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Effectiveness Of Ginger Transdermal Patch (Koyo Jahe) On Reducing The Intensity Of Labor Pain In Pregnant Women During The First Active Phase At TPMB K.B Pasuruan

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Abstrak

Salah satu konsekuensi dari persalinan adalah nyeri, yang dapat meningkatkan tekanan darah, denyut jantung janin, dan konsentrasi ibu. Ibu yang hendak melahirkan dapat mengalami rasa sakit dan ketidaknyamanan karena kontraksi rahim, yang mengawali proses persalinan. Dalam kebanyakan kasus, ibu hamil akan mengalami nyeri selama proses persalinan. Penanganan dan pengawasan nyeri persalinan selama persalinan sangat penting karena menentukan apakah ibu hamil dapat menjalani persalinan secara normal atau melalui prosedur medis. Metode nonfarmakologi dapat membantu mengurangi nyeri selama persalinan. Tujuan dari penelitian ini adalah untuk mengetahui efektifitas *ginger transdermal patch* (koyo jahe) untuk mengurangi intensitas nyeri persalinan pada ibu bersalin kala I fase aktif di TPMB Ny. K.B Pasuruan. Studi ini menggunakan metode kuantitatif *Quasy Experiment*,dengan desain *one grup pretest-posttest*. Koyo jahe ditempelkan ke area tubuh ibu bersalin yang nyeri. Sebelum dan setelah 20-30 menit koyo ditempelkan, intensitas nyeri diukur. Responden penelitian ini adalah ibu dalam fase persalinan aktif. Uji analisis menggunakan *uji Wilcoxon*. Hasil analisis menunjukkan bahwa ada perbedaan intensitas nyeri persalinan pada ibu bersalin kala I fase aktif sebelum dan sesudah pemberian koyo jahe berkurang, dengan nilai sig 0,000 < 0,05. Sebagian besar wanita yang akan melahirkan membutuhkan perawatan nyeri persalinan, baik secara farmakologis maupun non farmakologis. Jahe adalah salah satu metode nonfarmakologis untuk mengurangi nyeri persalinan. Kandungan dalam jahe dapat berinteraksi dengan reseptor nyeri, membantu relaksasi, sehingga ibu bersalin merasa lebih rileks dam nyaman selama proses persalinan

Abstract

One consequence of labor is pain, which can increase blood pressure, fetal heart rate, and maternal concentration. Mothers who are about to give birth can experience pain and discomfort due to uterine contractions, which begin the labor process. In most cases, pregnant women will experience pain during the labor process. Handling and monitoring labor pain during labor is very important because it determines whether pregnant women can go into labornormally or through medical procedures. Nonpharmacological methods can help reduce pain during labor. The purpose of this study is to determine the effectiveness of ginger transdermal patch (koyo ginger) to reduce the

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intensity of labor pain in pregnant women during the first active phase at TPMB Mrs. K.B Pasuruan. This study uses the quantitative method of Quasy Experiment, with the design of one group pretest-posttest. Koyo ginger is attached to the area of the mother's body that is in pain. Before and after 20-30 minutes of gluing, the intensity of pain is measured. The respondents of this study are mothers in the active labor phase. The analysis test uses the Wilcoxon test. The results of the analysis showed that there was a difference in the intensity of labor pain in pregnant women during the first active phase before and after the administration of koyo ginger decreased, with a sig value of 0.000 < 0.05. Most women who are about to give birth need labor pain treatment, both pharmacological and non-pharmacological treatment. Ginger is one of the nonpharmacological methods to reduce labor pain. The content in ginger can interact with pain receptors, helping relaxation, so that the mother feels more relaxed and comfortable during the delivery process

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Introduction

Labor is a collection of physiological and psychological events that, as a result of tissue damage, can cause pain, anxiety, and fatigue (Tsai et al., 2020). Contraction of the myometrium artery causes uterine ischemia, which causes pain during labor. In addition, uterine contractions cause thinning and dilation of the cervix. Due to many physiological and psychosocial factors, the mother's experience of pain during labor can be very different. Stress can lead to the production of prostaglandins, which cause stress and affect the body's ability to withstand pain (Sari & Sidabutar, 2022).

