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The Effect of Cold Compresses on Reducing Labor Pain in the Active Phase

Henik Istikhomah[1] , Dewi Susilowati[2], Rosalinna[3], Mahanani Kusumawardani[4]
[1,2,3,4]Poltekkes Kemenkes Surakarta, Jl Kesatrian No 2 PO BOX 180 Danguran klaten Selatan klaten jawa tengah, Indonesia.
Email: henik.istikhomah7@poltekkes-solo.ac.id[1], *dewialis2004@gmail.com[2], rosalinasetianto@gamil.com[3], mahaelfreda@gmail.com[4]*

ABSTRACT

One effort to help reduce labor pain in the active phase 1 is by applying cold compresses. This study aims to determine the effect of cold compresses on reducing labor pain in the active phase 1 at Dr. Oen Solo Baru. This type of research is quantitative research with a quasy experimental design. The research design uses pre and posttest group design. The research sample was 30 mothers during the first active phase of labor in the maternity ward of Dr. Oen Solo Baru. The research instrument was a cold compress given for 20 minutes and a pain intensity measuring instrument according to Numerical Rating Scale (NRS). Data analysis used the Wilcoxon test. The average level of labor pain during the first active phase before being given a cold compress for 20 minutes was 6.83. The average pain level during labor during the first active phase after being given cold compresses decreased to 5.33. The Wilcoxon test results obtained obtained p-value = 0.000. There is an effect of cold compresses on reducing labor pain during the first active phase with p = 0.000. Cold compresses can be an alternative in reducing labor pain.

Keywords: ***Active phase, cold compresses, labor pain***

ABSTRAK

Salah satu upaya untuk membantu mengurangi nyeri persalinan pada fase aktif 1 adalah dengan menerapkan kompres dingin. Penelitian ini bertujuan untuk mengetahui pengaruh kompres dingin terhadap penurunan nyeri persalinan pada fase aktif 1 di RSUD Dr. Oen Solo Baru. Jenis penelitian ini adalah penelitian kuantitatif dengan desain eksperimental quasy. Desain penelitian menggunakan desain kelompok pre dan posttest. Sampel penelitian adalah 30 ibu selama fase aktif pertama persalinan di bangsal bersalin Dr. Oen Solo Baru. Instrumen penelitian adalah kompres dingin yang diberikan selama 20 menit dan alat ukur intensitas nyeri sesuai Numerical Rating Scale (NRS). Analisis data menggunakan uji Wilcoxon. Tingkat rata-rata nyeri persalinan selama fase aktif pertama sebelum diberi kompres dingin selama 20 menit adalah 6,83. Tingkat nyeri rata-rata selama persalinan selama fase aktif pertama setelah diberi kompres dingin menurun menjadi 5,33. Hasil uji Wilcoxon diperoleh diperoleh p-value = 0,000. Ada efek kompres dingin pada pengurangan nyeri persalinan selama fase aktif pertama dengan p = 0,000. Kompres dingin bisa menjadi alternatif dalam mengurangi nyeri persalinan.

Kata Kunci: Fase aktif, kompres dingin, nyeri persalinan

*Henik Istikomah, Poltekkes Kemenkes Surakarta, Jalan Kesatriaan No 2, Danguran, Klaten Selatan, 57425 henik.istikhomah7@poltekkes-solo.ac.id,

INTRODUCTION

Childbirth is a series of processes that end with the expulsion of the products of conception by the mother which begins with true labor contractions, which are marked by progressive changes in the cervix, and ends with the birth of the placenta (King et al., 2019). Most deliveries (90%) are accompanied by pain. Meanwhile, pain in labor is a physiological process (Utami & Putri, 2020). Factors that influence labor pain include psychological and physiological factors. The physiological factor in question is contraction (Du et al., 2022).

Pain in labor is a manifestation of the contraction (shortening) of the uterine muscles. It is these contractions that cause pain in the waist, abdominal area and radiates towards the thighs. Labor pain is caused by stretching of the lower uterine and cervical segments and the presence of uterine muscle ischemia. Pain during labor occupies a score of 30 - 40 out of 50 score set by Wall and Mellzack. This score is higher than clinical pain syndromes such as chronic back pain, pain due to cancer, leg pain and others (Lim et al., 2021).

