

Comparison of the effectiveness of aromatic ginger warm water bath with salt warm water against leg oedema of pregnant women in the third trimester

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ABSTRACT

Leg edema is found in around 80% of pregnant women in the third trimester, occurring due to pressure on the uterus which inhibits venous return and gravitational pull causing greater fluid retention. The aim of the research was to determine the comparison of the effectiveness of warm water soaking in aromatic ginger and salt warm water on leg edema of pregnant women in the third trimester in the Padusunan Padang Pariaman Health Center work area in 2023. The research design used was quasi-experimental with a two group pretest-posttest design. The sample of pregnant women who experienced lower limb edema was 52 people. Data processing uses a dependent t-test (paired sample t-test). The results of this study obtained the average level of edema in pregnant women in the third trimester before the warm water soak in aromatic ginger (3.62) and after (1.65). The average level of edema in pregnant women in the third trimester before the warm water soak was carried out salt (3.31) and after (1.96), Effectiveness before being given aromatic ginger warm water with warm salt water against leg edema in pregnant women in the third trimester (3-4) and after (1-3), There is effectiveness before and after giving aromatic ginger warm water with salt warm water against leg edema in third trimester pregnant women in the Padusunan Padang Pariaman Community Health Center work area in 2023 (p-value < 0.05). It is estimated that every pregnant woman who experiences edema during convulsions below should apply warm water immersion therapy to reduce the edema.

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INTRODUCTION

Discomfort that occurs in the hird trimester is frequent urination (50%), vaginal discharge (15%), constipation (40%), flatulence (30%), leg edema (20%), leg cramps (10%), shortness of breath. (60%) and back pain (70%). (Handayani, D., 2021).

As many as 80% of leg edema is found in pregnant women, this is caused by uterine pressure which blocks venous return and the pull of gravity causes greater fluid retention. Leg edema is usually complained of in the third trimester, this is due to increasing uterine pressure. (Handayani, D., 2021)

Edema that occurs in pregnancy is generally leg edema. Leg edema is found in around 80% of pregnant women in the third trimester, occurring as a result of uterine pressure which inhibits venous return and gravitational pull causing greater fluid retention. Edema can be an early symptom that leads to pathological conditions and even an indicator of chronic diseases in pregnancy such as anemia, intrauterine growth restriction (IUGR), preterm labor, high blood pressure, preeclampsia, eclampsia, placental abruption, placenta previa, hydramnios. Some diseases that cause edema are: chronic heart disease, kidney failure, joint disease, pregnancy, excessive salt intake and physical fatigue. (Sawitry, 2020)

Since treatments to decrease common discomforts of pregnancy such as edema should not threaten the mother and fetus, many midwives and pregnant women seek complementary therapies such as massage therapy (Clayton, A. M, 2018)

From the results of a literature review regarding the application of foot massage and soaking warm water mixed with kencur in third-trimester pregnant women, foot massage can reduce edema in pregnant women because it can improve blood circulation and stretch the muscles, soaking warm water mixed with kencur is also an appropriate effort to provide a feeling of warmth in the feet so that blood circulation becomes smooth. The mixture of kencur also provides antiinflammatory against swollen feet due to edema. This warm feeling is produced by kencur because it contains oleoresin, which has an anti-inflammatory effect and can relieve muscle tension. The warm effect of kencur can also cause vasodilation of blood vessels, causing an increase in blood circulation and causing a decrease in pain. (Ali R Djunaid & Adam, 2020)

In research (Yanti, M. D., 2020), it is also stated that the chemical compounds in galangal rhizomes that have an anti-inflammatory effect are flavonoid compounds, flavonoid compounds are compounds that act as anti-inflammatory. The larger the dose used, the greater the anti-inflammatory effect.

According to (Lestari, T. E., 2018), soaking in warm water with a temperature of 38 degrees for at least 10 minutes using aromatherapy can relieve muscle tension and stimulate the production of brain glands which makes the body feel calmer and more relaxed. Foot soak therapy (foot hydrotherapy) helps improve blood circulation by widening blood vessels so that more oxygen is supplied to swollen tissues.

Research (Sawitry, 2020), explains that salt water can conduct electricity compared to fresh water and reduces water and salt elements into negative ions. This compound will enter the human body from the feet through a network of meridians that cross the skin tissue of the feet. Warm water and salt therapy as an alternative in treating edema in pregnancy and avoiding complications from pharmacological therapy (diuretics) which if used carelessly can cause loss of fluid volume, worsen uteroplacental perfusion, increase hemoconcentration, cause fetal dehydration and reduce weight Fetus.

