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Effect of Warm Citronella Compress on Decreasing Osteoarthritis Pain Intensity

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ABSTRACT
Osteoarthritis (OA) is a degeneration disease of the joints involving cartilage, lining of joints, ligaments, and bones causing pain and stiffness in the joints. Non-pharmacological pain management can use warm citronella compresses to reduce pain. This study aims to find out the effect of Warm Citronella Compress on The Decrease in Pain Intensity of Osteoarthritis in The Elderly. This type of research is pre-experimental research with the design of one group pre-post design tests. Observations were made before the intervention (pretest) and after the intervention (post test) with a sample number of 16 people. The analysis used paired T-Test with a level of meaning a = 0.05. The results of the data analysis obtained p value = 0.000 which means there is a significant effect in the provision of citronella warm compresses to decrease the intensity of osteoarthritis pain on elderly. It is expected that from the results of this research, citronella can used as a non-pharmacological treatment to reduce the pain in Osteoarthritis.

Keywords: Elderly, Pain, Osteoarthritis, Warm Citronella Compress

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BACKGROUND

Aging is a natural process that cannot be avoided, goes on continuously. Furthermore, it will cause anatomical, physiological and biochemical changes in the body, so that it will affect the functions and abilities of the body as a whole (Ferawati, 2017). One of the physiological problems that are often experienced by the elderly is osteoarthritis. Osteoarthritis (OA) is a degenerative joint disease, in which the entire structure of the joint undergoes pathological changes. Characterized by damage to the hyaline cartilage (cartilage) of the joints, increased thickness and sclerosis of the bone plates, osteophyte growth at the joint edges, stretching of the joint capsule, inflammation, and weakening of the muscles that connect the joints (Felson, 2008).

According to the World Health Organization (WHO) in 2010, it is known that osteoarthritis is suffered by 151 million people and 24 million people in the Southeast Asia region. In Indonesia, the prevalence of osteoarthritis is 36.5% in men and 12.7% in women among 34.4 million sufferers, where this incidence increases with age (Widayanto et al., 2014). Data from Riskesdas (2013) recorded the prevalence of joint disease diagnosed by health workers in Indonesia as much as 11.9%, in East Nusa Tenggara 33.1%, followed by West Java 32.1%, Bali 30%, while in West Nusa Tenggara it was 33.6. %, when viewed from the age characteristics, the highest prevalence was at> 75 years (54.8%). There were also more women (27.5%) than men (21.8%). Estimates worldwide show that 9.6% of men and 18% of women over 60 years have symptoms of osteoarthritis (Kemenkes RI, 2013).

Data from the West Nusa Tenggara health office, the number of people experiencing joint disorders, including osteoarthritis, is 33.6%, this figure is higher than the national prevalence, which is 22.6%. This joint disorder was highest in West Lombok Regency and the lowest was in Mataram City (13.5%). Meanwhile, based on the 2014 morbidity data report, the prevalence of diseases in the muscle system and connective tissue including osteoarthritis reached 77.541 (Kemenkes RI, 2014). The number of patients suffering from osteoarthritis at the Mandalika Mataram Elderly Social Center was quite high in 2016, with a total of 55 people, in 2017 there were 52 people and in 2018 there were 46 people (Data from the Mandalika Mataram Elderly Social Center 2018).

Osteoarthritis often causes pain. Pain in osteoarthritis is caused by inflammation and the degradation of cartilage is related to the degradation of collagen and proteoglycans by cellular autolytic enzymes. Macroscopically, irregularities appear on the cartilage surface followed by ulceration and decreased glycosaminoglycan content consisting of chondroitin sulfate, keratin sulfate, and hyaluronic acid (Masyhurrosyidi, 2014). The impact of pain on osteoarthritis is a decrease in the quality of life expectancy such as severe fatigue, decreased range of motion and pain in movement. The stiffness gets worse in the morning when you wake up, severe pain at the beginning of the movement but the stiffness does not last long, which is less than a quarter of an hour. Stiffness in the morning causes reduced mobility in extension movements, limited physical mobility, and the resulting systemic effects are organ failure and death (Masyhurrosyidi, 2014).

