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OPTIMIZATION OF COLD COMPRESS IN LABOR PAIN MANAGEMENT

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ABSTRAK : OPTIMASI KOMPRES DINGIN DALAM PENANGANAN NYERI PERSALINAN

Nyeri persalinan merupakan kondisi fisiologis. Data dari Wilayah Kerja Puskesmas Rawat Inap Sidomulyo menunjukkan bahwa dari 15 ibu bersalin, 13 orang (86,7%) mengalami nyeri disertai kecemasan, dengan tingkat nyeri sedang 6, dan 2 orang (13,3%) mengalami nyeri ringan dengan tingkat nyeri 3. Penelitian ini bertujuan untuk mengkaji optimalisasi pemberian kompres dingin untuk penanganan nyeri persalinan di Wilayah Kerja Puskesmas Rawat Inap Sidomulyo, Lampung Selatan, tahun 2024.

Penelitian ini merupakan penelitian kuantitatif dengan desain praeksperimental menggunakan pendekatan one group pretest-posttest. Populasi dan sampel penelitian adalah 30 orang ibu bersalin di Wilayah Kerja Puskesmas Rawat Inap Sidomulyo, dengan pengambilan data dilakukan pada bulan Februari sampai dengan Juli 2024. Pengambilan sampel dilakukan dengan metode purposive sampling. Analisis data meliputi analisis univariat dan bivariat dengan uji t dependen.

Rata-rata skor nyeri persalinan sebelum dilakukan kompres dingin adalah 7,50, yang menunjukkan bahwa responden secara umum mengalami nyeri berat. Setelah dilakukan pemberian kompres dingin, skor nyeri rata-rata menurun menjadi 6,13 yang berarti responden merasakan nyeri berat. Hasil uji statistik didapatkan nilai p sebesar 0,000 yang menunjukkan bahwa optimalisasi kompres dingin efektif dalam mengatasi nyeri persalinan di Wilayah Kerja Puskesmas Rawat Inap Sidomulyo, Lampung Selatan tahun 2024. Disarankan agar penggunaan kompres dingin dilanjutkan dan disertai dengan intervensi lain seperti sugesti pada trimester ketiga, pijat punggung, aromaterapi lavender, terapi musik, dan lain-lain.

Kata Kunci : Kompres dingin, Nyeri, Persalinan

ABSTRACT

Labor pain is a physiological condition. Data from the Working Area of Sidomulyo Inpatient Primary Health Care show that out of 15 laboring mothers, 13 (86.7%) experienced pain with anxiety, with a moderate pain level of 6, and 2 (13.3%) experienced mild pain with a level of 3. This study aims to assess the optimization of cold compresses for managing labor pain in the Working Area of Sidomulyo Inpatient Primary Health Care, South Lampung, in 2024.

This is a quantitative study with a pre-experimental design using a one group pretest-posttest approach. The population and sample comprised 30 laboring mothers from the Working Area of Sidomulyo Inpatient Primary Health Care, with data collection conducted from February to July 2024. Sampling was conducted using purposive sampling. Data analysis included univariate and bivariate analysis using dependent t-tests.

The average labor pain score before administering the cold compress was 7.50, indicating that respondents generally experienced severe pain. After applying the cold compress, the average pain score reduced to 6.13, suggesting that respondents experienced heavy pain. Statistical testing revealed a p-value of 0.000, indicating that the cold compress optimization effectively alleviated labor pain in the Working Area of Sidomulyo Inpatient Primary Health Care, South Lampung, in 2024. It is recommended that the use of cold compresses continue and be complemented with other interventions, such as suggestions during the third trimester, back massage, lavender aromatherapy, music therapy, and others.

Keywords : Cold compress, Pain, Labor

INTRODUCTION

Labor is a natural process that will be experienced by every pregnant woman. In this process, the cervix stretches and widens as a result of contractions of the uterine muscles to push the baby out. Most mothers begin to feel pain or labor pain in the first active phase, in this phase the mother feels severe pain because the uterus contracts more and more often to expel the results of conception (Sukarni., Margareth. 2019).

