DIFFERENCES IN THE EFFECTIVENESS OF DRY AND WET CUPPING TO REDUCE DYSMENORRHEA AMONG TEENAGER AT NGEMPLAK SLEMAN YOGYAKARTA

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ABSTRACT

The prevalence of dysmenorrhea worldwide ranges from 15.8 to 89.5% and Indonesia was 64.25%. Dysmenorrhea was experienced by young women aged 18 to 24. The teenagers at Wedomartani, Ngemplak, Sleman, Yogyakarta reported that they experienced dysmenorrhea at 18 to 20 years old. Dysmenorrhea might affect daily activities. Pain can be managed using non-pharmacological methods such as dry and wet cupping therapies. The goal of this study is to find out the differences in the effectiveness of dry and wet cupping to reduce dysmenorrhea among teenagers at Wedomartai, Ngemplak, Sleman, Yogyakarta. This is quantitative quasi-experimental research with a pretest-posttest without control group design. This research used a random sampling technique. thirty teenagers became respondents. The research instruments were questionnaires, a numerical scale, a cupping set, and observation sheets. Data were analyzed using the paired t-test and independent t-test. The paired t-test on dry cupping therapy showed a p-value of 0.000. The pretest score was 4.67 then the post-test was 2.93. The analysis of wet cupping therapy showed a p-value of 0.000. A decrease in dysmenorrhea can be seen at the pretest score of 5.53 and the posttest of 3.20. The independent t-test showed a p-value of 0.704 after receiving dry and wet cupping therapies. So we can dry and wet cupping therapy is equally effective in reducing dysmenorrhea pain in adolescents in Wedomartai, Ngemplak, Sleman, Yogyakarta dan Wet cupping is more effective than dry cupping. Teenagers can use wet cupping to relieve menstrual pain.

Keywords: Teenagers, Dysmenorrhea, dry cupping, and wet cupping

Introduction

Dysmenorrhea or menstrual pain is the main problem among women during puberty (Andriyani, 2013). According to the World Health Organization (WHO), the incidence of dysmenorrhea, throughout the world, is high. The average occurrence of dysmenorrhea in women is between 16.8-81%. The incidence of dysmenorrhea in Indonesia reaches 64.25%, where 54.89% primary dysmenorrhea and 9.36% secondary dysmenorrhea (Muflih, 2012). Meanwhile, the prevalence of adolescents in Yogyakarta who reported dysmenorrhea pain was around 52% and reported can not do carry out daily activities properly when dysmenorrheal pain (Andriyani, 2013).

Some impacts will occur if it is not treated immediately. There are disturbances in activities of daily living, anxiety, depression, retrograde menstruation or menstruation that moves backward, infertility or infertility, undetectable pregnancy, ruptured ectopic, ruptured

cyst, uterine perforation of the uterus. IUDs and infections. Common disorders among women while menstruating are menorrhagia and dysmenorrhea (Sugiyanto & Luli, 2020). Dysmenorrhea in teenagers and can cause emotional conflict, tension, and anxiety. It can cause Learning activities disrupted, concentration decreases, or absence in class. So, Women who experience dysmenorrhea cannot receive learning materials well. (Lestari, 2013)

Menstrual pain can be treated by pharmacological and non-pharmacological methods. Consuming analgesic drugs is an example of pain management through pharmacology (Maksum, 2019). Consumption of drugs continuously and without consulting a doctor can cause side effects such as abdominal pain, skin bruising, nausea, vomiting, etc (Elysia, 2017). Whereas, the non-pharmacological methods that can be used to reduce menstrual pain are the use of warm compresses or warm baths, acupuncture or acupressure, cupping and taking herbal medicines, as well as practicing relaxation techniques (Maksum, 2019). Complementary therapies have safe side effects compared to side effects side effects of chemical drug reactions (Trisnawati and Jenie, 2019).

Cupping therapy is a traditional treatment using bloodletting in the back area with a certain point that can be able to cure the disease. Cupping therapy is done when a person is menstruating, not before menstruation (Armini, 2019). Cupping itself has benefits for the body experiencing circulatory disorders and pain; 1) Cupping increases the elasticity of the erythrocyte walls for capillaries to deliver O2; 2) Cupping can increase natural antioxidants; 3) Cupping stimulates erythropoiesis (production of red blood cells) in the bones or kidneys; 4) Cupping increases the number of macrophages; 5) Increase natural killer cells; 6) Increases CD8+ and 7 T lymphocytes, reduces free radicals (Maksum, 2019).

Damayanti (2012) mentioned that cupping therapy is divided into two types, namely dry cupping therapy and wet cupping therapy. Taherpour et al., (2018) said that dry cupping significantly reduced the severity and duration of primary dysmenorrhea. Cupping therapy can reduce pain because of the strong suction of the cupping apparatus on the nerve pathways that signal the brain about pain so that the stimulus that reaches the brain makes the pain no longer felt by the patient. Thus, there is no significant result between dry cupping therapy and wet cupping therapy to reduce dysmenorrhea pain.