Pain is a normal thing that occurs and is an inseparable part of labor, around 80% - 95% of women giving birth report intense pain during labor due to cervical dilatation and decreased baby presentation (Stjernholm et al., 2021). Labor pain is a cause of prolonged labor, there are 5% of the causes of maternal death in Indonesia (Dewi et al., 2020).

Central Java province health profile, Central Java province MMR of 88.05 per 100,000 live births and IMR 8.9 per 1000 live births. The incidence of maternal death during childbirth (60%), during pregnancy (26.32%), and during childbirth (13.68%). Data from the Sukoharjo Regency Health Office stated that there were 4 cases of MMR in 2018 and 2019 respectively (Central Java Health Office, 2018).

Many methods are offered to reduce labor pain, both pharmacological (using drugs) and non-pharmacological (traditionally) methods. If possible non-pharmacological therapy options for the management of pain in labor should be considered before using analgesic drugs. Non-pharmacological methods have non-invasive, simple, effective, and no harmful effects compared to pharmacological methods and will also provide satisfaction and a pleasurable experience for the mother in labor (de Souza Melo et al., 2020).

Cold compress therapy is a non-pharmacological method to treat pain. This therapy needs to be given to all mothers giving birth as a pain therapy intervention

in health services (Handayani & Sukini, 2020) . The cold compress will block pain in the uterus, cervix and upper part of the vagina. However, the pelvic muscles can still make rotational movements of the baby's head to exit through the birth canal (Arfianti, 2018).

Research (Materrnity, 2019) explains that the use of cold compresses can reduce labor pain. The average pain before cold compresses using 6.73 Visual Analog Scale (VAS) was 6.73, after cold compress therapy decreased significantly to 2.58. Another study was conducted by Fadmiyanor C et al., (2018) regarding the differences in warm compresses and cold compresses on the intensity of labor pain in the active phase of the first stage of labour. The results showed a decrease in the intensity of labor pain during the first active phase with a p value = 0.023. The use of early compression has not been widely implemented in standard care processes.

The results of the author's preliminary study on May 3, 2021 at Dr. Hospital. Oen Solo Baru by observing 4 patients who were about to give birth, all respondents said pain during labor where 3 people with a scale of 8 and 1 person with a scale of 7. Observations made by researchers to health workers, that the mother was only asked to take a deep breath and then exhale through the nose, advising the mother to be patient and advising her husband / family to be by the side of the birthing mother but not providing non-pharmacological therapy such as cold compress therapy to help reduce labor pain during the active phase I, while based on theory and other research it is known that there is an effect between cold compresses for labor pain.

This study aims to determine the effect of cold compresses on reducing labor pain during the first active phase at Dr. Oen Solo Baru

METHODS

This type of research is a quantitative research with a quasi-experimental design. This type of research is used to prove the existence of a causal relationship in which the independent variables (variables that influence) and the dependent variable (are influenced) (Sugiyono, 2016).

The research design used pre and posttest group design. The observational study of labor pain intensity in the first active phase was carried out 2 times, namely before and after being given cold compresses.

This research was conducted at Dr. Hospital. Oen Solo Baru. The research was conducted in July 2021. The population in this study were all active phase I mothers in the maternity ward of Dr. Oen Solo Baru. Based on data from a preliminary

study that started from January to March 2021, the average number of spontaneous deliveries was 163 people. In this study, researchers took a sample of 30 people. The sampling technique in this study was Accidental Sampling, which was carried out by taking cases or respondents who happened to exist or were available somewhere according to the research context (Notoatmodjo, 2018). Inclusion criteria in the study: vaginal delivery, primigravida and multigravida and active phase I parturition. Exclusion criteria in this study were: Delivery room patients with imminent prematurity, anterpartum hemorrhage and patients with elective caesarean sections.

The questionnaire sheet is based on a pain intensity measuring instrument according to the Numeric Rating Scale (Marwiyah & Pusporini, 2017).