Labor pain is a physiological condition. This condition is an unpleasant feeling that occurs during the labor process. Labor pain begins to arise in the first latent phase and active phase. The longer the pain felt, the stronger it will be, the peak of pain occurs in the active phase, where the complete opening is up to 10cm. The intensity of pain during labor will affect the psychological condition of the mother, the labor process and the well-being of the fetus (Perry., Potter; Yana., Utami, 2016).

According to WHO Pain during labor and delivery is a unique and most severe pain event in a woman's life. More than 90% of mothers have experienced tension and stress during labor. In the Netherlands, it was reported that 54.6% of women who gave birth lost control of their labor pain. A study conducted in Sweden showed that 41% of participants reported that labor pain was the worst experience they had. Pain stimulates the sympathetic nervous system, which causes increased heart rate, blood pressure, sweat production, and hyper endocrine function (Vidayawati, 2023).

In Indonesia, there is data on pregnant women who experience anxiety related to labor pain in facing labor, there are 107,000 people (28.7%). Murray reported that in Indonesia the incidence of labor pain in 2,700 mothers in labor was only 15% of labors that took place with mild pain, 35% with moderate pain, 30% with severe pain and 20% of labors were accompanied by very severe pain (Vidayawati, 2023).

In Lampung Province, the number of deliveries has increased from year to year, in 2021 there were 8,948 mothers facing childbirth, in 2022 there were 9,209 mothers facing childbirth, and in 2023 there were 10,824 mothers facing childbirth. (Health Office Profile of Lampung Health Office, 2023).

South Lampung Regency in 2023, the achievement of deliveries assisted by health workers at South Lampung Regency Health Facilities in 2022 was 98.00%, a decrease from 2021 of 99.00%. In 2022, there were 12 Health Centers that had achieved the target of 100% and the Health Center with the lowest achievement was the Kalianda Health Center at 81.52%. This is because unbearable labor pain makes mothers prefer to give birth in large hospitals with minimal pain delivery methods (South Lampung Provincial Health Office, 2022).

As a comparison, the Candipuro Inpatient Health Center UPTD, South Lampung Regency in 2023 obtained data on 125 deliveries handled, and all patients experienced labor pain (Candipuro Health Center 2023).

In accordance with previous research conducted by Widiawati, I., & Legiati, T. (2018). Understanding labor pain in primipara and multipara. BIMTAS Journal: Umtas Midwifery Journal, 2(1), 42-48. The results of the study showed that severe pain was most often felt by primipara, which was 63% higher than multipara (37%). The results of the chi-square analysis showed a significant relationship between parity and pain in the first stage of labor, p value = 0.04 (<0.05)

Pain in the first stage is caused by stretching of the perineum, pulling of the peritoneum, the force that pushes the fetus out and pressure from the lower urinary tract and pelvis. Pain stimuli are transmitted through the parasympathetic nerves from the perineum tissue. The pain that arises is felt in the pelvic floor and groin or thigh areas. Labor pain begins to occur in the first stage of the latent phase, namely cervical dilation up to 3 cm and the active phase, namely cervical dilation from 4 cm to 10 cm. In the active phase, there is an increase in the intensity and frequency of contractions, so that the peak pain response is in this phase (Vadayawati, 2023). Labor pain can stimulate the release of chemical mediators such as prostaglandins, leukotrienes, thromboxane, histamine, bradykinin, substance P, and serotonin, which will cause stress that causes the secretion of hormones such as catecholamines and steroids with the result of vasoconstriction of blood vessels so that intestinal contractions weaken. Excessive secretion of these hormones will cause uteroplacental circulation disorders resulting in fetal hypoxia. From the results of the study, severe pain during the labor process causes mothers to experience psychological disorders, 87% postpartum blues which occurs from 2 weeks after delivery to 1 year, 10% Depression and 3% with Psychosis (Rejeki, 2021).