Based on the description above, researchers are interested in researching the difference in the effectiveness of dry and wet cupping therapy on reducing dysmenorrhea pain in adolescents in Wedomartani, Ngemplak, Sleman, Yogyakarta. This study was conducted to determine the difference in the effectiveness of dry and wet cupping on reducing dysmenorrhea pain in teenagers in Wedomartani, Ngemplak, Sleman, Yogyakarta

Methods (Times New Roman 12 pt Bold)

This research is a quantitative study using a quasi-experimental research design Pre and Post Test Without Control. The sample in this study was teenagers in Wedomartai, Ngemplak, Sleman, Yogyakarta who experienced dysmenorrhea, amounting to 30. They were divided into two groups, the dry cupping therapy and the wet cupping therapy group. The selection of research subjects using a random sampling technique. According to Prasanjaya & Ramantha (2013), the sample random sampling technique is a random sampling technique that provides equal opportunities for all sample groups to be designated as research subjects.

The inclusion criteria in this study were healthy teenagers who are willing to be respondents, teenagers who experience dysmenorrhea pain, and teenagers who follow all treatments.The exclusion criteria in this study were teenagers who have acute infections (asthma attacks, ARI, fractures, and burns), teenagers who take anticoagulant drugs (drugs that prevent blood clots, such as trisodium citrate, heparin, and sodium oxalate), teenagers who have a history of chronic disease (heart disease), there was an inflammation of the skin at the cupping point and also there was an open wound in the cupping point area.

This research was conducted from June to July 2021. The research instruments used were: (1) Questionnaire, (2) Dysmenorrhea Pain Scale, using a numeric pain scale, (3) Cupping Therapy SOP. Cupping is given at one point in the right and left-back area, then one point in the right and left calf area, (4) Observation sheet, consisting of pretest and posttest sheets. Data analysis was analyzed using Paired t-test and an independent t-test.

Result and Discussion (Times New Roman 12 pt Bold)

The results and discussion of this research will be presented in the narratives form and tables. The explanation will be started from the dysmenorrhea pain scale before and after dry cupping therapy. Then the dysmenorrhea pain scale before and after the wet cupping was followed. After that, we will discuss the difference between the pain scale on dry cupping therapy and wet cupping therapy. And at the last, We will look for differences in the effectiveness of dry cupping and wet cupping therapy to reduce dysmenorrhea pain.

Table 1. Respondents Pain Scale Before and After in the Dry Cupping Therapy Group at Teenagers in the Wedomartani, Ngemplak. Sleman (N = 15)

Result	Mean	SD	Min-Max	α
Pre-Test	4.67	1.676	1-7	0.000

Post Test	2.93	1.710	0-7

The dysmenorrhea pain scale among teenagers in the Wedomartani, Ngemplak, Sleman, Yogyakarta had an average value of 4.56 for Wet cupping therapy group. The minimum value was one and the maximum value was seven. Three respondents showed mild pain (1-3 scale pain), Ten respondents showed moderate pain (4-6 scale pain) and two respondents showed severe pain (7-10 scale pain). After dry cupping therapy, it can be seen that the average posttest value of dry cupping is 2.93. It included the mild pain scale. Two respondents reported no pain, eight respondents showed mild pain, then four respondents reported moderate pain and only one respondent showed severe pain.

According to the theory, dysmenorrhea is pain during menstruation. It is usually experienced by some women. Dysmenorrhea was caused by an imbalance of the hormone progesterone in the blood and psychological factors (Salamah (2019). Ilham (2020) said that primary dysmenorrhea occurs in adolescents after menarche or during the ovulatory cycle. Pain felt just before or during menstruation and will decrease for up to 72 hours.

In line with the research from Pangestika (2019), which showed pain scale of dysmenorrhea in the experimental group was 2.14 and the control group was 4.43. The pain experienced by respondents in the treatment group was mild, while the control group experienced moderate pain with different intensities with the maximum values in the treatment group being 4 and 6 in the control group, while the minimum values were 1 in the treatment group and 4 in the control group. The results of the statistical test showed that there were differences between the two groups.

This is reinforced by Gate Control Theory namely cupping plays a role in releasing excess prostaglandin substances during menstruation, where prostaglandin substances function to send pain signals to the brain. Through the cupping process, this substance is released so that the pain felt by the patient is reduced. Cupping is also able to close the defenses to inhibit impulses to the brain, this is due to the strong suction of the cupping apparatus which plays a role in busying the nerve pathways that transmit pain signals to the brain (Sharaf, 2012).

Maksum (2018) said that the effect of cupping treatment on the pain level of dysmenorrhea. It showed the average value of dysmenorrhea pain after receiving cupping treatment of 5.09 and the difference in the average pain scale before and after treatment. after cupping, the pain scale decreased by 1.69. Another study from Kurniawati (2016) reported that the dysmenorrhea pain scale in Nursing Undergraduate Students at the Muhammadiyah University of Jember decreased from 5.73 to 2.60. before cupping therapy, The treatment group

had four scale pain for the minimum value and seven for the maximum. After cupping therapy, it reported one for minimum value and four for the maximum.

