

The Effect of Foot Soaking in Warm Water with Galangal Mixture on Edema Foot of Third Trimester Pregnant Women

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Abstract. *The aim of this study was to determine the effect of foot soaking in warm water with galangal mixture on edema feet of third trimester pregnant women. This type of research is an analytical survey with a research design that is true experiment design with pre-test-post-test with control group approach using purposive sampling technique with a total sample of 32 respondents. The results showed that there was an effect of foot soaking in warm water with a mixture of galangal on the edema feet of third trimester pregnant women at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo shows that based on the alternative Wilcoxon test, the p value is = 0.001. It is recommended that the results of this study be used as input in the process of teaching and learning activities and as a reference, especially for further research.*

Keywords: *Edema, Pregnancy, Galangal, Soak*

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INTRODUCTION

Pregnancy is something that is happy and eagerly awaited for someone who is married, but the process of pregnancy requires quite a sacrifice because generally pregnancy affects the health condition of pregnant women. The gestation period starts from conception until the birth of the fetus (280 days / 40 mg) or 9 months 7 days. The period of pregnancy is divided into 3 trimesters, namely the first trimester starting from the beginning of pregnancy to 14 weeks, the second trimester 14 weeks to 28 weeks, the third trimester 28 weeks to 36 or 40 weeks. (Warnazila & Nugroho, 2014)

Third trimester of pregnancy in pregnant women experience physical and psychological changes during pregnancy that can cause discomfort. According to Famela's (2016) research, the discomfort of third trimester pregnant women includes; frequent urination 50%, vaginal discharge 15%, constipation 40%, flatulence 30%, leg edema (swelling) 20%, leg cramps 10%, headache 20%, striae gravidarum 50%, hemorrhoids 60%, shortness of breath 60 %, and back pain 70%.

Edema is swelling caused by the accumulation of fluid. Half of pregnant women experience swelling of the legs during pregnancy. Edema of the feet in pregnant women can be physiological or pathological. Pathological edema is a non-dependent edema of the face and hands, feet or generalized edema, and is usually accompanied by rapid weight gain (Irianti, 2014). This is usually found in pregnant women with complications during pregnancy such as; hypertension, preeclampsia, eclampsia and impaired kidney and heart function. Physiological leg edema results from impaired venous circulation

and increased venous pressure in the lower extremities. Edema of the legs is usually complained of at gestational age above 34 weeks (third trimester).

Based on WHO data in 2010, the incidence of nausea and vomiting is 80-85%, back pain during pregnancy varies between 35 - 60%, hemorrhoids occur around 8%, while leg swelling (edema) occurs around 75%. In pregnant women, swelling that commonly occurs in the third trimester. From the data above, complaints of swelling rank second as much as 75%, edema in pregnant women can be dangerous or not (Anggraeni, 2016).

The greater the gestational age of the mother, the greater the edema experienced, but the edema that occurs is physiological edema caused by the continued enlargement of the uterus. If the edema gets bigger, it will reduce the mother's activity, because the body burden will be increased as well. Edema can get worse when sodium levels are high in the body because of the nature of sodium (salt) to draw more water into the bloodstream. If the water continues to be attracted and the blood vessels are getting wider, the blood vessels can burst and the result of the broken blood vessels will inhibit the supply of nutrients to the fetus, if the nutrients are lacking it will inhibit fetal growth (Dewi, 2011).

Data from the Indonesian Ministry of Health in 2012, 80% of pregnant women in Indonesia experience complaints of swelling in the legs, 45% of leg swelling due to preeclampsia comorbidities, 35% due to physiological factors in pregnancy, and 20% of the causes of death in pregnant women are eclampsia (Anggraeni, 2016).

The incidence of preeclampsia in Indonesia ranges from 2-6% of healthy nulliparous pregnant women. In developing countries, the incidence of preeclampsia ranges from 4-18% of mild preeclampsia occurs in 75% and severe preeclampsia occurs in 25%. Of all the incidence of preeclampsia, about 10% of pregnancies are less than 34 weeks (Padila, 2014).