Labor pain management is one of the main goals of maternity care. The overall goal in pain treatment is to reduce pain as much as possible with the least possible side effects. Hot and cold compress therapy is one of the non-pharmacological

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methods to overcome pain. This therapy needs to be given to all mothers giving birth as one of the pain therapy interventions in health services, namely hospitals, health centers and maternity clinics. 6 Non-pharmacological methods are the most commonly used methods to reduce pain. This method has a very low risk, is cheap, simple, effective, has no adverse effects and can increase satisfaction during labor (Felina, 2022). The method for reducing labor pain in this study is compresses, which scientifically can reduce pain in labor without pharmacology. Not only for labor pain, but it can also overcome muscle injuries and pain. The use of compresses is easier and more practical through procedures without having to undergo training. Warm compresses are vasodilating which can increase local temperature on the skin thereby increasing circulation in the tissue for the process of reducing muscle spasms and reducing pain. Cold compresses are vasoconstrictive which are useful for reducing joint and muscle pain tension, local anesthesia reduces swelling, and cools the skin (Fadmiyor, 2018).

In accordance with research conducted by Wirda Tuljannah, P. (2018). Differences in Warm Compresses and Cold Compresses on the Intensity of Pain in the First Stage of Active Labor at the Taman Sari 1 Main Clinic, Pekanbaru City. The results of the study showed that the average pain intensity score before the warm compress intervention was 7.00 and after it was 5.50, while the average pain intensity score before the cold compress intervention was 7.10 and after it was 5.50. The results of the Mann Whitney test at a 95% confidence level showed that there was a difference in the intensity of pain in the first stage of active labor in mothers giving birth with warm compress therapy and cold compress therapy at the Taman Sari 1 Main Clinic, Pekanbaru City (p = 0.023).

Based on the results of a pre-survey in January 2024 in the Sidomulyo Inpatient Health Center Work Area to 15 mothers in labor, it was found that 13 mothers (86.7%) experienced pain to anxiety, moderate pain with a scale of 6, and 2 mothers (13.3%) experienced mild pain with a scale of 3.

RESEARCH METHODS

Type of quantitative research. With a pre-experimental research design with a one group pretest - posttest design approach. The population and sample were mothers in labor in the Sidomulyo Inpatient Health Center Work Area as many as 20 respondents in February to July 2024. The sampling technique in this study was purposive side. Univariate and bivariate data analysis used the Wilcoxon test. g in February to July 2024. Univariate and bivariate data analysis used the independent test

RESEARCH RESULTS

Characteristics of Respondents

Based on table. 1, it is known that the characteristics based on the highest percentage, the highest age is the non-risk age of 20-35 years 28 respondents (93.3%) the highest occupation is housewife as many as 22 respondents (73.3%) the highest education is high school as many as 18 respondents (60.0%), the highest parity is Primipara 19 respondents (63.3%), and the highest opening is at opening 7 as many as 11 respondents (36.7%).

Table 1
Characteristics of Respondents in the Work Area of the Sidomulyo Inpatient Health Center in 2024

Characteristics	Frequency	Percentage
Age		
Not at risk (20-35 years)	28	93,3
At risk (<20 and ≥35 years)	2	6,7
Employment		
Worker	3	10,0
Housewife	22	73,3
Civil Servant	1	3,3
Self-Employed	4	13,3
Education		
D3	1	3,3
S1	2	6,7
SMA	18	60,0
SMP	9	30,0
Parity		

Multipara	11	36,7
Primipara	19	63,3
Stag Of Cervics		
Stage 5	10	33,3
Stage 6	9	30,0
Stage 7	11	36,7

Univariate Analysis

Table 2
Average Labor Pain Before Being Given Cold Compresses in the Work Area of the Sidomulyo Inpatient Health Center in 2024

Pain	N	Mean	Min-Max	SD	SE
Pretes	30	7,50	6-9	0,974	0,178

Based on table 2 above, it can be seen that the average labor pain before being given a cold compress in the Sidomulyo Inpatient Health Center Work Area in 2024 had a mean value of 7.50, which means that the average respondent was in controlled severe pain.

Table 3
Average Labor Pain After Cold Compresses in the Sidomulyo Inpatient Health Center Work Area in 2024

Pain	N	Mean	Min-Max	SD	SE
Postes	30	6,13	5-7	0,730	0,133

Based on table 3 above, it can be seen that the average labor pain after being given a cold compress in the Sidomulyo Inpatient Health Center Work Area in 2024 with a mean value of 6.13, which means that the average respondent experienced a decrease to moderate pain.