Bivariate analysis was used to determine the effectiveness of dry cupping therapy for pain scale during dysmenorrhea. It used paired sample t-test analysis. Table 1 showed the difference in the average pain scale before and after dry cupping therapy with a decrease in the pain scale of 1.74. It showed that there was a significant difference in the dysmenorrhea pain scale before and after dry cupping therapy (p-value = 0.000), which means that there was a statistically significant difference between dysmenorrhea pain before and after dry cupping therapy. So it can be concluded in the above test that there is the effectiveness of dry cupping therapy on reducing dysmenorrhea pain in teenagers in Wedomartani, Ngemplak, Sleman, Yogyakarta.

Maksum (2019) reported that the management of dysmenorrhea pain can be done non-pharmacologically, namely cupping therapy. Dry cupping therapy can reduce sensitivity to pain by stimulating the release of enkephalins and the release of endorphins. Dry cupping can release substances that function to stimulate pain signals to the brain, namely prostaglandins which are formed as a result of cell inflammation. Taherpour et al., (2018) also said that dry cupping significantly reduced the severity and duration of primary dysmenorrhea. Cupping therapy can reduce pain because of the strong suction of the cupping device on the nerve pathways that signal the brain about pain so that the stimulus that reaches the brain makes thepain no longer felt by the patient. In addition, according to Armini et al., (2019), cupping affectsmuscles by stimulating blood circulation in the muscles so that muscle spasms disappear. Cupping can also release substances that function to stimulate pain signals to the brain, namelyprostaglandin substances that are formed as a result of cell inflammation.

Another study reported of 21 people who experienced primary dysmenorrhea who had regular menstrual cycles had a decreased pain level after dry cupping (Purwaningrum, 2019). In dry cupping, cupping is carried out on intact skin, with negative pressure (suction) the skin will be lifted causing increased capillary filtration and local collection of fluid and dilution of chemicals, inflammatory mediators, and nociceptive substances (analgesia) resulting in decreased pain and resolution. network adhesion. Whereas in wet cupping, skin incisions are made and blood is drawn out, cupping pressure causes pressure gradients and forces through the skin and capillaries, and releases endogenous opioids (analgesia) which causes a decrease in pain scale (Cao H, et al, 2015).

Table 2. Respondents Pain Scale Before and After in the Wet Cupping Therapy Group at Teenagers in the Wedomartani, Ngemplak. Sleman (N = 15)

Result	Mean	SD	Min-Max	α

Pre-Test	5.60	1.805	3-9	0.000
Post Test	3.20	2.077	0-7	

The dysmenorrhea pain scale in adolescents in Wedomartai, Ngemplak, Sleman, Yogyakarta in the pretest dry cupping therapy group with dry cupping therapy has an average value of 4.67, with a minimum value of 1 and a maximum value of 7. Two respondents reported mild pain, eight respondents showed moderate pain and five respondent said severe pain. Table 2 showed the decrease of the pain scale average after wet cupping therapy. After therapy, respondents said 3.20 for the average pain scale. One respondent reported no pain, eight respondents reported mild pain, five respondents showed moderate pain and only one respondent said severe pain.

Strengthened by Amalia (2018) that Dysmenorrhea or menstrual pain is a pain that feels very piercing in the lower abdomen and thighs. The pain is caused by an imbalance of the hormone progesterone in the blood. Andira (2010) said that dysmenorrhea is caused by an increase in prostaglandins which then causes increased myometrial contractions, resulting in reduced menstrual blood flow and the disintegration of the endometrium in the muscle walls. Primary dysmenorrhea usually begins when a woman is 2-3 years old after menarche and reaches its peak at the age of 15 and 25 years

The results of research by Lestariningsih (2020), entitled promotive and preventive activities through hijamah (cupping) to reduce menstrual pain in female students of Madrasah Aliyah Al Muhsin Metro from 145 girls (79%) of 183 female students. The degree of menstrual pain experienced by female students is a scale of 1-3 (mild pain) as many as 75% of students (51.7%), a pain scale of 4-6 (moderate pain) as many as 45 students (31%) and a scale of 7-10 (severe pain). As many as 25 students (17.2%). The results of the hijamah action show that the average pain scale before the hijamah procedure is 7.18 and after the hijamah procedure it becomes 5.12. It can be concluded that there is a decrease in the menstrual pain scale, which is 2.06.