Data obtained from the Gorontalo Provincial Health Office, there are 52 cases of death or 52 per 100,000 live births, with a total of 13 cases of death due to severe preeclampsia in 2015. Gorontalo District is the largest contributor to maternal mortality with 20 deaths, 8 cases of preeclampsia. Maternal mortality with severe preeclampsia or 20 per 100,000 live births with a presentation of 29.4%. Gorontalo City followed 10 cases of maternal mortality, 2 with severe preeclampsia or 10 per 100,000 live births with a percentage of 25%. North Gorontalo District itself has 10 cases of maternal mortality, 2 with severe preeclampsia or 10 per 100,000 live births with a percentage of 20%. Boalemo District has 8 deaths or 8 per 100,000 live births with 1 severe preeclampsia with a presentation of 12.5%. Pohuwato District there were 8 cases of maternal deaths, there were no maternal deaths with severe preeclampsia. (Gorontalo Provincial Health Office, 2016).

Pregnant women who have comorbidities such as preeclampsia, the swelling that occurs in the legs is difficult to reduce the edema even though it has been made to rest, usually the swelling can go down if you get routine treatment, but in contrast to mothers who do not have comorbidities, the swelling that occurs can go down if it's made break. Swelling in pregnant women can be reduced by following a warm foot bath regularly, because one of the benefits of foot soaking in warm water is to improve blood circulation.

Warm water soaking intervention is one of the non-pharmacological interventions that can be used for pregnant women. Foot soak therapy (foot hydrotherapy) helps improve blood circulation by widening the blood vessels so that more oxygen is given to the swollen tissue (Wati et al., 2016). The results of research related to soaking in warm water include research conducted by Damarsanti (2018), soaking feet with warm water can reduce anxiety in third trimester pregnant women.

Along with the tagline back to nature, the use of traditional medicines among Indonesians as an alternative treatment is increasing. Many traditional medicinal plants have been marketed, among others, as a prevention or treatment of a disease. One of the nutritious plants used for traditional medicine is kencur (*Kaempferia Galanga L.*).

Kencur is often used as a traditional medicine, one of which is efficacious as a swelling or inflammation compressing drug, rimpangkencur extract has anti-inflammatory activity which is tested in acute inflammation, where in the end result kencur leaf water extract can reduce leg edema in pregnant women (Hasanah et al., 2011). obtained from RSUD dr. Hasri Ainun Habibie Gorontalo visited third trimester pregnant women for antenatal care (Antenatal Care / ANC) at the Obstetrics and Gynecology Department in October-December 2018 as many as 318 people, with 223 pregnant women in the third trimester. Meanwhile, there were 160 pregnant women in the third trimester who experienced feet edema in October to December. Based on the results of interviews conducted by researchers with 8 third trimester pregnant women who checked their uterus, 3 of them with leg edema, the three pregnant women said that they had never done soaking feet with warm water mixed with galangal to reduce leg edema because they did not know the benefits and did not have free time. To do it.

Based on the above background, the researcher is interested in researching "The effect of foot soaking in warm water with a mixture of galangal on leg edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo " that aim to determine the effect of foot soaking in warm water with galangal mixture on foot edema of third trimester pregnant women.

METHODS

Research design is a comprehensive planning that involves all components and steps of research by considering research ethics, research resources and research constraints. The research design used was true experimental design with a pre-test-post-test with control group approach (Notoatmodjo, 2012).

The population in this study were all pregnant women with feet edema in the third trimester of pregnancy at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo which is 160 people. In this study, the sampling technique used was purposive sampling based on certain considerations. The determinant of the sampling size can be determined based on the Arikunto formula that samples above 100 can be taken using a 10%, 20%, or 30% percentage technique.

The difference between this study and Famela's research (2016) with the title "Foot Massage to Overcome Foot Edema for Pregnant Women Third Trimester Mrs S age 28 years G2P1A0 at BPM Hj Maunah Tambakagung klirong kebumen is in Famela's research using foot massage therapy while in this study using a warm water soak mixed with galangal.

RESULTS AND DISCUSSION

Univariat analysis

Analisa Univariat

Tabel 1. Frequency Distribution of Respondents Based on the Work of the Treatment Group at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo.