The researcher determined the respondents according to the inclusion criteria, and would give informed consent to mothers-in-partu with spontaneous delivery according to respondents who happened to be available or available somewhere according to the research context. Researchers first observed the pain scale for 10 minutes before applying cold compresses during the first stage of the active phase. Respondents were given cold compresses with ice temperatures below 20 °C for 20 minutes during the first stage of the active phase. After 20 minutes, and the ice has melted, the ice pack is replaced with a new one. After completing the process of giving cold compresses, the second stage of pain scale observation or posttest is carried out. Pain scale data both pre-test and post-test were recorded in the observation sheet and used as main research data. This study used the Wilcoxon test. The significance value of the p-value <0.05 means that the data is not normally distributed (Sugiyono, 2016).

RESULTS AND DISCUSSIONS

Results

Data was taken in July 2021. The researcher approached potential respondents by explaining the aims and benefits of the research and explaining the research procedures. Prospective respondents who have received the researcher's explanation, then prospective respondents who are willing to become respondents sign informed consent and respondents are given an open questionnaire regarding the characteristics of the respondents (such as age, parity, last education and employment status).

Researchers assessed labor pain during the first active phase before applying cold compresses for 10 minutes. Cold compress intervention for 20 minutes. Researchers assessed labor pain in the active phase of

the first stage after cold compresses were applied and recorded the results of the study on the observation sheet.

Table 1. Frequency Distribution of Respondents Based on Age, Parity, Education and Occupational Characteristics Pain Level in Labor During Active Phase I

Characteristics	Labor Pain During The Active Phase I			
	Pretest		Posttest	
	Moderate pain	Severe pain	Moderate pain	Severe pain
Age				
20-35 years	8 (26.70%)	22 (73.30%)	30 (100)	0
Parity				
Primipara	6 (20%)	13 (43.30%)	19 (63.30%)	0
Multipara	2 (6.70%)	9 (30%)	11 (36.70%)	0
Education				
Base	0	0	0	0
Intermediate	3(10%)	9 (30%)	12 (40%)	0
Tall	5 (16.70%)	13 (43.30%)	18 (60%)	0
Work				
Work	6 (20%)	19 (63.30%)	25 (83,30)	0
IRT	2 (6.70%)	3 (10%)	5 (16.70%)	0

Sumber: Primer data (2021)

The data in table 1 shows 30 respondents aged between 20-35 years (100%). Pain in the first stage of the active phase during the pre test was mostly in the category of severe pain as many as 22 people (73.30%), and the post test was 30 people with moderate pain category (100%).

Data in table 1 shows that during the pre-test with primipara parity, 13 people (43.30%) experienced severe pain and 6 people (20%) moderate pain, while multiparas experienced 9 people (30%) severe pain and moderate pain. as many as 2 people (6.70%). A total of 30 respondents (100%) consisting of 19 primiparas (63.30%) and 11 multiparas (36.70%) experienced labor pain during the first active phase of the moderate category.

The data in table 1 shows that the majority of respondents are highly educated. During the pre test, respondents with secondary education were 12 people (40%), experienced severe pain 9 people (30%) and moderate pain 3 people (10%) while the level of higher education had severe pain 13 people (43.30%) and moderate pain 5 people (16.70%). During the post test, 30 people (100%) experienced moderate pain with 12 people (40%) secondary education level and 18 people (60%) higher education level.

Data in table 1 shows 25 respondents (83.30%) are working mothers, where during the pre test 19 people (63.30%) experienced severe pain and 6 people (20%) experienced moderate pain. While the IRT was 5 people (16.70%), consisting

of 3 people (10%) experiencing severe pain and 2 people (6.70%) experiencing moderate pain. And during the post test all respondents experienced moderate pain, of which 25 people (83.30%) were working mothers and 5 people (16.70%) were housewives

Table 2 Description of Pain Levels In Partu During I Active Phase Before and After Compress D Wants for 20 Minutes

Inpartu Pain When 1 Active Phase	Moderate pain (person)	Severe pain (person)	Mean ±SD	Median	Mode	Min-max
Pre-test	8	22	6.83±0.69	7	7	5-8
Post test	30	0	5.33±0.75	5,5	6	4-6

Sumber:Primer data (2021)

Based on the data in table 2 , it shows that 8 respondents during the pre-test experienced labor pain in the active phase 1 of the moderate category, 22 respondents with labor pain in the 1st active phase of the active phase in the heavy category. All respondents experienced labor pain during the first active phase of the moderate category after being given cold compress therapy (post test).