Bivariate analysis is to determine the effectiveness of wet cupping therapy on the pain level of dysmenorrhea using paired sample t-test. The results of the analysis in table 2 show the average value of dysmenorrhea pain before being given dry cupping therapy with a pain scale of 5.5 or moderate pain. Meanwhile, after being given dry cupping therapy, the average value of the dysmenorrhea pain scale was 3.20. Table 2 showed the difference in the average pain scale before and after wet cupping therapy with a decrease in the pain scale of 2.33. After the statistical test showed a significant difference in the dysmenorrhea pain scale before and

after wet cupping therapy was given (p-value = 0.000). So it can be concluded that the above test is the effectiveness of wet cupping therapy on reducing dysmenorrhea pain in teenagers in Wedomartai, Ngemplak, Sleman, Yogyakarta.

Strengthened by the theory of Chen (2015), Cupping therapy is believed to be effective for various diseases. In recent years, cupping therapy is often used for pain, lower back pain, shoulder pain, fatigue, and anxiety. In addition, Armini et al., (2019), said that cupping plays a role in the inflammatory process such as reducing blood and fluid released through the gaps between cells. Able to reduce pain and make the body more comfortable, 10% said the pain felt healed or no longer felt and 4% of the body became comfortable but the pain did not decrease. Pain reduction sensitivity is also caused by the release of enkephalins and endorphins.

Cupping also affects the blood, namely stimulating blood circulation in the body with nitric oxide (NO) which plays a role in expanding blood vessels. This is reinforced by a theory known as the Gate Control Theory. In addition, cupping puncture and blood clots in cupping therapy stimulates the fibrinolytic system to dilute the frozen menstrual blood so that the uterus does not need to contract to expel the blood, besides that cupping therapy plays a role in reducing levels of prostaglandin substances formed due to cell inflammation, thereby reducing sensitivity to pain without any side effects. (Sharaf, 2012)

This study is the same as the research of Maksum et al., (2019), entitled the effect of cupping on the reduction of dysmenorrhea pain in college students. It showed a decrease in the dysmenorrhea pain scale after wet cupping therapy. Cupping has a method involving the withdrawal of Qi (energy) and Xue (blood) to the surface of the skin by using a vacuum (vacuum) created in the glass which can remove 6 pathogens from outside the body consisting of wind, heat, cold, dry. , damp, and fire. Cupping can reduce pain, by doing cupping it will release pain-causing substances, including substances formed due to death or tissue inflammation, such as bradykinin and histamine. Cupping histamine release can also release lactic acid in muscles which can cause cramps and muscle pain (Asmarani and Dewi, 2019)

Cupping therapy by performing small and thin wounds on the skin surface followed by suction under vacuum causes the excretion of substances through the skin artificially (Sayed, et al 2013). The incision of the skin during cupping causes the release of CRF (Corticotropin-Releasing Factor) from the hypothalamus and will stimulate the release of ACTH (Adrenocorticotropic Hormone) from the anterior pituitary. Furthermore, ACTH is synthesized to release other substances, namely POMC (Proopiomelanocortin) in which the product of this substance is endorphins which is one of the endogenous opioids. (Asmarani and Dewi, 2019).

Cupping therapy can decrease the serum concentration of substance P (pain-related pathway), which is confirmed as an anti-nociceptive effect. The tactile effect of cupping can stimulate large Aβ-type fibers originating from receptors in the periphery. Stimulation of these receptors will suppress the sending of pain signals from the same area of the body. This occurs due to local lateral inhibition in the spinal cord (Ansar, & Zulkifle, 2016). Wet cupping also make increases microvascular oxygenation so that blood flow in the affected area improves (Asmarani and Dewi, 2019).

Table 3. Differences in Dysmenorrhea Pain After Dry Cupping and Wet Cupping Therapy Against Dysmenorrhea Pain Reduction among Teenagers at Wedomartai, Ngemplak, Sleman, Yogyakarta (N=30)

Group	N	Δ Mean	α
Dry Cupping	15	1.74	0.704
Wet Cupping	15	2.40	

The results of the analysis in table 3 show a decrease in the pain scale in the wet Cupping group was 1.74 and the wet cupping group was 2.40. Table 3 shows that there is no difference in the effectiveness of dry and wet cupping therapy in reducing dysmenorrhea pain in adolescents in Wedomartai, Ngemplak, Sleman, Yogyakarta. After performing statistical tests, there was no significant difference in the effectiveness of the dysmenorrhea pain scale after being given dry and wet cupping therapy (p-value = 0.704). It was concluded that there was no difference between wet cupping and dry cupping therapy in reducing the pain scale of dysmenorrhea. The reduction of Wet cupping therapy group was higher than dry cupping therapy group. But, when viewed from the results of the independent sample t-test, wet cupping therapy and dry cupping therapy were both effective in reducing the dysmenorrheal pain scale in respondents.

In this study, it was known from the results of the independent sample t-test that there was no difference between dry cupping and wet cupping therapy in reducing the pain scale of dysmenorrhea. Judging from the risk factors for the incidence of dysmenorrhea related to the severity of symptoms, including younger age at the time of menarche, a longer menstrual period, a lot of blood that comes out during menstruation, a family history of dysmenorrhea, depression, anxiety and obesity. (Salamah, 2019).