Treatment	Frequency (n)	Persentase (%)
IRT	9	56,2
SWASTA	3	18,8
PNS	2	12,5
GTT	2	12,5
Total	16	100

Source: Primary Data, 2019

From table 1 regarding the distribution of respondents based on the work of the treatment group, it is known that of the 16 respondents the largest proportion was IRT with 9 respondents (56.2%).

Table 2. Frequency Distribution of Respondents Based on Control Group's occupation in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo

Occupation (Control)	Frekuensi (n)	Persentase (%)
IRT	8	50
SWASTA	4	25
PNS	2	12,5
GTT	2	12,5
Total	16	100

Source: Primary Data, 2019

From table 2 regarding the distribution of respondents based on the control group's work, it is known that of the 16 respondents the most were IRT with a total of 8 respondents (50%).

Table 3. Distribution of Respondents by Age of Treatment Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie

Age (Treatment)	Frequency (n)	Percentage (%)
26 - 35 Tahun	14	87,5
36 - 45 Tahun	2	12,5
Total	16	100

Source: Primary Data, 2019

From table 3 regarding the distribution of respondents based on the age of the treatment group, it is known that of the 16 respondents the largest age group was the young adult group aged 26 - 35 years with a total of 14 respondents (87.5%).

From table 4 regarding the distribution of respondents based on the age of the control group, it is known that of the 16 respondents the most were young adults aged 26-35 years with a total of 13 respondents (81.2%).

Table 4. Distribution of Respondents Based on Age Control Group in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo

Age (control)	Frequency (n)	Percentage (%)
26 - 35 years old	13	81,2
36 - 45 years old	3	18,9
Total	16	100

Source: Primary Data, 2019

From table 4 about the distribution of respondents based on the age of the control group, it is known that of the 16 respondents the most were young adults aged 26 - 35 years with a total of 13 respondents (81.2%).

Table 5. Distribution of Respondents by Gravida Treatment Group at Obstetrics and Gynecology Poli Hospital dr. Hasri Ainun Habibie Gorontalo

Gravida (treatment)	Frequency (n)	Percentage (%)
1	4	25
2	9	56,2
3	2	12,5
4	1	6,2
Total	16	100

Source: Primary Data, 2019

From table 5 about the distribution of respondents based on the graphical treatment group, it is known that of the 16 respondents the most gravida was the second with 9 respondents (56.2%).

Table 6. Distribution of Respondents Based on the Gravida Control Group in Obstetrics and Gynecology Poli Hospital dr. Hasri Ainun Habibie

Gravida (control)	Frequency (n)	Percentage (%)
1	5	31,2
2	7	43,8
3	3	18,8
4	1	6,2
Total	16	100

Source: Primary Data, 2019

From table 6 regarding the distribution of respondents based on the gravida of the control group, it is known that of the 16 respondents the most gravida were the 2nd with a total of 7 respondents (43.8%).

Table 7. Distribution of Respondents based on Gestational Age, Treatment Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Pregnancy age(treatment)	Frequency (n)	Percentage (%)
7	8	50

8	5	31,2
9	3	18,8
Total	16	100

Source: Primary Data, 2019

From table 7 regarding the distribution of respondents based on gestational age in the treatment group, it is known that of the 16 respondents the most gestational age was 7 months with a total of 8 respondents (50%).

Table 8. Distribution of Respondents based on Gestational Age, Control Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Pregnancy age (Control)	frequency(n)	percentage (%)
7	8	50
8	4	25
9	4	25
Total	16	100

Source: Primary Data, 2019

From table 8, the distribution of respondents based on the gestational age of the control group, it is known that of the 16 respondents the most gestational age was 7 months with a total of 8 respondents (50%).

Table 9. Distribution of Respondents Based on Blood Pressure in the Treatment Group at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Blood Pressure (treatment)	frequency(n)	Percentage (%)
Normal	16	100
Total	16	100

Source: Primary Data, 2019

From table 9 about the distribution of respondents based on the blood pressure of the treatment group, it is known that of the 16 respondents all respondents (100%) had normal blood pressure.

Table 10. Distribution of Respondents Based on Blood Pressure in Control Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Blood pressure (Control)	frequency (n)	percentage (%)
Normal	16	100
Total	16	100

Source: Primary Data, 2019

From table 10 about the distribution of respondents based on the blood pressure of the control group, it is known that of the 16 respondents all respondents (100%) had normal blood pressure.

