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# Relaxation and Cold Compress Effectiveness toward Labor Pain Intensity During of the First Stage

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**ABSTRACT--- Background** Pain is an integral part of the delivery. The reduction of labor pain is needed to break the cycle of pain with all the impact. Nonpharmacologic pain management is preferred because it is inexpensive, safe, can be done by the family.

**Research purposes** Want to know the effectiveness of deep breathing relaxation plus cold compress than relaxation breath in any of the first stage of labor pain relief the active phase.

**Method** This study research design Quasi Eksperimet Design with non-randomized control group pretest-posttest design. The research instrument is wineskins ice, cold jelly bag, and scale of 0-10 Numeric Rating Scale (NRS).

**Subject** Maternal active phase of the first stage meet inclusion and exclusion criteria.

**Result** Pain intensity respondent before giving relaxation deep breathing plus cold compress all (100%) experienced severe pain and moderate pain while after the administration of relaxation deep breathing plus cold compress all (100%) of respondents experienced moderate pain and mild pain and no pain severe, Paired T-test results found no significant difference in pain intensity before and after the intervention (p = 0.000 and 95% confidence interval), it means that there is a significant effect of granting relaxation deep breath and a cold compress to the intensity of pain in women giving birth when I. Impairment the average intensity of pain before and after administration of relaxation and breath in the cold compress of 1.86. The results of the correlation between two variables are equal to 0801 with a sig of 0000.

**Conclusion** Relaxation is a psychological modulation coupled with a cold pack that is a sensory modulation affecting the reduction of pain greater than the use of one method that is relaxation. The use of two methods in reducing labor pain is more effective because the effect of the method is further reinforced by the effects of other methods.

**Keywords:** Relaxation and cold compresses, the intensity of labor pain

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## I. INTRODUCTION

Childbirth is a process that is highly anticipated by every prospective mother with hope and happiness. But for some women who have given birth or who have never given birth, childbirth can be stressful and frightening events due to a sense of pain during labor. A mother who is facing labor tends to feel frightened, especially primigravida. The pain of labor is caused by emotional tension, the pressure on the nerve endings, the strain on the tissue and joint, and hypoxia on uterine muscle during and after a long contraction. Disproportionate cephalopelvic and other causes that make it difficult birth (dystocia) may increase the pain(Walyani & Purwoastuti, 2016)

Pain is an integral part of labor and delivery. Pain during childbirth is a normal thing to happen. The causes include physiological and psychological factors. The physiological factor is contraction. These muscle movements cause pain because when the muscles of the uterus extend and then retracts. The cervix also is softened, thinned and leveled then interested. That's when the fetal head presses the cervix and open it. So contraction is an attempt to open the birth canal. The psychological factors are the excessive fear and anxiety that will affect this pain. Every woman has their own version of the pain of labor and delivery. This is because the threshold of pain stimuli everyone is different and subjective. Some mother feels no pain, only their stomachs feel tight. There also was not impervious to experience pain. The diversity of the response is a protective mechanism of the pain that is felt(Andarmoyo, 2013).

The physiology of labor pain starts during the first stage of labor (when opening) and it is divided into two phases which latent and active phases. The latent phase lasts about 8 hours, the cervical opening of 0-3 cm and an active phase lasted for 7 hours, the cervix opens from 4-10 cm, more powerful and frequent contractions. In the first stage of active phase labor the pain increased caused by stretching the vagina, the larger the opening of the cervix caused to increase the pain. In the active phase of the uterine contraction, the amplitude is also increased so that the contractions getting stronger so that pain is increasing. In the first stage of labor primigravida can last approximately 12 hours while on multigravida lasts approximately 8 hours(Walyani & Purwoastuti, 2016),

Pain at the opening time mainly due to the opening of the cervix, such as smooth muscle stretch is fairly painful stimuli. There is a close relationship between the large opening of the cervix with pain intensity (the more open the more painful) and between the onset of pain with the onset of uterine contractions (pain felt around 15-30 seconds after the onset of contraction). (Andarmoyo, 2013)

Pain during labor generally feels great, and only 2-4% of women who experience mild pain during labor.3 pain during labor occupies 30-40 score of 50 scores set Wall and Mellzack. The score is higher than clinical pain syndrome such as chronic back pain, cancer pain, leg pain and other (Fraser, 2009). Pain and fear cause stress. Stress results in increased secretion of adrenaline. One of the effects of adrenaline is the contraction of blood vessels that supply oxygen and fetus decreased. Decreased blood flow also causes uterine contractions and the resulting weakening of prolonged labor. Not only an increased secretion of adrenaline, but the secretion of adrenocorticotropic hormone (ACTH) also increased, leading to increased levels of serum and blood sugar cortisol. All the above-mentioned effect is potentially harmful to the mother and fetus, especially the mother and fetus at high

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risk. For the reasons mentioned above, the reduction of labor pain is not just for pleasure alone but to be an inherent need to break the cycle of pain and all the consequences thereof. (Aprilia, Y, 2011).