Although statistically there was no difference between dry and wet cupping, the decrease in pain scale indicated that wet cupping was higher. Dry cupping therapy is cupping on the skin, while wet cupping therapy before skin cupping is given an injury so that blood comes out

during cupping. Wet cupping therapy is more effective than a dry cupping therapy (Risniati, et.all, 2019). There was a significant difference in reaction time between dry and wet cupping therapy pain thresholds (16.93 ± 3.63 and 22.82 ± 6.34; p= 0.039). In the dry cupping therapy pathway, there was an effect between HSP 70 and TLR4 (= 0.656; p=0.006), NFkB-p65 and -endorphins (= 0.643; p= 0.007), -endorphins and mu opioid receptors (= 0.923; p= 0.000) ; there was no effect between integrin 2 1 and HSP 70 (= 0.477; p= 0.062), TLR4 and NFkB-p65 (= 0.364; p= 0.166), mu opioid receptors and glutamate (= 0.352; p= 0.182), glutamate and time pain threshold reaction (= 0.253; p = 0.344). In the wet cupping therapy pathway, there was an effect between integrin 2 1 and HSP 70 (= 0.763; p= 0.01), HSP 70 and TLR4 (= 0.691; p=0.003), TLR4 and NFkB-p65 (= 0.521; p= 0.038), NFkB-p65 and -endorphins (= 0.699; p= 0.003), -endorphins and mu opioid receptors (= 0.893; p= 0.000); there was no effect between mu opioid receptors and glutamate (= 0.162; p= 0.548), glutamate and pain threshold reaction time (= 0.108; p= 0.691). (Subadi, 2014)

Conclusion and Suggestion

In conclusion we can say that dry and wet cupping therapy is equally effective in reducing dysmenorrhea pain in adolescents in Wedomartai, Ngemplak, Sleman, Yogyakarta dan Wet cupping is more effective than dry cupping. The recommendation is for teenagers can do wet cupping as an alternative dysmenorrhea treatment. But, teenagers can also choose wet cupping to reduce the intensity of dysmenorrhea pain. For further researchers, it is recommended to investigate the factors that influence the effectiveness of dry cupping and wet cupping therapy on the intensity of dysmenorrhea pain in teenagers.

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THE EFFECT OF FOOT MASSAGE AND LAVENDER AROMATHERAPY ON RHEUMATOID ARTHRITIS PAIN INTENSITY IN THE ELDERLY IN THE PUBLIC HEALTH CENTER JEMBATAN KECIL BENGKULU CITY

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Abstract

In Indonesia, one of the highest health complaints experienced by the elderly is rheumatoid arthritis. In the province of Bengkulu in 2018 there were 13.2% or around 8,620 people of rheumatoid arthritis affecting the elderly. The purpose of this study was the fear of the influence of foot massage therapy and lavender aromatherapy on the intensity of rheumatoid arthritis pain in the elderly. This study used Pre-Experimental Designs in the form of one group pre-test and post-test design. This technique uses consecutive sampling of 30 people. Pain data collection used the Numeric Rating Scale (NRS) before and after intervention. Therapy carried out for 3 days with 15 minutes each for 2 weeks. Univariate analysis used Mean, Standard Deviation, Median, Minimum, Maximum and 95% CI. And bivariate analysis using paired t-test with 5%. Pain intensity in the elderly before being given foot massage therapy and lavender aromatherapy were 5.13 (moderate pain) and after being given foot massage therapy and lavender aromatherapy 3.03 (mild pain). The results of the paired t-test statistical test obtained ap value of 0.000 ($p < 0.05$). The results of the paired t-test statistical test obtained ap value of 0.000 ($p < 0.05$). There is an effect of foot massage therapy and lavender aromatherapy on the intensity of rheumatoid arthritis pain in the elderly. It is hoped that the staff can apply foot massage therapy and lavender aromatherapy as a safe and practical non-pharmacological method as an alternative in reducing pain intensity.

Keywords: *Foot Massage, Lavender Aromatherapy, Pain Intensity, Rheumatoid Arthritis, The elderly*

Introduction

Rheumatoid arthritis is one of the highest health complaints experienced by the elderly. The incidence of rheumatoid arthritis in 2016 according to WHO is 20% of the world's population, 5-10% are those aged 5-20 years and 20% are those aged 55 years (Putri, Priyanto, 2019). According to the Basic Health Research (Riskesdas) (2018) the number of rheumatoid arthritis sufferers is Indonesia reached 7.30%. Data from the Bengkulu provincial health office in 2018 there were 13.2% of rheumatoid sufferers aged > 15 years or around 8,620 people, most of whom attacked

the elderly. While at the Jembatan Kecil health center in Bengkulu, the data on the total number of rheumatoid arthritis sufferers in January 2020 - January 2021 aged 60-69 years is 0.4% or around 30 people.