From table 11 regarding the distribution of respondents based on edema before treatment in the treatment group, it is known that of the 16 respondents the most were moderate edema with 11 respondents (68.8%).

Table 11. Distribution of Respondents Based on Edema before Treatment Treatment Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Edema before treatment (treatment)	Frequency (n)	Percentage (%)
Moderate	11	68,8
Severe	5	31,2
Total	16	100

Source: Primary Data, 2019

Table 12. Distribution of Respondents Based on Edema before Treatment Control Group at Obstetrics and Gynecology Poli Hospital dr. Hasri Ainun Habibie Gorontalo

Edema before treatment (control)	Frequency (n)	Percentage (%)
Moderate	11	68,8
Severe	5	31,2
Total	16	100

Source: Primary Data, 2019

From table 12 regarding the distribution of respondents based on edema before treatment in the control group, it is known that of the 16 respondents the most were moderate edema with 11 respondents (68.8%).

From table 13 about the distribution of respondents based on edema after treatment in the treatment group, it is known that of the 16 respondents the most were moderate edema with 9 respondents (56.2%).

Table 13. Distribution of Respondents Based on Edema after Treatment Treatment Group at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo

Edema after treatment (treatment)	Frequency (n)	Percentage (%)
Light	7	43,8
moderate	9	56,2
Severe	0	0
Total	16	100

Source: Primary Data, 2019

Table 14. Distribution of Respondents Based on Edema After Treatment Treatment Group in Obstetrics and Gynecology Poli Hospital dr. Hasri Ainun Habibie Gorontalo

Edema after treatment (treatment)	Frequency (n)	Percentage (%)
Light	1	6,2
Moderate	11	68,8
Severe	4	25
Total	16	100

Source: Primary Data, 2019

From table 14 regarding the distribution of respondents based on edema after treatment in the control group it is known that of the 16 respondents the most were 11 respondents (68.8%).

Bivariate Analysis

Based on table 15 the effect of foot soaking in warm water with kencur mixture on leg edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo showed that based on the data normality test, the data were not normally distributed so that the researcher did not use the main test (Paired t-test). The researcher used an alternative test, namely using the Wilcoxon test. In the treatment group, the p value = 0.001, which means that there is an effect of foot soaking in warm water with a mixture of kencur on the edema of the legs of third trimester pregnant women at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo, while in the control group the value of p value = 0.157, which means there is no effect of foot soaking in warm water with kencur mixture on foot edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo. Based on table 8, it shows the difference between the mean edema after treatment with edema before treatment is 0.75, while the edema after control with edema before control is 0.13, which means that the mean reduction in the mean value in the control group has no significant change.

Table 15. The Effect of Warm Water Foot Soaking with Kencur Mixture on Foot Edema of Third Trimester Pregnant Women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo

Mean (SD)		P value	Mean (SD)		P value
Edema Before Treatment	2,31 (0,479)	0.001*	Edema Before control	2,31 (0,47)	0.157*
After Edema Treatment	1,56 (0,512)		Edema after Control	2,18 (0,57)	
Mean defiation	0,75			0,13	

* Wilcoxon test.

Based on table 15, the effect of foot soaking in warm water with galangal mixture on leg edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo showed that based on the data normality test,

the data were not normally distributed so that the researcher did not use the main test (Paired t-test). The researcher used an alternative test, namely using the Wilcoxon test. In the treatment group, the p value = 0.001, which means that there is an effect of foot soaking in warm water with a mixture of kencur on the edema of the legs of third trimester pregnant women at the Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo, while in the control group the value of p value = 0.157, which means there is no effect of foot soaking in warm water with kencur mixture on foot edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo. Based on table 8, it shows the difference between the mean edema after treatment with edema before treatment is 0.75, while the edema after control with edema before control is 0.13, which means that the mean reduction in the mean value in the control group has no significant change.