Most women who are about to give birth need labor pain treatment, both pharmacological and non-pharmacological (Thomson et al., 2019). Ginger is one of the nonpharmacological ways to reduce labor pain (Choudhary et al., 2021). Ginger is a safe and effective painkiller because it stops prostaglandins through the COX and LOX pathways and modulates pain in various ways (Rondanelli et al., 2020). To improve the results of ginger therapy, ginger extraction is carried out and preparations are made in the form of transdermal patches (koyo). Koyo, also called transdermal patches, are placed on the skin and release an amount of active substances through the skin towards the bloodstream (Ermawati & Prilantari, 2019). In the research site, the method to reduce labor pain is only limited to breathing exercises and lower back massage.

The objectives of this study are (1) how the intensity of labor pain before and after the administration of ginger patches (koyo jahe) and (2) how effective is the use of gingger patches for labor pain in pregnant women during the active phase 1.

Pain in the waist, abdominal area, and towards the thighs is caused by contractions of the uterine muscles during the labor process as well as ischemia of the uterine muscles. Health workers can reduce pain by using non-pharmacological methods such as relaxation, warm compresses, massage, aromatherapy, and herbal medicine. Extracted ginger is one of the easy and inexpensive non-pharmacological treatments. One of the herbal remedies that can help reduce labor pain is ginger extract (Mintarsih et al., 2022). Ginger oleoresins such as shogaol, gingerol, zingeron, and others have warm, spicy, bitter, and aromatic properties. The process of cyclooxygenase stops the production of prostaglandins, which are pain mediators. anti-inflammatory and antioxidant, which can relax muscles, reduce inflammation and joint pain, and make you feel more relaxed (Rondanelli et al., 2020). To improve the outcome of the therapy and reduce side effects, ginger extract is made into a transdermal patch. Koyo has certain advantages, which is hotter and more durable than other pharmaceutical drugs. Therefore, because it is more effective, it is widely used to heal pain. This innovative product is easy to take anywhere because it does not cause pain or irritation to the skin and stays warm for a long time. (Syarifah et al., 2023b). This study adds value by bridging traditional herbal remedies with modern transdermal technology, offering a novel and effective solution for managing labor pain.

Husband assistance reduces the pain of primigravida's mother's childbirth by providing sufficient support to the family and medical personnel during the delivery process (Utami & Putri, 2020). Some non-pharmacological methods that can help mothers reduce labor pain are massage, music, aromatherapy, warm compresses, breathing exercises (breathing), and delivery ball exercises. This type of treatment is safe and has the potential to improve the health of the mother and fetus. . Hypnosis, biofeedback, sterile water injections, aromatherapy, and TENS do not help reduce labor pain (Pratiwi et al., 2021). Back massage can relieve labor pain well. Therefore, it can be recommended to be done by all women who experience labor pain (Choudhary et al., 2021). To reduce pain during childbirth, various pain reduction techniques can be used, such as abdominal touch and pressure reduction, hypnosis, religious and murottal music, classical and regional music, relaxation, compresses, warm ginger drinks, acupressurs, TENS, accounts, and aromatherapy (Abikou et al., 2024). Dalam

hal penurunan nyeri persalinan kala I fase aktif, air hangat dan jahe merah sangat berbeda. Jahe merah bahkan lebih baik untuk nyeri persalinan daripada air hangat. Ginger compress therapy reduces labor pain between before and after use (Mintarsih et al., 2022). When 25 to 50 grams of red ginger is brewed with 150 milliliters of warm water or given orally, its oleoresin content helps reduce labor pain (Syarifah et al., 2023a)

State of the Art dari penelitian ini , Modern Koyo Ginger has undergone significant development, combining traditional knowledge with the latest technology. Contemporary ginger koyo is often made with a blend of natural ingredients such as cloves, turmeric, lavender, or essential oils. This combination has better synergistic results in relieving inflammation and pain (Joharmi et al., 2022). Technologies such as polymer or nanoparticle matrices allow for a more controlled and sustainable release of the active content of ginger. This improves long-lasting pain relief results. Koyo ginger has a more flexible shape so that it is easier to adjust to the contours of a person's body, making it more comfortable to use. Some items even come with strong adhesives so that they don't come off easily (Syarifah et al., 2023b). More and more research is being conducted to find out whether koyo ginger is safe and effective for reducing labor pain. This study provides stronger scientific evidence about the benefits of koyo ginger.