*Rheumatoid arthritis*is one of the autoimmune diseases which is inflammatory arthritis in adult patients, someone who suffers

from this disease will experience symptoms in the form of pain in the synovial joint, tendon sheath, and will experience thickening due to inflammation followed by bone erosion and bone destruction around the joint. et al. 2016). Rheumatoid arthritis is a disease that is generally considered trivial by the public, because it does not cause death. Rheumatism is not treated immediately can make limbs function abnormally and can even cause lifelong disability (Tedampa, 2016).

Non-pharmacological management includes relaxation and guided imagination, distraction, music, cutaneous stimulation, giving warm and cold sensations, massage and aromatherapy (Potter & Perry, 2010). One of the non-pharmacological measures to relieve pain is to warm the sore joints and inhale aromatherapy, namely lavender aromatherapy. The mechanism of the method is the same as foot massage therapy or is called foot massage.

Foot Massage is the manipulation of connective tissue through hitting, rubbing or squeezing to have an impact on increasing circulation, improving muscle properties and providing a relaxing effect (Potter & Perry, 2011).

While lavender aromatherapy naturally functions as an anti-bacterial, fungal, viral, such as respiratory tract infections of the reproductive tract, burns, skin infections, insect bites, reduces anger, anxiety, depression, improves mental and physical balance (provides a sense of comfort, calm and sedation).) (Nurhanifah, D, et al, 2020). Inhaling the aroma of lavender which contains linalyl acetate and linalool is useful for reducing pain and providing a relaxing effect because it stimulates alpha waves in the brain and will improve blood circulation. This action can affect the brain's limbic system which is the center of emotion, regulates mood, and memory to produce the neurohormonal serotonin which will relieve tension, stress, and anxiety and produce endorphins and encephalins as pain relievers (Smeltzer &

Muliani's research results. R., et al. (2019) with the title “Cuteneus Stimulation (Foot Massage) Reducing Pain Scale in Elderly Patients With Rheumatoid Arthritis”. The results of pain measurements before foot massage were carried out on rheumatoid arthritis pain in the elderly, some (59.1%) respondents experienced moderate pain and (40.9%) others experienced mild pain. After foot massage was performed on rheumatoid arthritis pain in the elderly, 8 respondents had no pain (36.4%), 13 respondents had mild pain (59.1%) and 1 respondent had moderate pain (4.5%). This means that there is a difference in pain scale before and after being given foot massage.

The results of the research by Herlina, et al (2017), with the title "The Effect of Lavender Aromatherapy on Reduction of Active Stage 1 Labor Pain". The results of the measurement of pain mean pain intensity in laboring mothers before being given lavender aromatherapy was 7.07 (severe pain) and after being given lavender aromatherapy was 5.53 (moderate pain). There was a decrease in pain intensity by 1.54.

Prasetyo's research results. M., et al. (2020) with the title "The Effect of Foot Massage and Inhalation of Lavender Aromatherapy on

Blood Pressure and Pain Post Elective Major Surgery". The results of the pain scale measurement were obtained with a decrease in the average (mean) decrease in pain intensity from an average of 3.12 to 2.00.

It can be seen from the results of several studies which state that there is a decrease after being given foot massage therapy and lavender aromatherapy. Therefore, the researcher wanted to find out if there was an effect if foot massage and lavender aromatherapy were used in reducing the intensity of pain felt by the elderly with Rheumatoid Arthritis.

Method

This type of research is research *Pre-Experimental Designs* in the form of one group pre-test and post-test design. This study was conducted on one group without a control or comparison group. This research was conducted from December 2020 to April 2021 in the working area of the Jembatan Kecil Health Center in Bengkulu City. The data collection procedure on the first day of the study explained the objectives, benefits, confidentiality, and data collection procedures, prospective patients who agreed to become respondents then signed the consent form. After that, the respondent will be examined for pain intensity. Previously, the patient would be given an observation sheet regarding the intensity of rheumatoid arthritis pain. Next, the researcher will conduct a time contract for the intervention of foot massage and lavender aromatherapy.Foot Massage intervention and lavender aroma were carried out 3 times for 3 days with 15 minutes each for 2 weeks.

Patients who do not meet the procedure until the procedure is completed cannot meet the research criteria and are immediately replaced with other patients. On the third day after doing foot massage therapy and lavender aromatherapy, they were re-examined. Measurement of pain intensity was carried out by a team that is my friend so as not to be confused, measurements were carried out on the first day before the intervention was given and after three days of intervention, the patient's pain intensity measurement would be carried out again.

Results

Univariate Analysis

Univariate analysis in this study was to see the mean, median, minimum and maximum

values, standard deviation and standard error and 95% confidence interval (CI) for mean based on patient characteristics, pain intensity characteristics before and after foot massage and aromatherapy therapy. lavender.

Characteristics of the patient

The number of patients in this study were 30 people. Characteristics of patients in this study include age, gender, occupation, recent education.

