I (X)	Duration of Stage II (Y)
Pain Scale of Stage I (X)	Pearson Correlation	1	.460*
	Sig. (2-tailed)		.041
	N	20	20
Duration of Stage II (Y)	Pearson Correlation	.460*	1
	Sig. (2-tailed)	.041	
	N	20	20

*. Correlation is significant at the 0.05 level (2-tailed)

From Table 7, the Sig. (2-tailed) value is 0.041 <0.05, and the Pearson correlation r count is 0.460 > r table 0.444, which means that have a correlation between the stage I pain scale variable (X) and the stage II duration variable (Y), with a degree of correlation in the moderate category (0.41 – 0.60) or positive correlation.

4. Discussions

Pain is joint in labor. However, if it is not adequately adapted, it will cause other disturbances, namely increased anxiety or worry and even excessive fear, which results in vasoconstriction and causes blood flow from mother to fetus to decrease. This even reduces uterine contractions, decreases uteroplacental circulation, reduces blood and oxygen flow to the uterus, and causes uterine ischemia, increasing pain impulses(Smith et al., 2018). The presence of labor pain is necessary for obtaining uterine muscle contractions. These contractions are part of opening the birth canal and removing the fetus. The pain usually appears in the abdomen, back, or around the thighs and pelvis (Türkmen & Oran, 2021). Stage II of labor is a period full of risks to the fetus; stage II is the most decisive. The expulsion period, when the baby's head stretches the vaginal tissue, describes women's feelings in

labor when the opening is complete. The baby is ready to be born with contractions of the uterine muscles and natural pressing urges. One of the physiological changes in the second stage is the descent of the fetal head until the head is on the pelvic floor, the perineum protrudes, and the vulva opens (Gunadi et al., 2022). The time limit for the second stage of labor, which is 120 minutes or 2 hours in primiparas, is 60 minutes.

Several techniques developed for women in labor in the second stage aim to shorten the duration of labor and minimise complications that occur in the mother and fetus. In this study, non-pharmacological methods, including warm compresses and breathing techniques, were used to adapt pain problems that can cause psychological problems for mothers during labor. This is in line with research by (Khotimah & Lintang, 2022), where the treatment was carried out using a bladder filled with warm water at a temperature of 36º-40ºC then placing a warm compress on the women's lower back in a left oblique position. Then giving this warm compress can be done for 20-30 minutes (Astuti et al., 2020)

Furthermore, adding breathing techniques along with warm compresses is one of the innovations aimed at managing breath relaxation when warm compresses are carried out. This benefits adaptation to dealing with anxiety and fatigue when dealing with painful contractions. The women who were given a combination of these techniques usually experienced less pain than those who only received a single technique (Farahmand et al., 2020). This study is also relevant to implementing breathing reflex training by Fernand Lamaze, namely focusing on determining specific breathing patterns or concentration points used to block pain messages to the brain (Yuksel et al., 2017). Other research shows that breathing reduces pain intensity from severe to mild. Then, to tolerate pain, controlled breathing relaxation can also increase their ability to overcome and control anxiety and stress due to pain (Astuti & Bangsawan, 2019; Aritonant, 2017; Susanti, 2014). Giving warm compresses alone also affects pain control (Helti & Nila Hayati, 2022; Suyani, 2020), but the combination of warm compresses and breathing techniques has a faster reduction than a single administration of warm compresses (Sayed & Allah, 2019; Biswan et al., 2017). The findings of previous studies did not show a relationship. However, changes in the second stage were faster in the two parity categories, more related to the characteristics of the respondents (Pujiarti, 2022) and regular pregnancy exercise (Aslamiyah et al., 2021).

5. Conclusion

Based on the results of this study, the use of warm compresses combined with breathing techniques shows the effect of reducing the scale of labor pain in the active phase of stage I. Breathing exercises by inhaling and exhaling deeply make it easier for partus women to manage feelings of anxiety caused by pain, so that partus women are also more relaxed in dealing with the duration of time leading to the second stage of labor. We suggest future studies to analyse more deeply the side effects of non-pharmacological therapy on birth outcomes.

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