Today many methods offered to reduce pain during labor, both pharmacological method (using drugs) and non-pharmacological (traditionally) (Maryunani, 2010). If possible, non-pharmacological therapeutic options for the management of pain in pregnancy and childbirth should be considered before taking analgesics (Billington, 2009). Several pharmacologic management of labor pain is largely a medical act. Meanwhile, non-pharmacological pain management can be done by most of the health care providers (doctor, nurse or midwife) who may also be involved, maternal family. Although the pharmacological method is more effective in reducing labor pain, in addition to the more expensive also potentially has adverse effects for both the mother and fetus (Maryunani, 2010).

Relaxation is a non-pharmacological pain control methods are most commonly used in the UK. Steer reports that 34% of patients using relaxation methods. These methods include the psychological modulation of pain. The use of psychological methods to fight the pain comes from studies showing the significant psychological contribution to pain. Pain control techniques that include relaxation teaches patients to minimize the activity of the sympathetic and autonomic nervous system, The theory that supports the use of the relaxation of labor during childbirth is located on the physiology of the nervous system autonomy. The autonomic nervous system (SSO) is a part of the peripheral nervous system that maintains homeostasis in the internal environment of the individual so that this function is rarely reached the level of awareness and if they do exist, there are little control volunteers. Women can reduce the sensation of pain by controlling the intensity of the reaction to pain (Mander, 2003).

Hypnobirthing relaxation classes should be followed regularly. While the current phenomenon of women has three dual roles is as a housewife, working outside the home and as a member of the society or community in which he lives. This condition greatly limits the time women to visit health workers directly and continuous or sustained (Aprilia, Y, 2011).

In addition to the psychological modulation of pain, other methods can be used for non-pharmacological pain control one of which is the modulation of sensory pain. The method of using physical intervention to 'close the gate' of pain impulses. Massage and compress is one example of this method(Mander, 2003). Use ice massage and compress it using an ice bag are two types of highly effective cold therapy for pain relief. Use ice massage is done by using a large block of ice or a small paper cup, filled with water and frozen (water out of the cup that freezes to create a soft ice surface for a massage). Massage is a simple thing. Nurse or clients can put ice in the skin by providing a strong pressure, followed by a circular massage, permanent and slowly over the skin. Cold compresses can be carried out near the location of pain, but the opposite side of the body associated with a pain location or a location that is situated between the brain and the site of the pain. It takes 10 to 15 minutes a cold compress (Potter, 2005)

Cold compresses are useful for musculoskeletal or joint pain. Cold compresses reduce muscle tension (longer than a hot compress). Cold compresses will make the numbness of the affected area by slowing the transmission of pain impulses and the other through sensory neurons (which may help explain the numbness as the effects of the

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cold). Cold compress also reduces swelling and soothe the skin. It would be unlikely that ice therapy (cold) and heat works by stimulating pain receptors are not (non-nociceptors) in the same field on injury(Andarmoyo, 2013).

## II. METHODOLOGY

This study research design Quasi Eksperimet Design with non-randomized control group pretest-posttest design to investigate the effectiveness of deep breathing relaxation plus a cold compress to the reduction of maternal pain intensity active phase of the first stage.

In this study, the maternal active phase of the first stage of pain intensity was measured in advance. The next step is the treatment given one non-pharmacological therapy (deep breathing relaxation plus cold compress) to reduce the pain of childbirth in each group for 30 minutes. After completion of the treatment given time resting 5 minutes then measuring the pain intensity. The result of the difference in pain intensity before and after comparison to see the effectiveness of non-pharmacological management therapy more help reduce maternal pain intensity.

The population in this study is the first stage of maternal active phase, with the inclusion criteria is a single pregnancy, baby presentation back of the head, aged between 20-35 years, infant birth weight 2500-4000 grams, entered the active phase (≥ 4 cm opening) until with the phase of maximum dilation (opening 9 cm) and accompanied husband.

How the selection of the samples using consecutive sampling, and who met the inclusion criteria included in this research were 30 respondents.