Table 5.1 Distribution of Average Age and Frequency Distribution of Gender, Occupation, Last Education, and Pain Intensity Level of Rheumatoid Arthritis Patients at the Jembatan Kecil Health Center in Bengkulu City

No	Variable	Intervensi
1	**Usia**	
	Mean	63.93
	Min	60
	Max	69
	SD	2.959
	SE	0.540
	CI 95%	62.83-65.04
2	**Jenis kelamin**	
	Laki – laki	13 (43.3%)
	Perempuan	17 (56.7%)
3	**Pekerjaan**	
	Tidak bekerja	19 (63.3%)
	Bekerja	11 (36.7%)
4	**Pendidikan terakhir**	16 (53.5%)
	Tidak sekolah	8 (26.7%)
	SD	6 (20.0%)
	SMP	
5	**Tingkat intensitas nyeri**	
	Ringan	3 (10,0%)
	Sedang	26 (86,7%)
	Berat	1 (3,3%)

Based on table 5.1, the results of the analysis obtained that the mean age of rheumatoid sufferers was 63.93 years with a standard deviation of 2,959 years. The results of the interval estimation can be concluded that 95%, namely the mean age of the patients is 62.83 – 65.04 years. It can be seen that more than 56.7% of patients in this study were women. In this study, more than 63.3% of the sufferers did not work. And the last education was elementary school by 86.7%. With the level of pain intensity is in moderate pain of 86.7%.

Table 5.2 Distribution of Average Pain Intensity of Rheumatoid Arthritis Patients Before Foot Massage Therapy and Lavender Aromatherapy at the Jembatan Kecil Health Center Bengkulu City

Intensitas nyeri	Sebelum intervensi
Mean	5,13
N	30
SD	1.074
Min	3
Max	7
CI 95%	4.73-5.53

From Table 5.2 above, the results of the analysis showed that the mean intensity of rheumatoid arthritis pain before intervention was 5.13 with a standard deviation of 1,074 (95% CI: 4.73 – 5.53).

Table 5.3 Distribution of Average Pain Intensity of Rheumatoid Arthritis Patients After Foot Massage Therapy and Lavender Aromatherapy at the Jembatan Kecil Health Center in Bengkulu City

Intensitas nyeri	Setelah intervensi
Mean	3.07
N	30
SD	0.980
Min	1
Max	5
CI 95%	2.70–3.43

Based on table 5.3 above, the results of the analysis showed that the mean intensity of rheumatoid arthritis pain after the intervention was 3.07 with a standard deviation of 0.980 (95% CI: 2.70-3.43)

Table 5.4 Data Normality Test Results

Variable	*pValue* (nilai *Skewness* : SE) Kenormalan Data
Skala nyeri awal	-0.639 : 0.427 = - 1.496
Skala nyeri akhir	-0.141 : 0.427 = - 0.330

Bivariate Analysis

Bivariate analysis was conducted to determine the effect of foot massage therapy and lavender aromatherapy on the intensity of rheumatoid arthritis pain in the elderly. Before the bivariate analysis was carried out, the researchers conducted a normality test using the Skewness value method for Std.Error with p-Value still at the value (-2 to +2) and the results of the processed data were normally distributed. Then the researchers conducted a bivariate analysis using the paired t-test with 5% to determine the difference in the average increase in pain intensity before and after.

Table 5.5 Distribution of Differences in the Mean Increase in Pain Intensity Before and After Foot Massage Therapy and Lavender Aromatherapy at the Jembatan Kecil Health Center in Bengkulu City

Variable	Mean	SD	*palue* dalam kelompok
Sebelum intervensi	5.13	1.074	0.000
Setelah intervensi	3.07	0.980	

From table 5.5, it is found that the average value before the intervention was 5.13 (1.074) and after the intervention was obtained the average was 3.07 (0.980) there was a decrease of 2.06.

When viewed from the effect of the intervention, it was obtained using the paired t-test, showing the intervention group value was 0.000 (p Value < 0.05) which means that there was an effect of foot massage therapy and lavender aromatherapy and there was a difference in mean before and after the intervention.

Discussion

Characteristics of Rheumatoid Arthritis Patients at the Jembatan Kecil Health Center in Bengkulu City

The results showed that the age characteristics of patients with rheumatoid arthritis in the working area of the Jembatan Kecil Health Center had an age range of 62 - 65 years, with an average age of 63.93 years. This result is in line with the research conducted by Susanti, E (2017), which states that the majority of rheumatoid arthritis sufferers are in the age range of 60-65 years with a percentage of 36.7%. And also in line with Fadlilah's research, S (2018), which states that most of the

sufferers are in the range of 60-64 years with a percentage of 93.3%. The results of this study are not in line with research from Wahyurianto, Y (2017), which states that the age of the patient is in

the range of 65 – 70 years with a percentage of 70.21%.