Bivariate Analysis

From table. 4 it can be seen that the average labor pain before being given a cold compress in the Sidomulyo Inpatient Health Center Work Area in 2024 with a mean value of 7.50, which means that the average respondent was in controlled severe pain. After being given the intervention, it decreased with a mean value of 6.13, which means that the average respondent experienced a decrease to moderate pain. The results of the statistical test obtained a P-value = 0.000, there was optimization of cold compresses on labor pain in the Sidomulyo Inpatient Health Center Work Area, South Lampung Regency in 2024.

Table 4
Optimization of Cold Compresses for Labor Pain in the Work Area of the Sidomulyo Inpatient Health Center, South Lampung Regency in 2024

Variabel	N	Mean	Uji Beda Mean	SD	SE	P -Value
Pretest pain	30	7,50	1,367	0,974	0,178	0,000
Posttest pain	30	6,13		0,730	0,133	

DISCUSSION

Univariate Analysis

Average Labor Pain Before Being Given Cold Compresses in the Sidomulyo Inpatient Health Center Work Area in 2024

The average labor pain before being given cold compresses in the Sidomulyo Inpatient Health Center Work Area in 2024 with a mean value of 7.50, which means that the average respondent was in controlled severe pain.

These results are in line with the theory of Willian & Oxorn (2010) Pain is one of the natural defense mechanisms, namely a warning of danger. In pregnancy, pain attacks inform the mother that she is experiencing uterine contractions. Painless labor is a dangerous event such as silent coronary thrombosis. In normal labor, the pain comes and goes (intermittent). Pain attacks begin to be felt when the contractions reach their peak, and disappear after the uterus relaxes.

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These results are in line with research by Wirda Tuljannah, P. (2018). Differences Between Warm Compresses and Cold Compresses on the Intensity of Labor Pain in the First Active Phase at the Taman Sari 1 Main Clinic in Pekanbaru City. The results showed that the average pain intensity score before the warm compress intervention was 7.00 and after it was 5.50, while the average pain intensity score before the cold compress intervention was 7.10 and after it was 5.50. Several labor theories explain that the mechanism of labor is caused by biochemical changes, including an increase in the ratio of estrogen and progesterone hormone levels so that progesterone decreases, an increase in prostaglandin levels, an increase in oxytocin receptors in the myometrium, an increase in uterine volume resulting in ischemia in the uterine muscles and causing uteroplacental circulation disorders so that the placenta degenerates. In addition, the pressure of the baby's head helps dilate the cervix and perineum (Bobak, 2005; Rejeki, 2014)

According to researchers, the pain experienced by mothers in labor is caused by physiological reactions to labor, such as the baby continuing to push out through the uterus and continuing to put pressure on the cervix, and in this state the feeling of pain will be increasingly unbearable. The active phase of labor, namely the frequency and duration of uterine contractions generally increase (contractions are considered adequate if they occur three or more times within 10 minutes and last for 40 seconds or more), the cervix opens from 4 to 10 cm, usually at a speed of 1 cm or more per hour until complete opening (10 cm), there is a decrease in the lower part of the fetus. So it is very necessary to do therapy to reduce labor pain, one of which is by giving aromatherapy through inhalation which can stimulate the hypothalamus nerves to release endorphin hormones that can provide a sense of comfort.

According to researchers, the level of pain is influenced by age, gender, culture, meaning of pain, attention, anxiety, past experiences, coping patterns, family support. from the research results the range of pain obtained is 7.5 This means that labor pain in the first stage of the active phase of the maximum dilation period has a range of pain scales from troublesome to severe pain. Labor pain that occurs in respondents is an unpleasant feeling which is an individual response that accompanies the labor process. Labor pain is caused by uterine muscle contractions, pelvic muscle tension and psychological conditions. These contractions cause the cervix to open so that labor occurs. Labor pain is a physiological thing that occurs in mothers who are going to give birth because it will release the results of conception, but this physiological thing will become pathological if the mother in labor is unable to anticipate the labor process that will take place.