The average value of the first stage of labor pain before being given cold compresses for 20 minutes was 6.83 with a standard deviation of 0.69. The median value is 7 and the mode is 7. The lowest pain is 5 and the highest is 8. The average level of labor pain in the 1st stage after being given a cold compress for 20 minutes decreased to 5.33 with a standard deviation of 0.75 with a median value of 5.5 and mode is 6. The lowest pain is 4 and the highest is 6.

Table 3 Test Results of the Effect of Cold Compresses on Reducing Intravenous Pain in the Active Phase 1

Inpartu Pain When 1 Active Phase	*Mean Rank*	*Z*	*p.s*
Pretest Posttest	15.50	-4,930	0.000

Wilcoxon test, it was known that the value of Z = -4.930 with a significance of p = 0.000 (p <0.05) , so it was concluded that there was an effect of cold compresses on reducing labor pain in the first active phase.

Discussion

1. Characteristics of respondents

Age

Based on the results of research on the age characteristics of the respondents, it is known that all respondents totaled 30 people aged between 20-35 years (100%). The research data showed that during the pre-test, the majority experienced pain in

the severe category, and during the post-test, the majority experienced impartu pain during the active phase of the moderate category.

According to Syaifuddin (2017) the age of 20-35 years is the right age for pregnancy, childbirth and childbirth so that they are psychologically and physically ready to reduce anxiety that causes labor pain. women of reproductive age experience labor pain that is not as severe as that felt by women of old age because women giving birth at reproductive age have sufficient tolerance for labor pain and it is related to the mother's energy and the condition and function of the reproductive organs. The results of Adam & Umboh's research (2015), explained that 90% of respondents aged between 20-35 years in the study applied acupressure at the SP 6 and BL 67 meridian points for the duration of the first stage of labor at the Halmahera Health Center.

The results of this study obtained data that the older the respondent's age was not directly proportional to the level of pain impartu during the active phase I, where there were mothers who were younger had a higher pain score, on the other hand other respondents who were younger experienced pain that was not high, this is occurs because pain is subjective.

Parity

The frequency distribution of respondents based on parity showed that 19 people (63.3%) were primiparas. Primiparous and multipara respondents during the pre-test mostly experienced labor pain during the first active phase in the heavy category. Respondents experienced a decrease in pain levels during the post test, where all respondents had moderate pain levels.

Adam & Umboh (2015) stated that the parity of primiparous mothers had stronger uterine contractions than multiparous mothers. Multiparous mothers who have previous childbirth experience will adapt more easily to pain compared to mothers who have never had experience, in this case, primiparous mothers. The results of a different study were conducted by Maryuni (2019) which stated that 62% of respondents were mothers with multiparas in research on the relationship between age, parity, education, employment and labor pain at the Jatinegara District Health Center, East Jakarta. There is no relationship between parity, education, work and labor pain.

Based on the results of this study, that for both primiparous and multiparous respondents, the level of active phase I labor pain before being given cold compress therapy, the level of labor pain was in the severe category, and after being

given cold compress therapy, labor pain in the active phase I stage was moderate.

Education

Based on the results of research at the level of education, the majority of respondents with higher education were 18 people (60%). The majority of respondents with secondary and higher education during the pretest experienced pain in the severe category (73.30%). All respondents experienced a decrease in labor pain during the first active phase of the moderate category.

Rachmawati (2019) argues that the level of education in general affects a person's ability to receive and understand information about conditions and the surrounding environment, thus influencing the perspective and choice of coping in solving problems. Education is one of the factors that influence knowledge. The respondent's education influences the acceptance of pain perceptions which is also associated with the acceptance of useful knowledge and information which then influences anxiety and perceptions of pain (Magfuroh, 2012). Reaction to pain is a very individual response. This reaction depends on the personality, emotional state and level of understanding of the patient, cultural background, family and education, and previous experience. Education will be able to have an impact on mother's knowledge about childbirth including labor pain and how to manage pain (Afritayeni, 2017). The results of Maryuni's research (2019) stated that 36% of pregnant women respondents had secondary education and experienced active phase 1 labor pain in the category of severe pain.

Work

The results of the research on the employment status data of the respondents were mostly working mothers 83.3%. Most of the respondents, both working and not working during the pretest, experienced labor pain in the first active phase of the heavy category (73.30%). all respondents experienced labor pain during the first active phase of the moderate category after being given cold compress therapy for 20 minutes.