Edema of Pregnant Women Feet before Doing Soak Feet in Warm Water with Kencur Mixture

The results showed that of the 16 respondents, both treatment and control groups, the most were moderate edema with 11 respondents (68.8%). This can be seen from 68.8% of respondents seen moderate edema. Meanwhile, respondents in both the treatment and control groups with severe edema were 5 respondents (31.2%). In addition, this edema also appears when the researchers conducted the study, some pregnant women liked the long sitting position with their legs hanging. This is in accordance with the theory that sitting with the legs hanging off will cause leg edema because this position will increase the pressure due to the force of gravity which will slow back blood flow, causing swelling in the legs. In addition, the researchers conducted interviews during the study and obtained information that some respondents said they did not move much at home because they felt they were heavy to walk with. This is in accordance with the theory that causes leg edema in third trimester pregnant women, due to lack of movement in pregnant women so that the blood flow in the legs is not smooth so that they experience edema in the lower extremity area, namely the legs.

Swelling or edema is the buildup or retention of fluid in the outer area of the cell as a result of the transfer of intracellular fluid to the extracellular. Edema in the legs is usually complained of at gestational age above 34 weeks. This is because the uterine pressure increases and affects blood circulation. With increasing uterine pressure and gravitational pull, it causes greater fluid retention (Irianti, 2014).

Edema or swelling of the legs during the later stages of pregnancy indicates obstruction of lymph flow (spleen). The spleen is a clear fluid that flows through special channels. The spleen is produced by many organs and tissues. It plays a very important role in the body's natural defense mechanisms. (Ramaiah, 2015).

Swelling or edema in pregnancy can indicate a serious problem if it appears on the face and hands and does not go away after resting and is followed by other physical complaints. This could be a sign of anemia, heart failure or preeclampsia. The kidney system that is not optimal in pregnant women affects the body's work system, resulting in excess fluid. This can be seen after birth, when the swollen ankle temporarily gets worse. This is because the additional tissue needed for fetal growth and development while in the womb is no longer needed and will be removed, after previously being processed by the kidneys and becoming urine. Because the kidneys are not able to work optimally, excess fluid builds up around the blood vessels so that the kidneys are able to

process them further. Sometimes swelling makes the skin at the bottom stretch, looks shiny, tense and very uncomfortable, while leg cramps in pregnant women often occur at night while sleeping. Leg cramps are caused by increased salt levels in the body and changes in circulation (Sutanto, 2014).

This is evidenced by a study (Coban & Sirin, 2010) entitled "Effect of Foot Massage to Physiological Decrease Lower Leg Edema in Late Pregnancy." The similarity between Coban and Sirin's research and this research is that the respondents are pregnant women in the third trimester who experience leg edema.

Researchers assume that leg edema before treatment is a physiological edema that often occurs in late trimester pregnant women, the cause is due to the activity of pregnant women who are not moving and sitting with their legs hanging so that blood flow in the legs is not smooth and hampered, this triggers leg edema. Physiology in third trimester pregnant women.

Edema of Feet for Pregnant Women after Soaking Feet in Warm Water with Kencur Mixture

The results showed that of the 16 respondents the treatment group had the most moderate edema with 9 respondents (56.2%), while the most control group was moderate edema with 11 respondents (68.8%). Respondents in the treatment group with mild edema were 7 respondents (43.8%), while respondents in the control group with mild edema were 1 respondent (6.2%). After the research, the respondents in the treatment group with severe edema were 0%, while the control group respondents with severe edema were 4 respondents (25%). This edemakaki can be seen from the results of observations made by researchers after conducting an intervention of warm water foot bath with kencur mixture. This is in accordance with the theory that soaking the feet with warm water with a mixture of kencur can increase blood circulation to the top of the feet by widening the swollen blood vessels besides the function of kencur as an anti-inflammatory which functions to reduce swelling. In this study, researchers used kencur that had been mashed in the hope that more extracts would be obtained from the kencur so that it could maximize its properties.

Swelling or edema is the accumulation of excess fluid in body tissues, and can be seen from weight gain and swelling of the feet, fingers and face. Mild pretibial edema is often found in ordinary pregnancy, so it is of little significance for the diagnosis of preeclampsia. Nearly half of pregnant women will experience normal swelling in the leg which usually goes away after resting or elevating the leg. What is worrying is the edema that appears suddenly and tends to expand (Sutanto, 2014).