The results of research (Sawitry, 2020) showed that the degree of edema in pregnant women after the warm water and salt soak had changed, namely the highest degree of edema was grade 1 and the lowest was 0. After the warm water and salt soak, the mother felt very comfortable and Mother no longer feels tingling as usual.

The results of research (Manullang, R. S., 2022), it was found that the degree of edema in pregnant women after the warm water and salt soak had changed, namely the highest degree of edema was grade 2 and the lowest was 1. After the warm water and salt soak, the mother felt very comfortable and Mother no longer feels tingling as usual. According to the results of this study, according to researchers, the presence of leg edema in these 15 respondents required immediate treatment. One of the efforts made is by soaking in warm water and salt. In this study,

management of leg edema was carried out by soaking the feet up to 10-15 cm above the ankles in warm water with a temperature of 38-39°C mixed with 5 tsp of Epsom salt and soaking for 15-20 minutes.

According to Sulaiman's research in 2010, the water extract of aromatic ginger leaves has anti-inflammatory activity which was tested in acute inflammation. Galangal rhizomes for inflammation can inhibit the release of aerotonyms and can inhibit the synthesis of prostaglandins from arachidonic acid by inhibiting the action of cyclooxygenase. This is in line with research (Mardiah, 2022) that the use of galangal rhizome at a dose of 45 mg/kg can overcome edema. The ingredients contained in galangal are chemical compounds that can reduce edema/inflammation. The chemical compounds contained in galangal are polyphenols, quinones, triterpenoids, tannins and flavonoids. Soaking your feet in warm water with a temperature of 38°C for 10 minutes using aromatherapy can reduce muscle tension and stimulate the production of brain glands which makes the body feel more relaxed and calmer.

In riset (Harismayanti RA, 2020) said that soaking the feet in warm water causes a conduction process, namely heat transfer from warm water to the feet. This will help increase blood circulation by widening blood vessels which will result in more oxygen supply.

The conclusion from this study was that red ginger hydrotherapy was proven to be more effective in reducing battery oedema in third-trimester pregnant women compared to standard antenatal care. Red ginger hydrotherapy was able to reduce feet oedema in third-trimester pregnant women by 2,647 mm (86.5%), while standard antenatal care intervention was only 1,118 mm (45.3%) with a p-value of 0.000 ($p < 0.05$). It is hoped that this study can be used as a reference for further research, by adding a longer duration of administration (>20 minutes in >5 consecutive days) and the intervention time that (Gabriella & , Runjati Runjati, 2022)

Based on the results of research on the effect of foot massage and warm water soak mixed with kencur on foot edema in pregnant women at the Nagrak Health Center in 2021 that the average degree of foot edema before foot massage and warm water soak mixed with kencur is at level 3+ meaning it is deep enough, can lasts more than 1 minute, the affected extremity looks larger and swells while the average degree of foot edema after a foot massage and soaking in warm water mixed with kencur is at level 1+ meaning mild pitting, no visible distortion (change), fast disappearing. From the day of the study, it can also be concluded that foot massage and soaking in warm water mixed with galingale affect foot edema in pregnant women at the Nagrak Health Center, Cianjur Regency (Bunga Tiara Carolin at.el, 2023)

(Shinta Novelia & Caka, 2022) entitled The Effect of Applying Massage and Soaking the Feet with Warm Water Mixed with Galangal on Foot Edema in Pregnant Women, said that there is an influence of foot massage therapy and soaking the feet with warm water mixed with galangal. Similar research was also conducted by Tri Endah Widi Lestari (2018) with the title Application of Foot Massage and Soaking in Warm Water Mixed with Galangal on Leg Edema of Pregnant Women in the Third Trimester in the Work Area of Puskesmas I Wangon, Banyumas with the result of reducing leg edema in pregnant women in the third trimester. which was carried out on 3 respondents from third trimester pregnant women who experienced complaints of physiological leg edema. This therapy was applied repeatedly for 5 days for each respondent.

It is hoped that this research can increase insight, information and knowledge pregnant mother about leg edema during pregnancy. Based on the description above, the author is interested in. Apply a warm salt water soak and a mixed warm water soak galangal to reduce leg edema in third trimester pregnant women.