## III. RESULTS AND DISCUSSION

Table 1. Distribution Characteristics At Respondents

| variables | Intervention | Statistic test |
|---|---|---|
| | Mean ± SD | (Levene test) |
| Maternal age (years) | 26.12 ± 5.139 | 1,227 |
| Gestational age (weeks) | 39.10 ± 1.552 | 0.611 |
| Parity | 1.93 ± 0.884 | .574 |
| BB birth (kg) | 3.14 ± 3.02 | .566 |
| Worry | 16.20 ± 7.015 | .360 |
| Pain before | 6,13±1,234 | .120 |

Table 1 shows the characteristics of respondents are homogeneous (Levene's test> 0.05). The average maternal age 26.12 years, the mean gestational age of 39.10 weeks, an average parity of 1.93, birth weight on average 3.14 kg, average 16.20 anxiety, and pain an average of 6.13.

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**Table 2. Distribution of respondents based on the intensity of pain in the intervention group plus the relaxation breath in cold compress**

| Pain intensity | Before Percentage (%) | | After Percentage (%) | |
|---|---|---|---|---|
| | f | % | f | % |
| Mild pain | 0 | 0 | 4 | 13.33 |
| Moderate pain | 16 | 53.33 | 26 | 86.67 |
| pain weight | 14 | 46.67 | 0 | 0 |
| Total | 15 | 100 | 15 | 100 |

The above table shows that the intensity of pain respondent before giving relaxation deep breathing plus cold compress all (100%) experienced severe pain and moderate pain while after the administration of relaxation deep breathing plus cold compress all (100%) of respondents experienced moderate pain and mild pain and no who experience severe pain.

**Table 3. Results of analysis of the effect of deep breathing relaxation plus a cold compress to the intensity of pain in the first stage of maternal**

| The intensity of pain | mean | Mean difference | the value of p | r | CI lower | CI upper |
|---|---|---|---|---|---|---|
| Before | 6,33 | 1.86 | 0,000 | 0.801 | 1.455 | 2,278 |
| After | 4.47 | | | | | |

The above table shows that the average respondent pain before administration of relaxation and breath in the cold compress is 6.33 and the average pain intensity after administration of deep breathing relaxation and cold compresses is 4.47. Noticeable decrease in the average value of the intensity of pain before and after administration of relaxation and breath in the cold compress of 1.86. From the test results statistically using paired t-test p-value = 0.000 (<0.05) with a 95% confidence interval can be concluded that Ho is rejected and Ha accepted means no significant effect of relaxation giving a deep breath and a cold compress to the intensity of pain in women maternity stage I.

The results of the correlation between the two variables are equal to 0801 with a sig of 0000. This shows that the correlation of the average pain intensity before and after relaxation and cold compress is very strong and significant.

With a 95% confidence interval, if the measurement is made on the population of the pain intensity difference mothers before and after giving birth deep breathing relaxation plus cold compress between 1.455 to 2.278.

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## IV. DISCUSSION

Characteristics of survey respondents in the form of maternal age, gestational age, parity, birth weight, anxiety and pain during childbirth has been tested before treatment of variance (Levene'ss test) to determine that the respondents have the same variance (p values> 0.05)

This study was conducted in women with an age range of 20-35 years. After testing the statistical (Levene's test) was obtained p = 1.227 so that it can be concluded that the variance of the data being tested is the same. A young age tends to be associated with psychological conditions that are still unstable, triggering worries that the pain felt becomes more severe. Age is also used as one factor in determining the tolerance to pain. Tolerance will increase with age and understanding of the pain (Andarmoyo, 2013).

The research was conducted on all maternal parity although the intensity of labor pain in primiparous often more severe than the pain of labor in multipara.17 To reduce bias in research results then performed statistical tests (Levene's test) was obtained p = 0.574 so that it can be concluded that the variance of data was tested are the same. Although in general the second and subsequent delivery lasts shorter than labor in primigravida, the speed and intensity of labor may suddenly make multiparous mother overwhelmed. The mother may use an epidural on his first delivery and be terrified to feel the actual delivery of the baby. He needs appeasement and support as a primigravida,

Maternal anxiety at variance test was also conducted. After testing the statistical (Levene'ss test) obtained by value p = 0.360 so that it can be concluded that the variance of the data being tested is the same. As it is known that the pain or the possibility of pain can induce fear causing anxiety to ended panic (Lailiyana 2011). Fear or anxiety will elevate the individual's response to pain. Fear of the unknown, fear of being left alone during labor (unaccompanied) and the fear of failure of labor may increase anxiety. Fear, anxiety, and tension trigger the production of prostaglandins causing stress. Stress conditions can affect the body's ability to withstand pain (Judha, 2012)

In terms of birth weight in both studies, groups have not seen any significant differences. Statistical testing (Levene'ss test) obtained by value p = 0.566 so that it can be concluded that the variance of the data being tested is the same. This data needs to be compared to avoid the influence of birth weight bias towards labor pain that occurs. The existence of a large baby can pose greater pain and long labor.