Novelty (Kebaruan) From this study, Koyo Ginger has experienced very rapid development, offering a more comfortable and effective way to relieve labor pain. With the development of technology and research, it is hoped that there will be more innovations in koyo ginger products that can help pregnant women. The use of technologies such as nanotechnology and pharmaceuticals allows the development of koyo ginger with more precise and effective formulations.

There are not many studies that have studied how to use ginger transdermal patches, also called koyo ginger, to reduce the pain experienced by pregnant women during the early phases of labor. The consumption of ginger as a drink, compress, or aromatherapy drug is the only research subject that has been conducted. As a result, researchers are very interested in conducting this study. Koyo, or transdermal patches, regulate the release of chemicals into the human body. This allows the patch transdermal delivery system to avoid the first-pass effect, which reduces the amount of drug entering the systemic circulation (Ermawati & Prilantari, 2019). Based on the above background, the researcher is interested in conducting a study with the title: The Effectiveness of Ginger Transdermal Patch on Reducing the

Intensity of Childbirth Pain in Childbirth During the I Akfit Phase at TPMB Mrs. K.B Pasuruan.

Method

The administration of ginger transdemal patch, or koyo jahe, was an independent variable in this study. The intensity of labor pain is a dependent variable. This study uses quasi-experimental methods of pre-test and post-test for one design group. Maternity mothers are treated with ginger koyo that is attached to certain areas of the body (such as the lower back and lower abdomen). Pain scale measurements were carried out twice, first before the administration of koyo ginger and the second time after 30 minutes..

The inclusion criteria of the study include 1 active phase of childbirth starting from the opening of the cervix of 4 cm. Active 1-phase mothers who experience pain and do not experience complications are also included and are willing to be study respondents. On the other hand, the exclusion criteria of the study included mothers who experienced a decrease in consciousness or were not willing to become research respondents. The research was conducted at the Independent Practice of Midwives (TPMB) Mrs. KB Pasuruan.

In this research procedure, we conduct interviews for respondents who fall into the inclusion criteria to obtain general data from respondents and their willingness to become respondents. Then we measure the pain scale before administering the ginger koyo using the pain scale measurement observation sheet using the Numeric Rating Scale (NRS) method, then the ginger koyo is attached to the body area designated by the respondent, for 30 minutes the pain scale is measured again. Koyo ginger can remain in place during the delivery process.The sampling technique used to collect the sample was purposive sampling with a sample of 30 maternity mothers Figure 1 shows the Numeric Rating Scale (NRS) tool used to collect primary data. Pain assessment observation sheets before (pre-test) and pain assessment observation sheets after (post-test) were used. Mothers were given a scale from 0-10 to indicate how severe their pain was. Secondary data includes maternal KIA books and medical records.

Univariate analysis was used to provide an overview of the variables studied as well as the characteristics of pregnant women. In addition, the wilcoxon test was used to assess how effective ginger transdermal patch (koyo jahe) was in reducing the intensity of labor pain in

pregnant women during the first active phase. This test was performed on paired data, and samples were tested twice, before and after administration of transdermal ginger patches.

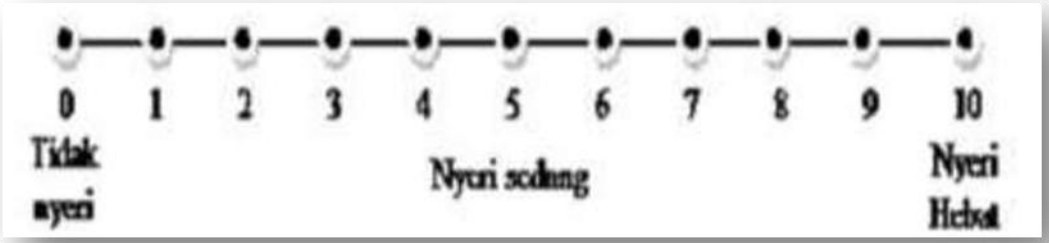

Figure 1. *Numeric Rating Scale*

Results and Discussion

Based on the results of data collection and analysis tests, the following research results were obtained:

Table 1
Results of Wilcoxon Test Data Analysis

Wilcoxon Test Rank Output Results				
		N	Mean Ranks	Sum of ranks
Pain intensity after ginger - pain intensity before ginger	Negative Ranks	28[a]	14.50	406.00
	Positive Ranks	0[b]	.00	.00
	Ties	2[c]		
	Total	30		
Z	-5.292[b]			
Asymp. Sig. (2-tailed)	.000			

From table 1, it can be seen that almost all respondents, namely 28 mothers (93.3%) experienced a decrease in the pain scale after the installation of koyo, there was a difference in the average intensity of labor pain before and after the administration of koyo ginger which means that there is an effectiveness of ginger transdermal patch (koyo ginger) on the reduction of the intensity of labor pain during the 1 active phase, with a significance value (sig) of 0.000. Since the significance value is less than the probability value of 0.05, it can be said that there is a difference between the intensity of pain before and after the administration of koyo ginger. Pain is defined by the International Association for the Study of Pain (IASP)

as a sensorially and emotionally unpleasant experience associated with actual and potential tissue damage.

Labor is a series of physiological and psychological processes that can cause pain, anxiety, and fatigue due to tissue damage (Tsai et al., 2020). Pain caused by uterine contractions and stretching of the cervix and birth canal is a natural and inseparable part of the labor process. In addition to interfering with the progress of labor, labor pain can cause anxiety and fatigue. Excessive pain and fear and anxiety increase the secretion of catecholamines and cortisol, which makes the pain worse and potentially prolongs the first and second stages of labor. It leads to prolonged labor and fetal and neonatal complications such as impaired oxygen supply, fetal death, head compression, low APGAR scores, and deteriorating fetal condition. ((Hakala et al., 2022)).

Only 2-4% of mothers experience mild pain during childbirth, and the rest feel severe pain. Labor pain is on a score of 30 to 40 out of 50 set by Wall and Mellzack. Compared to clinical pain such as chronic back pain, cancer pain, and leg pain, labor pain scores are higher. Midwives can play a major role in the preparation and management of labor pain. In addition, the quality of the relationship between the maternity and the midwife, the doctor also affects the perception of the maternity mother about pain. While some mothers in labor can manage labor pain well without help, others require pharmacological or non-pharmacological treatment to relieve pain (Thomson et al., 2019).

Management and monitoring of labor pain is very important, especially in the first trimester, as it determines whether the mother can go into labor normally or end it due to complications caused by overwhelming pain. Before using analgesic drugs, nonpharmacological methods to reduce labor pain should be considered. Mostly, medical treatment has side effects on the mother and fetus (Utami & Putri, 2020). Non-pharmacological therapies for pain, such as psychological analgesics, similar to education, physiological therapy and psychological therapy, deep breath relaxation, imagination to control pain, hydrotherapy exercises, music, hypnotherapy, and complementary therapies using herbal herbs such as ginger (Abikou et al., 2024).

Ginger has long been known to have efficacy because it contains active chemical compounds such as gingerol, shagaol, and zingeron, which help prevent and treat various diseases. Therefore, ginger is considered to have pharmacological effects on health (I

Wayang Redi Aryanta, 2019). Using a variety of active compounds derived from various natural ingredients, aromatherapy administration has been widely used before. This active compound is known to reduce pain, improve sleep quality, and reduce anxiety (Tsai et al., 2020). The volatile aroma content of red ginger enters the brain's perceptual system, which produces a calming and positive effect. Due to the strong contraction of the uterine muscles, this positive and soothing effect can help reduce pain. The aroma of fresh red ginger helps relax and improve the sensory work of the brain. To improve a person's emotional state, a relaxed state can help reduce the intensity of pain (Joharmi et al., 2022).