RESEARCH METHOD

This research is a quasi-experimental research whose design uses the two group Pretest-Posttest design, because this research aims to compare the results of the pretest of the intervention group and the posttest of the intervention group. (Arikunto, 2016)

This research was conducted in the Padusunan Padang Pariaman Community Health Center work area in 2023 with a sample of pregnant women in the third trimester with leg edema. The sample consisted of 40 people and was divided into two for each group, namely 26 people in the warm aromatic ginger water soak group and 26 people in the warm salt water soak group. The sampling technique used is probability sampling using purposive sampling technique.

The data collection tool in this study used an observation sheet in providing warm aromatic ginger and salt warm water immersion therapy. In this study, because the sample size was small, a parametric test was immediately carried out, namely the Paired T Test.

RESULTS AND DISCUSSIONS

Based on research that has been conducted regarding the comparison of the effectiveness of warm kencur water baths with warm salt water on leg edema of pregnant women in the third trimester in the working area of Padusunan Padang Pariaman Health Center in 2023, the following results were obtained:

Table 1. Comparison of effectiveness before giving aromatic ginger warm water with salt warm water

Edema limbs	n	Mean	Min	Max	SD
Before giving aromatic ginger warm water	26	3.62	3	4	0.496
Before giving salt warm water	26	3.31	3	4	0.471

Table 1 shows that the average score before being given aromatic ginger warm water foot soak was 3.62 with an SD of 0.496 and the average score before being given a salt warm water foot soak was 3.31 with an SD of 0.471, with a range of values for edema before being 3-4.

Table 2. Comparison of effectiveness after being given aromatic ginger warm water and salt warm water

edema Limbs	n	Mean	Min	Max	SD
after giving aromatic ginger warm water	26	1.65	1	2	0.485
after giving salt warm water	26	1.96	1	3	0.824

Table 2 shows that the average score after being given a aromatic ginger warm water foot soak was 1.65 SD 0.485 with a range value for edema after being 1-2 and the average score before being given a salt warm water foot soak was 1.96 SD 0.824 with a value range for edema after being 1-3.

Table 3. Comparison of effectiveness before and after giving aromatic ginger warm water and salt warm water

Group	N	Mean	Difference Mean	SD	Sig. (2-tailed)
aromatic ginger warm water					
Before giving aromatic ginger warm water	26	3.62			
After aromatic ginger warm water	26	1.65	1.97	0.196	0,000
salt warm water					
Before salt warm water	26	3.31			
After salt warm water	26	1.96	1.35	0.485	0,000

The statistical test results based on table 3 show that the data is declared effective with an edema p-value of <0.05. It was concluded that there was effectiveness before and after being given

aromatic ginger warm water with warm salt water against leg edema in pregnant women in the third trimester in the Padusunan Padang Pariaman Community Health Center work area in 2023.

Based on the research results, it was found that there was effectiveness before and after being given warm kencur water with warm salt water against leg edema in pregnant women in the third trimester in the Padusunan Padang Pariaman Health Center work area in 2023.

The rate of recovery from edema itself depends on the influence of the mother's daily activities. High maternal mobilization will be different from low maternal mobilization. High maternal mobilization is aimed at pregnant women who have activities and movement every day, such as walking, exercising, washing and doing other household chores. The reduction in the degree of edema will be different from pregnant women who only do a little physical activity and movement every day. This difference in activity can trigger muscle tension and joint pain, so it will have an effect on reducing the degree of edema (Anggeriani, R., 2022)

Aromatherapy in warm water can stimulate brain glands stimulates the body to relax and quieter. In this article shows that treat is effective in reducing leg edema, safe and provide relaxing effect for pregnant women so reduced complaints of leg edema and mothers feel more comfortable, relaxed, calm and sleep better. From effects If you feel that way, soak it up Warm water can also reduce it anxiety in third trimester pregnant women who will face childbirth (Damarsanti, P., Anggraini, R. & Setianingsih, 2018)

The aroma of galangal as aromatherapy will be captured by the nasal receptors then stimulates the brain control and relate with feelings (mood and emotions) and then distributed to the hypothalamus as a regulator of the internal system body, body temperature control system, and blood flow control system. Effect aromatherapy will provide calm, comfort, reduce pain and stress, and provides relaxation (Dey, T. N., 2022).