Syaifuddin (2017), argues that work is a busy life that must be done, especially to support his life and family life. Someone who has an important job and requires activity will interfere with pregnancy. Pregnant women who work can cause physical and mental fatigue, resulting in increased pain, including during childbirth. The results of Rohani's research (2020) stated that 60% of respondents were housewives in research on the effect of

massage effleurage on reducing the level of labor pain in the first stage of labour. The results of this study stated that massage effleurage had an effect on reducing the level of labor pain in the first stage of the active phase

In this study, work was not related to the level of labor pain in the first active phase, this can be seen from the employment status of the respondents both working and not working, having almost the same level of labor pain in the first active phase both before and after the intervention.

Pain in labor in the first stage of the active phase before and after cold compresses for 20 minutes

Based on the results of research on the level of labor pain in the first stage before being given cold compress therapy for 20 minutes, it is known that the average is 6.83 or rounded up to a score of 7 (severe pain). According to King et al (2019), during the first stage of labor, pain will appear due to contractions of the uterine muscles, hypoxia of the contracting muscles, cervical stretching, uterine corpus ischemia, and stretching of the lower uterine segment. Through spinal nerve segments T11-12 and lower thoracic accessory nerves and upper lumbar sympathetic nerves pain receptors will be transmitted. This pain stimulus runs from the periphery through the spinal cord, brain stem, thalamus and cerebral cortex. As labor progresses, the intensity of each contraction increases, resulting in greater pain intensity (Nisa et al., 2018) .

Based on the results of the study, that most of the respondents experienced labor pain during the first active phase before being given a cold compress with an average value of 7 or in the category of severe pain. This severe pain is perceived that the respondent feels pain with, feels very disturbing or unbearable. Respondents often had to wince, scream and even scream as an expression of unbearable pain.

One of the efforts to reduce the scale of labor pain can be done by compression therapy (Materrnity, 2019). Mothers who are in the labor phase will complain of feeling warm or hot so by giving cold therapy during labor it will relax the mother and decrease pain (Pratama, 2021). The physiological effect of cold compresses is that they are vasoconstrictive, make the area numb, slow down the speed of nerve conduction so that it slows down the flow of pain impulses, and has a local anesthetic effect (Sugianti & Joeliatin, 2019).

Data on the posttest after the respondents were given cold compresses for 20 minutes found that the average labor pain

decreased by 5.33 or in the moderate pain category. The interpretation of moderate pain is that the respondent's face is still seen occasionally grimacing and holding his stomach while squirming, but there is sufficient effort to hold it back (Thanasomtopchanamon et al., 2022). Research by Ulfa & Monica (2020) stated that the average intensity of labor pain before the cold compress intervention was 6.53 and after the intervention decreased to 4.6 in a study of the effect of cold compresses on reducing labor pain in the first stage of labor in women giving birth.

The Effect of Cold Compresses on Reducing Intravenous Pain in the Active Phase I

Based on the results of the Wilcoxon test, it was known that the value of Z = -4.858 with p = 0.000 (p<0.05), so it was concluded that there was an effect of cold compresses on reducing labor pain in the active phase I phase. . The results of the Materrnity study (2019) The role of health workers in providing pesalinan care is by implementing a reduction in labor pain. Data obtained from Pertamina Bintang Amin Hospital in Bandar Lampung City in 2015 had a normal delivery of 840 births experiencing complications as many as 112 (13.3%), in 2016 until November there were 962 births and 154 complications (16,0%) cases among these complications have contracted uterine contractions that are not well coordinated. It is known that the effect of cold hot compresses on labor pain scale in Pertamina Bintang Amin Hospital in Bandar Lampung City in 2018. This type of quantitative research is a quasi-experimental or quasi-experimental research design with two group pretest-posttest. The study population of all mothers in the first stage of labor in Pertamina Bintang Amin Hospital in 2018, a sample of 30 people, consisting of 15 control groups and 15 experimental groups, purposive sampling techniques. Univariate data analysis and bivariate t test (t-test). The results showed that the average labor pain before being given Cold Hot Compress was 6.93 with a standard deviation of 0.799. The average labor pain after being given Cold Hot Compress is 5.27 with a standard deviation of 1,100. There are differences in pain intensity in the experimental group and the control group where p-value = 0.004 (<α 0.05) difference in mean value of 1.6 points was obtained. It is recommended to provide information about pain reduction techniques such as cold hot compress technique (Materrnity, 2019). Cold hot compresses can reduce pain during labor in the hospital Pertamina Bintang Amin

also strengthen previous research conducted by which stated that hot and cold compresses can reduce pain in the first stage of labor at Pertamina Bintang Amin Hospital with a p value <0.005.