According to natural medicine, there are four main reasons that cause edema during pregnancy (Ramaiah, 2015), among others: wearing tight clothes, especially around the waist. A tight bandage around the waist acts as a binder and interferes with the circulation of the spleen causing leg edema; sitting with bent legs or standing for long periods of time; eating excess salt. When the amount of salt you consume is more than necessary, the excess salt will be excreted by the body. During excretion, some of the salt stops in various parts of the body, excess salt will attract water and cause swelling of the body parts. As well as hormonal changes that make the body retain a lot of water.

Soaking warm water feet is a form of hydrotherapy. A warm foot bath is a condition where your feet come into direct contact with warm water. Soaking the feet in warm water is done with a temperature of 38°C (Darmasanti, 2018).

Kencur can be used to help treat muscle injuries and inflammation. To do this, mash the kencur with a handful of rice until it is smooth, then apply it to the part of the body that is injured or swollen. Kencur extract contains anti-inflammatory which functions to reduce swelling (Savitri, 2016).

This is evidenced by a study (Coban & Sirin, 2010) entitled "Effect of Foot Massage to Physiological Decrease Lower Leg Edema in Late Pregnancy." The similarity between Coban and Sirin's research and this research is that the respondents are pregnant women in the third trimester who experience leg edema.

Researchers assumed that leg edema after treatment experienced a decrease in the level of edema, this was evidenced by the number of treatment group respondents who experienced severe edema to 0 respondents after treatment, previously the treatment group respondents with severe edema were 5 respondents (31.2%). This is in accordance with the theory that soaking the feet in warm water with a mixture of kencur can improve blood circulation to the top of the feet by widening the swollen blood vessels besides the smoothed function of kencur as an anti-inflammatory which functions to reduce swelling.

Effect of foot soaking in warm water with a mixture of kencur on foot edema of third trimester pregnant women at Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo.

The results showed that the effect of foot soaking in warm water with a mixture of kencur on foot edema of third trimester pregnant women in Obstetrics and Gynecology Clinic, dr. Hasri Ainun Habibie Gorontalo shows that based on the alternative Wilcoxon test, the p value is obtained = 0.001, which means that there is an effect of foot soaking in warm water with a mixture of kencur on leg edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo in the treatment group and obtained p value = 0.157, which means there is no effect of foot soaking with warm water mixture of kencur on foot edema of third trimester pregnant women in Obstetrics and Gynecology Poli RSUD dr. Hasri Ainun Habibie Gorontalo in the control group.

The results showed that 7 respondents in the treatment group with moderate edema experienced a decrease to mild edema while in the control group only 1 respondent with moderate edema experienced a decrease to mild edema. In addition, there were 5 respondents in the treatment group with severe edema who experienced a decrease to moderate edema, while only 1 respondent in the control group with severe edema experienced a decrease to moderate edema. The decrease in leg edema in the control group could be influenced by factors of maternal activity at the time of the study, including pregnant women who liked to walk regularly and pregnant women who did not sit with their legs hanging down.

To overcome edema, it is necessary to get enough rest and adjust the diet, namely increasing the consumption of foods that contain protein and reducing foods that contain carbohydrates, fats and salt. If the situation worsens, doctors can give consideration to giving birth to the baby immediately for the safety of the mother and baby (Sutanto, 2014).

According to Irianti (2014) midwifery care to reduce edema, namely: encourage the mother to improve her posture, especially when sitting and sleeping. Avoid sitting with your legs hanging because it will increase the pressure due to the force of gravity which will cause swelling. While sleeping, position the feet a little high so that the fluid that has accumulated in the extracellular part can switch back to the intracellular due to the resistance of the force of gravity; avoid wearing tight clothes and standing for a long time, sitting without a back; do light exercise and walk regularly to facilitate increased circulation; wear maternal abdominal support or a girdle to relieve edema in the pelvic veins. encourage the mother to use stockings to help relieve the straining pressure on the veins so as to prevent varicose veins; perform Kegel exercises to reduce vulvar varicose veins or hemorrhoids to improve blood circulation; use an ice pack on the vulva area to reduce swelling; take a warm bath or warm foot compress for soothing; encourage the mother to consume foods containing calcium and vitamin B. Calcium is useful for preventing cramps due to not meeting the body's calcium needs. Meanwhile, vitamin B will help stabilize the peripheral nervous system and perform foot soaking therapy using warm water (Irianti, 2014).