Average Labor Pain After Being Given Cold Compresses in the Work Area of the Sidomulyo Inpatient Health Center in 2024

The average labor pain after being given cold compresses in the work area of the Sidomulyo inpatient health center in 2024, with a mean value of 6.13, which means that the average respondent experienced a decrease to moderate pain.

These results are in line with research by Tarigan, R. N. (2020). The Effect of Cold Compresses on Reducing Labor Pain in the First Active Phase in Primigravida Mothers in the Work Area of the Kutalimbaru Health Center, Deli Serdang Regency in 2017. The results of the study showed that in the control group, the majority of respondents experienced severe labor pain, namely 7 people (56.7%), while in the experimental group, the majority experienced mild labor pain, namely 6 people (40.0%) and none with very severe labor pain. Cold compress treatment has a significant effect on reducing labor pain.

The results of this study are in line with Manurung's theory (2011) Cold compress therapy is one of the non-pharmacological methods to overcome pain. This therapy needs to be given to all mothers giving birth as one of the interventions for pain therapy in health services, namely hospitals, health centers and maternity clinics.

According to researchers, pain in mothers giving birth affects the pain of a number of body systems that can cause increased blood pressure, pulse, breathing, muscle tension and the mother's concentration during labor to be disturbed. If the mother cannot control the pain, all of that can have a bad effect on the smoothness of labor so that it can result in prolonged labor which causes high maternal mortality rates. This cold compress is useful for reducing joint and muscle pain tension, reducing swelling, and cooling the skin. Cold compresses will make the affected area by slowing down the transmission of pain through sensory neurons. The mechanism of pain reduction due to cold compresses is because cold causes vasoconstriction to reduce blood flow to the injured area of the body, preventing the formation of edema, reducing inflammation.

Efforts to increase comfort in reducing pain in mothers giving birth can be done using non-pharmacological methods. One of the efforts in complementary midwifery care is by using

relaxation techniques. This is in line with the theory that giving cold compresses between contractions can stimulate the release of endorphins and relieve labor pain (Nabila., Putri., Evayanti, 2021) Cold compresses can also reduce swelling and cool the skin (Panjaitan et al., 2020). Compresses can stimulate nerve fibers that close the gate so that the transmission of pain impulses to the spinal cord and brain can be inhibited, with the reduction of labor pain can maintain some sensations of uterine contractions and the ability to push (Biges, 2019).

Bivariate Analysis

Optimization of Cold Compresses for Labor Pain in the Work Area of the Sidomulyo Inpatient Health Center, South Lampung Regency in 2024

The results of the statistical test obtained a P-value = 0.000, there was optimization of cold compresses for labor pain in the Work Area of the Sidomulyo Inpatient Health Center, South Lampung Regency in 2024.

In line with the theory put forward by Asmadi (2008; Marina, 2017), compresses are a method of maintaining body temperature using fluids or tools that can cause warmth or coldness in parts of the body that need it. There are two types of compresses, namely hot and cold compresses. Cold (ice) and hot compresses can be effective pain relief strategies in some circumstances; however, their effectiveness and working mechanisms require further study. It is suspected that ice or cold and heat therapy works by stimulating non-pain receptors (non-nociceptors) in the same receptor field as in injury (Smeltzer, S.C bare B.G 2002).

In line with research conducted by Nopliza, T., & Susanti, S. (2019). The Effect of Cold Compresses on Reducing Pain in First Stage Labor in Mothers Giving Birth in the Batu Aji Health Center Work Area, Batam City in 2018. There is a significant effect of the provision of cold compress techniques on reducing pain in first stage labor in mothers giving birth in the Batu Aji Health Center Work Area, Batam City in 2018. Based on the results of the t-test, it shows that P Value = (0.000) with [sig. (2-tailed) 0.000 <α0.05], because (p-Value) is smaller than α = 0.05 which means Ho is rejected.