Ginger also has the ability to stop the enzyme lipoxygenase, which leads to a decrease in leukotrides and prostaglandins, inflammatory mediators, which reduce pain. The anti-inflammatory effect of ginger is comparable to the effects of ibuprofen and mefenamic acid (Dahlan et al., 2020). There is a correlation between anxiety and labor pain, ginger can help reduce anxiety and at the same time reduce labor pain. It has a warming effect, which can relieve muscle spasms, pain, and stiffness. It can also prevent blood vessels from becoming wider. After twenty minutes of treatment, the benefits of ginger to reduce pain increase. It is thought that ginger also improves metabolism and blood flow. Therefore, additional leukocytes can be delivered to reduce pain (Maghraby et al., 2023).

One herbal remedy that can help reduce labor pain is ginger extraction (Rondanelli et al., 2020). Ginger oleoresins such as shogaol, gingerol, zingeron, and others have warm, spicy, bitter, and aromatic properties. Prostaglandins, which are pain mediators, anti-inflammatory, and antioxidants, work to relax muscles, reduce inflammation and pain, and make the body more relaxed. The cyclooxygenase process inhibits the formation of prostaglandins (Rondanelli et al., 2020). To improve the outcome of the therapy and reduce side effects, ginger extract is made into a transdermal patch. Koyo has certain advantages, which is hotter and more durable than other pharmaceutical drugs. Therefore, because it is more effective, it is widely used to cure pain. This koyo is easy to carry anywhere because it stays warm for a long time and does not cause excessive pain or irritation to the skin (Syarifah et al., 2023b).

Transdermal is a delivery system that uses adhesives containing drug compounds, placed through the surface of the skin to release active substances in certain doses into the bloodstream (Ermawati & Prilantari, 2019). This system is the latest innovation to reduce the problem of drug bioavailability in the oral route, so that in the administration of drugs

through the skin can experience an increase in good therapeutic effects (Ermawati, 2019). One of the developments in drug therapy systems through the transdermal route is the manufacture of patch preparations. Patches are preparations with a route of drug administration per cutaneous that is intended for external use with a closed skin contact system (Fuziyanti et al., 2022).

Koyo, or transdermal patches, control the release into the human body. This allows the Transdermal Patch delivery system to avoid the first-pass effect, which reduces the amount of drug entering the systemic circulation (Ermawati & Prilantari, 2019) The oleoresin, shogaol and gingerol content in ginger has the effect of reducing the intensity of labor pain. To enhance the side effects and improve the efficiency of ginger therapy, ginger extracts and preparations are made in the form of transdermal patches. Preparations known as transdermal patches are used by Transdermal Drug Delivery Systems (TDDS) systems. Transdermal patches are placed on the skin with an adhesive to release a specific dose of the active substance through the skin towards the bloodstream. The first-pass effect is reduced by the transdermal patch delivery system, which reduces the amount of drugs distributed systemically (Fuziyanti et al., 2022). *Koyo and other ingredients such as alcohol, methylsalicilate,*
It is used to improve its performance and provide a warm sensation to reduce labor pain. The advantage of koyo is that it does not need to be injected into the skin, which prevents excessive pain. Because ginger ingredients are easy to find, koyo is easy to remove and affordable. In addition, the effect on the small intestine is very small or non-existent. This innovative product is easy to carry anywhere and does not cause pain or irritation to the skin.

Conclusion

Based on the results of the study, there was a decrease in the intensity of labor pain during the 1st active phase after the administration of koyo ginger. Thus, it can be concluded that there is an effectiveness of the administration of ginger transdermal patch (koyo ginger) on reducing the intensity of labor pain in pregnant women during the active phase at TPMB Mrs. K.B Pasuruan. Koyo ginger is one complementary therapy option that can help reduce labor pain, especially for pregnant women who want a more natural approach to their labor. Health workers must inform pregnant women about the benefits and risks of using koyo

ginger. Further research is needed to develop product quality standards and prove that the use of koyo ginger is safe and effective in the long term. No studies have studied how to use ginger transdermal patches, also known as koyo ginger, to reduce labor pain in pregnant women who are in the early stages of labor. All the studies that have been conducted have only included the consumption of ginger as a drink, compress, or aromatherapy. In the next five years, researchers hope to develop and implement ginger transdermal patch products to reduce labor pain. Overall, the research underscores the potential of integrating traditional herbal medicine with modern delivery systems to improve maternal healthcare, making labor experiences safer and more comfortable for women.

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