Characteristics of patients based on pain intensity in this study, namely the average pain intensity before 5.13 and pain intensity after 3.07. The results of this study are in line with the results of Marlena, F (2019) research, namely the average pain intensity before 5.2 and the average pain intensity after 3.4 A person suffering from rheumatoid arthritis pain influenced by the presence of psychological factors, where by giving more attention can also reduce the sensation of pain felt by the sufferer. Rheumatoid that is not treated properly will eventually make the limbs function abnormally and can even cause lifelong disability (Tedampa, 2016).

Characteristics of patients based on gender in this study most (56.7) were women. The results of this study are in line with research by Fadlilah, S (2018), where most of the sufferers (80.0%) are female. This result is also in line with research from Wahyurianto, Y (2017), most of the sufferers (63.83%) are female. And the results of this study are not in line with research from Susanti, E (2017), most of the sufferers (63.3%) are male. This is because someone with a female gender who has rheumatoid arthritis is partly the result of the involvement of the hormone estrogen. This hormone stimulates autoimmunity, causing rheumatoid arthritis.

Characteristics of patients based on a pain scale of 7, the highest was in farmer workers and traders, which was a scale of 6. The results showed the highest scale of pre-test on the work of farmers and traders, namely on the highest scale. Sudden pain is usually caused by strenuous or unusual physical activity. Complaints of pain will be more severe after exercising or increase with activity and can improve with rest. Improper physical activity will exacerbate pain in people with joint pain (Nahariani et al, 2012).

Characteristics of patients before being given an intervention in education with the highest pain scale in education not in school, elementary, and junior high school with a pain scale of 6. These results show the highest scale of pre-test in respondents' education both in respondents who are not in school, elementary and high school are the same, namely pain scale 6. Theoretically, failure to treat pain in the elderly often occurs when education for the elderly and their assistance is not sufficient. Education for the elderly and their assistance in pain management is very necessary to increase the knowledge of the elderly about how to deal with their respective pains, so that the elderly who do not understand about the treatment of joint pain only need to be given education (Lase, 2015).

The Effect of Foot Massage Therapy and Lavender Aromatherapy on Rheumatoid Arthritis Pain Intensity in the Elderly in the Working Area of Jembatan Kecil Health CenterBengkulu City

The results showed that the average difference in pain intensity before and after being given foot massage therapy and lavender aromatherapy was a decrease of 2. The statistical test results showed pValue 0.000 < 0.05, which means that there was a significant difference in the mean intensity of pain before and after being given foot massage therapy in patients. rheumatoid arthritis, so it can be concluded that there is an effect of foot massage therapy and lavender aromatherapy on a decrease in pain intensity for rheumatoid arthritis sufferers.

In the research of Rizki Muliani et al (2019), the results of the study concluded that there was a significant decrease in pain intensity before and after foot massage therapy was given, p Value 0.000 < 0.05, meaning that there was an effect of pain scale before and after foot massage. Foot massage performed can complement the aging process of pain scale in the elderly.Therefore, pharmacological therapy cannot be separated, but for the use of the dose it can be adjusted to the physiological conditions of the elderly and foot massage can be used as a complementary therapy to reduce pain in the elderly.

The effect of lavender aromatherapy is useful in reducing muscle tension which will reduce pain levels, relaxation, anxiety, mood, and an increase in alpha and beta waves which show

increased relaxation (Argi, 2013). In the results of research by Astuti, W, Y (2013) there is an effect of lavender aromatherapy on the intensity of pain and anxiety before and after giving lavender aromatherapy because inhaling the aroma of lavender helps you feel relaxed and creates a balance of body and mind. In a study conducted by Sari, Y, P (2014) the results of the study concluded that there was a significant change in the pain scale level of rheumatic patients (osteoarthritis) before and after being given lavender aromatherapy warm compresses to decrease the pain scale of rheumatic patients in the elderly with $p = 0.00$ ($p < 0.05$).

Conclusion

The average pain intensity before being given foot massage therapy and lavender aromatherapy on the intensity of rheumatoid arthritis pain in the elderly in the working area of the Jembatan Kecil Public Health Center in Bengkulu City was 5.13. The average pain intensity after being given foot massage therapy and lavender aromatherapy on the intensity of rheumatoid arthritis pain in the elderly in the working area of the Jembatan Kecil Public Health Center in Bengkulu City was 3.07.

Foot massage can encourage nerve terminals by increasing modulation, because every movement will trigger nerves (A-beta nerves) then impulses will be sent to the central nervous system. The control system is activated via inhibitory interneurons, whereas excitatory interneurons are inhibited, thus closing the gate and pain messages are not transmitted to the central system (Chanif, C., Petpichetchian, W., & Chongchareon, 2013). Lavender aromatherapy containing linalyl acetate and linalool is useful for reducing pain and providing a relaxing effect because it stimulates alpha waves in the brain and will inhibit blood circulation. In addition, it also has benefits as an anti-inflammatory, strong antiseptic, antiviral, and antifungal which can reduce emotions, relax, and reduce pain (Gaware, 2013).

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