The intensity of the pain associated with contraction force and pressure exerted. The pain will be increased with the isometric contractions of the uterus against obstacles cervix/uterus and perineum. During labor when the cervix uteri/cervical dilatation is very slow or when the position of the fetus (fetus) causing abnormal mechanical distortion, strong contractions accompanied by severe pain. This is because the uterus continues to contract isometrically against an obstruction. Strong uterine contractions are a powerful source of pain (Andarmoyo, 2013).

Pain before intervention also tests variance to determine whether the pain before intervention has the same variance. Statistical testing (Levene'ss test) obtained by value p = 0.120 so that it can be concluded that the variance of the data being tested is the same.

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In Table 2 shows that the intensity of pain respondent before giving relaxation deep breathing plus cold compress all (100%) experienced severe pain and moderate pain while after the administration of relaxation deep breathing plus cold compress all (100%) of respondents experienced moderate pain and mild pain and no No experiencing severe pain. This is consistent with the theory that pain during labor generally feels great, and only 2-4% of women who experience mild pain during labor.3 Pain during childbirth occupies 30-40 score of 50 scores set Wall and Mellzack. The score higher than clinical pain syndrome such as chronic back pain, cancer pain, leg pain and other (Fraser, 2009)

The intensity of pain after a treatment also decreased. But because of the treatment of non-pharmacological pain management, other factors significantly affecting response to pain is because researchers involve labor companion (husband) during labor. Although the pain is felt, the presence of significant for mothers will minimize loneliness and fear. Attention is associated with increased pain while diversion attempts associated with decreased response to pain. By focusing on attention and concentration on clients on another stimulus, the nurse puts on a peripheral awareness. Usually, this causes the individual pain tolerance increased, especially to pain that lasts for a transfer (Judha, 2012).

Table 3 shows no significant difference in pain intensity maternity active phase of the first stage before and after treatment with p = 0.000. The average pain intensity in respondents is given relaxation after a deep breath plus cold compress decreased by 1.86.

The results support previous research carried Siti Muniroh (2012) on maternal pain intensity in the active phase of the first stage, giving it no significant effect of skin stimulation techniques using ice packs to decrease pain perception active phase of the first stage physiological childbirth (Muniroh, 2012)

Other research supports this research was also done by Handayani et al (2012) about massage his back against the reduction of labor pain is the first stage of the active phase, with the result the majority of birth mothers of the first stage of the active phase experiencing pain reduction, although reducing pain scale is still varied, even each - masing there were not reduced the pain scale. (Handayani, 2012). The equation with this study is the use of sensory pain modulation to help reduce the pain of childbirth.

Another supporting study is conducted by Suparni (2014) that deep breath relaxation coupled with cold compresses is more effective than relaxing deep breath alone in reducing the intensity of maternal pain in the active phase.

Relaxation breath in that coupled with cold compresses can help reduce labor pain because as well as the relaxation factor plus that cold application to moderation capabilities in the pain pathways-pathways channel painful stimuli so that the pain is reduced in the compressing area (Simkin, 2002)

During the first stage of labor, the pain caused by the dilation of the cervix, the lower uterine segment and the distention of the uterine corpus. Pain is transferred to dermaton thorasikus 10,11, and 12 are supplied by the same spinal cord segment with the segment that receives nociceptive input from the uterus and cervical (Andarmoyo,

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2013). Apply ice to the cold stimulus thoracal 7,8,9 produce that inhibit pain transmission to the brain by way of "closing the gate" to block pain stimuli traveling at higher centers in the central nervous system (Mander, 2003)

Apply ice also stimulates the release of endorphins which are useful to block the conduction of pain stimuli and can provide a feeling of comfort while on the pain as well as shifting the focus of attention on a given stimulus.

Relaxation is a psychological modulation coupled with a cold pack that is a sensory modulation affecting the reduction of pain greater than the use of one method that is relaxation. The use of two methods in reducing labor pain is more effective because the effect of the method is further reinforced by the effects of other methods. This method is called "multiple convergent therapies" (Mander, 2003).

Use of relaxation breath in desperate need of involvement of the individuals themselves. These methods need the support of a labor companion, not only because it has been studied during pregnancy only. Relaxation "close the gate" of pain impulses by using a psychological approach while cold compress "close the gate" of pain impulses to the use of physical intervention (Mander, 2003).

Based on the above systems as a midwife or a nurse when he led the delivery, we can do the technique blockade of pain, so pain felt inhibited. The trick is to give a stimulus to do with cold compresses, massage, pressing the lumbar region of the spinal cord or may also divert attention to the pain of labor by rubbing the lumbar region (Judha, 2012).

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