The main principle in pain management is to relieve attacks of pain. Effective pain management for the elderly can be done with pharmacological and non-pharmacological approaches (Kasran & Rina, 2006). One of the non-pharmacological measures to relieve pain is to warm the sore joints. The mechanism of this method is the same as the massage therapy method that uses gate control therapy. There are various ways to warm the joints, namely a warm compress with a towel, you can also sunbathe in the sun. The use of heat has the advantage of increasing blood flow to an area and possibly helping to reduce pain, humid heat can relieve morning stiffness due to arthritis (Potter & Perry, 2001). The Indonesian

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Herbal Book states that the properties of the citronella plant contain essential oils which have chemical properties and pharmacological effects, namely being warm as anti-inflammatory (anti-inflammatory) and relieving pain or pain that is analgesic and improves blood circulation, which is indicated to relieve muscle pain and joint pain in people with arthritis, body control and headaches (Hembing, 2007).

Research from The Science and Technology quoted in livestrong.com has found that citronella has antioxidant benefits that can help prevent cancer, citronella contains anti-microbial and anti-bacterial substances that are useful as infection drugs and contain analgesic compounds that help relieve pain, or pain such as muscle pain and joint pain due to rheumatoid arthritis or anti-rheumatism (Hyulita, 2013). Previous research conducted by Hyulitadi (2013) on the effect of warm citronella compresses on decreasing the intensity of rematoid arthritis pain in the elderly showed that there was a significant effect on the level of pain before and after giving citronella warm compresses. Another study conducted by Damaiyanti (2012) on the effect of warm ginger compresses on decreasing the intensity of rheumatoid arthritis pain in the elderly aims to reduce joint pain, improve blood circulation, reduce edema, increase muscle relaxation, nourish the heart, relax muscles, relieve stress. , relieves muscle stiffness, muscle pain, relieves pain, increases capillary permeability, provides warmth for the body so it is very useful for therapy in elderly people who experience rheumatism (Ferawati, 2017).

A preliminary study conducted by researchers at the Mandalika Mataram Elderly Social Center through interviews conducted on 6 elderly patients with osteoarthritis, of which 4 people with moderate pain scale and 2 people with mild pain scale. Then the researchers asked several questions about how to deal with pain, some patients answered by massaging and partly by taking medicine obtained from the Mandalika Mataram Elderly Social Center. The high incidence of osteoarthritis will cause pain. The continuous use of synthetic drugs for osteoarthritis such as NSAIDs and steroids will cause side effects. One of the non-pharmacological management in reducing pain can be done by using warm citronella compresses. Based on the description and background, the purpose of this study was to determine "The Effect of Warm Citronella Compress on Decreasing the Intensity of Osteoarthritis Pain in the Elderly at the Mandalika Mataram Elderly Social Center".

METHODS

This type of research is a pre-experimental research design with one group pre-post test design, observations are made before the intervention (pretest) and after the intervention (post test) with the aim of knowing the changes that occur after the experiment. As for the population in this study were the elderly who suffered from osteoarthritis at the Mandalika Mataram Elderly Social Center as many as 46 people and the sample was taken 16 people. The samples used in this study were those that met the inclusion criteria, namely the elderly who suffer from osteoarthritis, do not experience impaired consciousness, do not have other joint diseases, are not taking osteoarthitis and pain medications, and do not experience warm sensation disorders.

The independent variable in this study was the Citronella Warm Compress and the dependent variable was Pain Intensity. This research was conducted at the Mandalika Mataram Elderly Social Center. The data were analyzed by univariate and bivariate analyzes. Univariate analysis was carried out to obtain a general description of the characteristics of the respondents including age, gender and pain intensity. Meanwhile, the bivariate analysis used to test the effect of the independent and dependent variables was the

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paired t-test statistical test. The paired t-test statistical test was used because the data were normally distributed.