This shows that treatment for labor pain in the first stage does not only use pharmacological drugs, complementary therapies such as giving compresses as a diversion of pain. One of the main goals of labor care is to relieve labor pain. Pain treatment aims to minimize side effects while minimizing pain as much as possible. Reducing the scale of pain can be done through pharmacological and non-pharmacological actions, considering the side effects that arise in the mother and fetus, the use of pharmacological methods is not the main choice in labor pain management.

In this study, the average results of labor pain before being given cold compresses in the Sidomulyo Inpatient Health Center Work Area in 2024 with a mean value of 7.50, which means that the average respondent was in controlled severe pain. After being given the intervention, it decreased with a mean value of 6.13, which means that the average respondent decreased to moderate.

According to researchers, the impact of pain on the mother on the respondents is limited Activity Daily Living (ADL) and bonding attachment (bond of affection) because increased pain can also interfere with the mother's mobilization. The impact of pain on the baby is in breastfeeding, and lack of newborn care. Using a cold compress can lower the temperature by absorbing calories from the area of labor pain. Endorphin retention, decreased activity of nerve cell bodies, decreased sensory nerve transmission, and decreased irritants which are waste cell metabolism are neuro hormonal responses to cold compresses. Therapeutic application of cold compresses is another method to stimulate the skin. The normal sensation of body temperature is produced when the hypothalamus receives impulses from the peripheral nervous system. In addition, cold compresses can block pain transmission so that the cerebral cortex cannot receive signals because the cold stimulus that first reaches the brain has blocked pain. The purpose of giving a compress is to lower body temperature, reduce pain or pain, reduce bleeding and limit inflammation. Some indications for giving a compress are clients with high temperatures, clients with severe bleeding, and clients in pain. A cold compress is the application of a compress to an area that has large blood vessels using cold water. The water temperature used in a cold compress is 13oC (Sjamsuhidajat, 2013). A cold compress is a method of using local low temperatures that can cause several physiological effects. The application of a cold compress is to reduce blood flow to a part and reduce bleeding and edema. It is thought that cold therapy produces an analgesic effect by slowing down the speed of nerve conduction so that fewer pain impulses reach the brain. Another possible mechanism is that the perception of cold becomes dominant and reduces the perception of pain. The use of cold compresses by the method of administering a 15 cm long ice bag that has the SNI logo and is filled with 500 grams of ice cubes at a temperature of 13oC, then covered with a towel with a thickness of 600gsm, and then placed on the back

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for 3.3 minutes, the stomach for 3.3 minutes, and the lower stomach for 3.3 minutes each for 10 minutes since the first active phase and repeated the researcher repeated the compress

CONCLUSION

1. It is known that the average labor pain before being given a cold compress with a mean value of 7.50, which means that the average respondent is in controlled severe pain.
2. It is known that the average labor pain after being given a cold compress with a mean value of 6.13, which means that the average respondent experiences moderate pain.
3. It is known that the results of the statistical test obtained a P-value = 0.000, there was optimization of cold compresses on labor pain in the Sidomulyo Inpatient Health Center Work Area, South Lampung Regency in 2024.

SUGGESTIONS

1. Theoretical Suggestions
   a. For Science
      It is expected that the results of this study can provide insight as well as knowledge for the development of obstetrics that can be socialized among obstetric institutions and as a reading book for students of Malahayati University, Bandar Lampung.
2. Applicative Suggestions
   a. For Patients and Families
      It is expected that the results of this study can be used as input for clients so that they can find out how to divert pain, pain can be eliminated without having to use drugs medically (Pharmacology) pain can be reduced with several types of complementary therapies such as cold compresses.
   b. For Midwives / Health Workers
      It is expected that the results of this study cold compresses will continue and not only cold compresses but can be collaborated with other experiments, such as giving suggestions from Trimester III pregnancy, back massage, giving lavender aromatherapy, music aromatherapy and others
   c. For the Sidomulyo Inpatient Health Center Work Area
      It is hoped that the results of this study can be used as input for the Sidomulyo Inpatient Health Center Work Area to reduce the pain felt by mothers in labor, midwives can use cold compresses or other similar therapies to reduce pain in the first stage of labor in the active phase.

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