According to Bonapace et al., (2018) , pain during labor occurs due to the opening of the cervix. First, pain at the time of opening is mainly caused by the opening of the cervix, for example, stretching smooth muscle is a sufficient stimulus to cause pain. There is a close relationship between the size of the opening of the cervix and the intensity of pain (the more it opens, the more it hurts), and between the onset of pain and the onset of uterine contractions (pain is felt ± 15-30 seconds after the start of the contraction). Second, uterine contraction and stretching (Syaiful et al., 2020) .

Stimulation of pain is caused by pressure on nerve endings when the uterus contracts and stretches the lower uterus. The third is stretching the lower birth canal. Stretching of the birth canal by the fetal head at the end of the opening period and during the expulsion period causes the most intense pain in the labor process (Nisa et al., 2018). Obuna & Umeora, (2014) explained based on the gate-control theory which explains persuasively the psychological aspects of pain, the physiology of pain transmission and the effects of modulation. This theory emphasizes the development of pain control mechanisms within the body and provides an acceptable explanation for non-interventive pain control approaches including psychological methods, back massage and transcutaneous electrical nerve stimulations.

During the first stage of labor, circulating catecholamine levels are high which causes a shift in blood flow from the uterus and placenta to other organs. Switching blood flow from the uterus and placenta slows uterine contractions and reduces the supply of oxygen to the fetus (Nisa et al., 2018) . Labor pain can cause a physiological response that reduces the ability of the uterus to contract thereby prolonging the time of delivery. Slow progress of labor or no progress is one of the most worrisome, complicated and unexpected complications of childbirth resulting in trauma to the mother and fetus (Benfield et al., 2014).

(Mohamed Abdelglil et al., 2022) states that in the first stage of labor, labor will progress faster if the birthing mother feels relaxed. Mothers in labor will feel relaxed, if the pain they experience is not disturbing. One non-pharmacological method that helps reduce pain response is the cold compress method. Compress will cause vasoconstriction to reduce blood

flow to the injured area of the body, prevent the formation of edema, reduce inflammation. Cold will relieve pain by numbing the area, slowing the flow of pain impulses, reducing bleeding and increasing the pain threshold, decreasing muscle tension which is useful for pain relief. This action encourages the release of tension and creates a feeling of well-being that helps labor progress. The goal in treating pain is to reduce pain as much as possible with the fewest side effects (Susiloningtyas et al., 2019) .

According to researchers, cold compress treatment can reduce labor pain experienced by mothers who are about to give birth. At opening 4 to 10 the pain is felt to be more severe. This pain originates from the lower abdomen as a result of the opening and thinning of the cervix and then the pain spreads to the lower back and down to the thighs caused by the pressure of the fetal head on the mother's spine. This pain is felt only during contractions and will decrease in the intervals between contractions. By placing ice gel on the lumbosacral part it can cause several physiological effects. Cold therapy produces an analgesic effect by slowing the speed of nerve conduction so that fewer pain impulses reach the brain. Another mechanism at work is that the perception of cold becomes dominant and reduces the perception of pain, thus helping the labor progress.

CONCLUSION

The conclusion of this study is that there is an effect of cold compresses on reducing labor pain during the first active phase at Dr. Oen Solo Baru with p = 0.000. Cold compresses are one of the non-pharmacotherapy measures in reducing labor pain. The results of this study indicate that cold compresses are able to reduce labor pain during the first active phase in women giving birth, so that cold compress therapy can be applied to midwives in helping mothers in labor to reduce labor pain during the first active phase.

Midwives can provide cold compress therapy to overcome the pain response during the first active phase. Midwives can provide counseling so that mothers prepare ice bags and ice cubes into the delivery bag.

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