RESULTS

Table 1 Distribution of respondents' general characteristics at the Mandalika Mataram Elderly Social Center

Respondents' characteristics	N	%	Mean
Age			
a. 40-59 Years old	1	6,3	
b. 60-74 Years old	12	75,4	69,06
c. 75-90 Years old	3	18,3	
Gender			
a. Male	4	25	
b. Female	12	75	

Based on table 1, it can be seen that the most characteristics of respondents based on age are 60-74 years of age as many as 12 respondents (75.4%), with an average age of respondents is 69 years, the largest gender is female as many as 12 people (75 %).

Table 2 Average pain intensity before and after warm citronella compress intervention

Variable	Min	Max	Median	Mean	Standar Deviasi (SD)
Pretest	3	6	5	4,88	0,957
Posttest	1	4	3	2,94	0,854

Based on table 2, the mean intensity of osteoarthritis pain before warm citronella compresses is 4.88 (moderate pain) with a standard deviation (SD) of 0.957 with 2 people with mild pain intensity and 14 people with moderate pain. While the mean value after warm citronella compress was 2.94 (mild pain) with a standard deviation (SD) of 0.854 with 12 people with mild pain intensity and 4 people with moderate pain so there was a difference in pain intensity before and after warm citronella compresses.

Table 3 Effect of warm citronella compress intervention on the pain intensity of osteoarthritis

Variable	Mean	Standar Deviasi (SD)	Mean Difference	SD Difference	95% Cl		*p* value
					Lower	Upper	
Pretest	4,88	0,957	1,94	0,103	4,36	5,39	0,000
Posttest	2,94	0,854			2,48	3,39	

After the paired t-test was carried out, it was seen that the results of the analysis showed that the 95% Convidance Interval (CI) value before being given the warm citronella compress intervention ranged from 4.36 to 5.39 and after being given the warm citronella

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compress intervention ranged to 2.48 -3.39 with p value = 0.000. It can be concluded that there is an effect of warm citronella compresses on the intensity of osteoarthritis pain in the elderly.

DUSCUSSION

1. Pain Intensity Before Warm Citronella Compress

   After the statistical test was carried out, it could be seen that the results of the analysis showed that the average value of osteoarthritis pain intensity before warm citronella compress was 4.88 (moderate pain) and the standard deviation value was 0.957. This is in line with the results of research conducted by (Hyulita, 2013) that the average pain level before warm citronella compresses was 4.90 with a standard deviation of 1.071. And research conducted by (Pratintya, 2012) found that the average level of pain before the warm citronella compress was 5.25.

   Every elderly person with osteoarthritis experiences mild to moderate pain, sometimes it can be severe. The average client experiences moderate pain and the duration of pain can be for hours or even days, especially in cold weather and in the morning, this is due to damage to joint tissue, damage to cartilage joints and nearby bones, accompanied by perforation of the bones and soft tissue in and around the affected area. In general, elderly people with moderate pain intensity (4-6) feel pain often in the knee, foot, ankle and hand areas, and in various other joints (Hyulita, 2013). Pain intensity is a description of how severe the pain is felt by an individual, the measurement of pain intensity is very subjective and individual and the possibility of pain in the same intensity is felt very differently by two different people. Measuring pain with the most objective approach is probably to use the body's physiological response to pain itself. However, measurement with this technique also cannot provide a definite picture of pain itself (Tamsuri, 2007). So the researchers concluded that one of the main causes of joint pain is the effect of aging and the most common chronic pain suffered by the elderly, namely degenerative joint pain which is often called ostoearhritis and the average pain that is often felt is moderate pain because it interferes with activities.

2. Pain Intensity After Warm Citronella Compress

   After conducting statistical tests, it can be seen that from the results of the analysis, it can be seen that the average value of osteoarthritis pain intensity after warm citronella compresses is 2.94 (moderate pain) and the standard deviation value is 0.854. The results of this study are in accordance with those conducted by (Rohimah and kurniasih, 2015) where the results of this study show that there is an effect of warm compresses on neck pain in essential hypertension patients, as well as research conducted by (Agustin, 2017) where the results of this study prove that warm compresses can reduce joint pain in reducing the scale of joint pain in the elderly.