According to (Ernawati, 2022) soaking in warm water with a temperature of 38 degrees for at least 10 minutes using aromatherapy can relieve muscle tension and stimulate the production of brain glands which makes the body feel calmer and more relaxed. Foot soak therapy helps improve blood circulation by widening blood vessels so that more oxygen is supplied to swollen tissues. (Igirisa, Y., 2018)

Warm water can conduct electricity compared to fresh water and reduces negative ion water elements. This compound will enter the human body from the feet through a network of meridians that cross the skin tissue of the feet. Warm water therapy as an alternative for treating edema in pregnancy and avoiding complications from pharmacological therapy (diuretics) which if used carelessly can cause loss of fluid volume, worsen utero-placental perfusion, increase hemoconcentration, cause fetal dehydration and reduce fetal weight (Miranti, 2019)

Warm water immersion therapy mixed with galangal can reduce stress levels by stimulating the production of endorphins which have analgesic properties and are able to reduce pulse frequency and lower blood pressure by widening blood vessels, thus reducing afterload, increasing blood circulation back to the heart thereby reducing edema (Umiyah, A., 2022)

This research is in line with previous research conducted by Khotimah (2019), where the research results showed that there was an effect of warm water immersion therapy on edema in the lower limbs of pregnant women at RSUD Dr. H. Chatib Quzwaen Sarolangun 2018 (p-value=0.000, (p<0.05). Furthermore, research conducted by Endang (2018), that pregnancy with edema in the legs is related to soaking the feet in warm water can increase reduction of edema in the feet with a p-value of (0.023), research results by Sanaya Siagian (2021).

This will further help speed up the process of reducing feet oedema felt by pregnant women in the third trimester. Red ginger is one of the typical plants that is famous in Indonesia because of its oleoresin and essential oil content. Oleoresin contained in red ginger rhizome can give a spicy taste, while the essential oil is able to produce a distinctive aroma. The presence of zingiberene and zingiberol compounds in essential oils causes red ginger to have a fragrant smell (Rahmadani N, Ruslan R, 2018)

This research is not in line with research by (Yanti, M. D., 2020) where the results of statistical tests show that there is no difference in the effectiveness of foot massage and soaking in warm water mixed with galangal tubers in reducing the level of physiological foot swelling in pregnant women in the third trimester ($p = 0.673$).

Aromatic ginger (kencur) is also often used as traditional medicine, one of which is efficacious as a compressing drug for swelling or inflammation. Warm water foot bath therapy has a physiological impact on the body. The first has an impact on the blood vessels where the warm water makes blood circulation smooth, the second is the loading factor in the water that benefits the ligamentous muscles, affect the joints of the body. Warm water has a physiological impact on the body in the form of increasing blood circulation by widening blood vessels so that more oxygen is supplied to the tissues and strengthens muscles and ligaments (Putra & Ega S, 2019)

Another study by (Çoban, A., & Şirin, 2015) found that foot massage results the positive effect on decreasing normal physiological lower leg oedema in late pregnancy. In addition, research was conducted in 2019 found that warm footbath with salt is recommended for reducing edema under extremity in postpartum pre-eclampsia.

According to researchers, signs and symptoms of edema in the legs require immediate treatment, one of which is by applying warm compresses. In this study, management of leg edema was carried out by soaking the feet to a limit of 10-15 cm above the ankles in warm water with a temperature of 37-40 oC and doing this for 20-30 minutes for 5 days. The results of measurements on the degree of edema showed that the change between before the hot salt water soak was carried out and after it was carried out was 3.80 to 1.60, while the change between before the warm salt water soak was carried out and after it was carried out was 3.80 to 1.80 where most of the changes occurred on the 3rd day until day 5. (Zaenatushofi, Z., & Sulastri, 2019)

This shows that the reduction in the degree of edema occurs as a result of soaking the feet in warm water. According to the researchers' assumption, the effect of warm water immersion therapy on edema in the lower legs of pregnant women is because the feet are soaked in warm water, there will be a transfer of heat from the warm water to the body, causing the blood vessels to become wide and muscle tension to decrease so that blood circulation is smooth, with widening. blood vessels, the blood flow will be smooth so that it is easy to push blood into the heart. This situation causes blood flow to become smoother, so the end result is that blood circulation returns to the heart, making it easier for the body to withdraw fluid that is in extra cellular cells and will reduce lower leg edema. (Setianingsih, A. N., & Fauzi, 2022)

CONCLUSION

The results of the study showed that there was effectiveness before and after giving aromatic ginger warm water with warm salt water against leg edema in pregnant women in the third trimester in the Padusunan Padang Pariaman Community Health Center work area in 2023 (p -value 0.002). The results obtained from our research indicate soaking warm water mixed with salt, warm water mixed with kencur is effective that foot massage was found to have a positive effect in reducing the normal physiological edema of the lower limbs in late pregnancy.

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