Warm foot bath is a scientific treatment that uses water to heal and reduce pain and various minor ailments. Soaking your feet in hot water can heat the entire body, increasing blood circulation to the upper part. This foot soak therapy also helps improve blood circulation by widening the blood vessels so that more oxygen is given to the swollen tissue (Wati et al., 2016).

Scientifically warm water has a physiological impact on the body. Warm water foot soak therapy affects the blood vessels where warm water makes blood circulation smooth and strengthens the ligaments that affect the joints of the body. Hydrotherapy soak feet in warm water is very easy for everyone to do, does not require expensive costs and does not have dangerous side effects (Solechah, 2017).

According to Flona (2010), soaking in warm water at 38°C for at least 15 minutes using aromatherapy can relieve muscle tension and stimulate the production of brain glands which make the body feel calmer and more relaxed. Traditional Chinese Medicine calls the foot as the second heart of the human body, a barometer that reflects the health condition of the body. There are many acupoints on the soles of the feet. Six meridians (liver, bile, bladder, kidney, spleen and stomach) are on the feet. This is also supported by research conducted by Khotimah (2012) that the therapy of foot soaking in warm water on the feet improves the microcirculation of blood vessels and vasodilation thereby increasing the quantity of sleep. Soaking the feet in warm water on the feet is effectively used to increase the quantity of sleep in the elderly who have sleep disorders. Naturally, warm water foot soak therapy has a physiological impact on the body. The first has an impact on the blood vessels where warm water makes blood circulation smooth, the second is the loading factor in the water which benefits the ligament muscles that affect the joints of the body.

This warm water foot soak procedure is to use warm water with a temperature of 38°C - 40 C in conduction where there is a transfer of heat from warm water to the body so that it will help improve blood circulation by widening blood vessels as a result of which more oxygen is given. Improved blood circulation also improves lymph circulation, thereby cleansing the body of toxins. Therefore people who suffer from diseases such as rheumatism, arthritis, insomnia, fatigue, stress, poor blood circulation such as hypertension, muscle pain can relieve the symptoms of these complaints.

Hydrotherapy soaking warm water feet is also able to relieve pulse rate and increased blood pressure by reducing stress levels and improving joint swelling (Harnani, 2017).

Kencur (*Kaemferia Galanga* L.) is a family medicinal plant that is often used as traditional medicine and herbal medicine. This spice is a natural flavoring used in many Indonesian dishes. Kencur is used as a tonic or appetite enhancer in children. Kencur is also used for sore throats and an antidote to flatulence due to colds. The benefits of kencur are not only used as a spice in the kitchen, kencur is also used as a traditional herb for medicine and a drink for health and beauty (Savitri, 2016).

Kencur can be used to help treat muscle injuries and inflammation. To do this, mash the kencur with a handful of rice until it is smooth, then apply it to the part of the body that is injured or swollen. Kencur extract contains anti-inflammatory which functions to reduce swelling (Savitri, 2016).

This is in line with Famela's research (2016) with the title "Foot Massage to Overcome Foot Edema for Trimester III Pregnant Women Mrs. S, 28 years old G2P1A0 at BPM Hj Maunah Tambakagung Klirong Kebumen, with the results of this study showing respondents feel more comfortable because the leg edema they experience can reduced after getting a foot massage for 20 minutes for 5 days on leg edema or swollen feet.

CONCLUSION

(1) Foot edema of pregnant women before soaking feet in warm water with kencur mixture that out of 16 respondents, both treatment and control groups, the most were moderate edema with 11 respondents (68.8%). (2) Foot edema of pregnant women after soaking feet in warm water with kencur mixture that of the 16 respondents the treatment group the most was moderate edema with 9 respondents (56.2%), while the control group had the most moderate edema with 11 respondents (68.8%). (3) There is an effect of foot soaking in warm water with a mixture of kencur on foot edema of third trimester pregnant women at the Obstetrics and Gynecology Poli RSUD dr.Hasri Ainun Habibie Gorontalo shows that based on the wilcoxon alternative test the p value is obtained = 0.001.

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