   According to Kozier & Erb (2009) physiologically the body's response to heat is to cause blood vessel dilation, reduce blood viscosity, reduce muscle tension, increase tissue metabolism and increase capillary permeability. Giving a warm compress to this area of the body will give a signal to the hypothalamus through the spinal cord. When heat-sensitive receptors in the dihypothalamus are stimulated, the effector system gives off signals that begin sweating and peripheral vasodilation. Changes in the size of blood vessels are regulated by the vasomotor center in the medulla oblongata of the brain stem, under the influence of the hypothalamic anterior, causing vasodilation. The occurrence of this vasodilation causes increased blood flow to each tissue, especially those

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experiencing inflammation and pain, resulting in a decrease in joint pain in the inflamed tissue (Tamsuri, 2006). So the researchers concluded that there was a decrease in pain intensity after being given a warm citronella compress because the use of heat therapy on the surface of the body can improve tendon and ligament flexibility, reduce muscle spasm, relieve pain, increase blood flow and increase metabolism. In addition, warm compresses can deactivate nerve fibers, releasing endorphins, which are very strong opiates that can block pain relief.

3. Effect of Warm Citronella Compress on Decreasing Osteoarthritis Pain Intensity

From the results of data analysis using paired t-test, it can be concluded that warm citronella compresses have an effect on reducing the intensity of osteoarthritis pain in the elderly with a value of p = 0.000 (p <0.05). According to Potter and Perry (2005), warm compresses that are done to reduce pain can occur because of the transfer of heat from the compress into the body, which causes the widening of blood vessels, and there will be a decrease in muscle tension so that the joint pain felt in patients with rheumatoid arthritis can be reduced even disappeared. And a warm compress serves to treat or reduce pain, where heat can relieve ischemia by reducing muscle contraction and smoothing blood vessels so that it can relieve pain by reducing tension and increasing feelings of comfort, increasing blood flow in the joint area. Physiologically, the body's response to heat causes the widening of blood vessels, decreases blood viscosity, decreases muscle tension, increases tissue metabolism and increases capillary permeability.

The results of this study are in line with research conducted by (Hyulita, 2013) where this study said that there was an effect of using warm citronella compresses on reducing the intensity of rheumatoid arthritis pain. And a study conducted by (Gupta, 2012, entitled The effect of Core Stability Exercise on Pain Reduction in Osteoarthritis where this study says there is an effect of Core Stability Exercise on Pain Reduction in osteoarthritis. The results of this study are also supported by research conducted by (Sherlyna, 2015).) entitled The Effect of Giving a Warm Compress of Grated Ginger on Pain in the Elderly with Osteoarthritis in Pejeng Kangin, Gianyar Regency where this study said that there was an effect of Giving a Warm Compress of Grated Ginger Stew on Pain in the Elderly with Osteoarthritis.

According to researchers, warm citronella compresses reduce pain intensity in the elderly. Osteoarthritis is proven to reduce pain felt by clients. The decrease in the intensity of Osteoarthritis pain after a warm citronella compress is caused because the citronella plant contains the enzyme cyclo-oxygenase which can reduce inflammation in osteoarthritis sufferers, besides that citronella also has a pharmacological effect, namely a warm spicy taste. Where this warm effect can relieve pain, stiffness and muscle spasm, due to vasodilation of blood vessels. With the effect of the warm citronella compress on reducing the intensity of osteoarthritis pain in the elderly, this warm citronella compress therapy can be applied or can be used as an alternative treatment to treat pain in osteoarthritis sufferers.

CONCLUSION

There is an effect of giving warm citronella compresses to the decrease in the intensity of osteoarthritis pain in the elderly at the Mandalika Mataram Elderly Social Center with a p value = 0.000, which means that there is a significant effect. The results of this study are expected to be used as a source of information and increase knowledge regarding the benefits of warm citronella compresses to reduce the intensity of osteoarthritis pain and

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can be socialized to the public so that they can use the surrounding rhizomes as a non-pharmacological treatment for pain reduction in patients with Ostoearthritis.

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