



Article

**Effectiveness of Combination of Local Point Acupuncture Therapy with Topical Clove Oil (*Syzygium aromaticum*) Method on Pain Scale in Knee Pain Patients in Ngrambe Village, Ngawi Regency**

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**ABSTRACT**

Knee pain is a disorder that affects the articular cartilage, subchondral bone, synovium, joint capsule, and ligaments. The prognosis for knee pain can be good if the disease can be found in the early stages of damage. Until now, no cure has been found that can definitely cure knee pain and this disease often causes interference in daily activities. This research uses a quantitative type of research with a Quasi-Experimental research design with a two groups pre and post-test design. To measure the degree of pain, knee pain was measured using the NRS (Numeric Rating Scale). The total sample was 36 sufferers according to the inclusion and exclusion criteria in Ngrambe Village, Ngawi Regency. Then treated with a combination of herbal clove oil (*Syzygium aromaticum*) and local point acupuncture therapy. Combination therapy of clove oil (*Syzygium aromaticum*) with acupuncture is effective in reducing the scale of knee pain in Ngrambe Village, Ngawi Regency.

**I. INTRODUCTION**

Knee pain commonly called osteoarthritis (OA) is a disorder that affects the articular cartilage, subchondral bone, synovium, joint capsule, and ligaments. These diseases are overlapping disorders with different etiologies but similar biological, morphological, and clinical outcomes. The stimulation of stabbing acupuncture points will activate the hypothalamus-pituitary axis until beta-endorphins are released into the blood and cerebrospinal fluid. This causes analgesia and homeostasis effects on various systems, such as

the immune, cardiovascular, respiratory and tissue healing systems<sup>(1)</sup>.

Clove essential oil which contains the active ingredient eugenol has anti-inflammatory properties. Eugenol contained in clove flower essential oil (*Syzygium aromaticum*) (MABC) has anti-inflammatory, pain relieving, and antiseptic functions<sup>(2)</sup>. The essential oil content in the flowers is 21.3% with eugenol of 78–95%, in the stem 6% with eugenol of 89–95%, and in clove leaves 2–3% with eugenol of 80–85%. Clove leaves in some species contain 3–4% essential oil with eugenol

levels of 77.1% <sup>(3)</sup>.

## II. METHODS

This research uses a quantitative type of research with a Quasi Experimental research design with a two groups pre and post-test design. 36 research subjects were determined based on inclusion criteria including men and women aged 40-60 years that willing to be a research subjects and signed informed consent, who complained of knee pain without involving other diseases, not currently undergoing treatment or therapy programs that influence the results of research on knee pain, and willing to follow the program for 10 therapy sessions with a frequency of twice a week.

The sample was divided into 2 groups randomly with 18 people receiving local point acupuncture therapy intervention with a combination of clove oil for 10 therapy sessions and the other 18 people receiving local point acupuncture therapy intervention for 10 therapy sessions. Data were analyzed to determine the frequency distribution of each variable and hypothesis testing to determine the effect of the two actions on each variable. Data were analyzed with IBM SPSS 25 for Windows software.

## III. RESULT

This study began with a preliminary study conducted in December 2022 to determine the number of research subjects who experienced knee pain. The results of the preliminary study obtained 36 research subjects who met the research criteria. The study subjects were divided into two groups, namely the Clove Oil Herb group as a control group of 18 children and a combination group of Clove Oil Herb and Local Point Acupuncture as an intervention group of 16 children. Both groups received therapy twice a week.

Table 1 shows that most ages are 58-60 as many as 10 people (27,8%), The most gender is female as many as 21

people (58,3%), The most job is housewife and ranchers as many as 8 people (22,2%), The most differentiation syndrome is Yin's Kidney Deficiency as many as 13 people (36,1%).

**Table 1. Characteristic of Respondent**

Characteristics of Respondent	(N)	(%)
<b>Ages</b>		
40-42	2	5.6%
43-45	4	11.1%
46-48	3	8.3%
49-51	5	13.9%
52-54	5	13.9%
55-57	7	19.4%
58-60	10	27.8%
<b>Gender</b>		
Male	15	41.7%
Female	21	58.3%
<b>Job</b>		
Teacher	5	13.9%
Merchant	5	13.9%
Housewife	8	22.2%
Ranchers	8	22.2%
Farmer	5	13.9%
Enterpreuner	5	13.9%
<b>Differentiation of Syndrome</b>		
Yin's Kidney Deficiency	13	36.1%
Cold Wind Pathogen	10	27.8%
Qi and Xue Stagnation	8	22.2%
Spleen Deficiency and Damph Fleghma	5	13.9%

Table 2 shows that the pain scale before treatment of most research subjects is 6 as many as 5 people (27.8%) in the experimental group. Meanwhile scale pain 4-7 as many as 4 people (22.2%) in the control group. And showed the pain scale after treatment of most research subjects is 1 as many as 7 people (38.9%) in the experimental group. Meanwhile scale pain 5 as many as 5 people (27.8%) in the control group.

Table 3 it can be seen that  $p < 0,05$ , the result showed  $H_0$  rejected and  $H_a$  accepted which means local point

acupuncture therapy intervention with a combination of clove oil are effective in reducing the scale of knee pain in Ngrambe Village, Ngawi Regency.

**Table 2. Pre and Post Respondent After Treatment**

Pretest Posttest	Control Group (n=15)		Experiment Group (n=15)	
	(N)	(%)	(N)	(%)
<b>Pain Scale Before Treatment</b>				
4	4	22.2%	3	16.7%
5	4	22.2%	4	22.2%
6	4	22.2%	5	27.8%
7	4	22.2%	4	22.2%
8	2	11.1%	2	11.1%
<b>Pain Scale After Treatment</b>				
1	0	0.0%	7	38.9%
2	1	5.6%	4	22.2%
3	4	22.2%	5	27.8%
4	3	16.7%	1	5.6%
5	5	27.8%	1	5.6%
6	3	16.7%	0	0.0%
7	2	11.1%	0	0.0%

**Table 3. Independent Sample T-Test**

Group	N	Mean	p
Control Group	18	10.00	0.000
Experimental Group	18	15.00	

#### IV. DISCUSSION

In this study, the results obtained from the frequency distribution of research subjects based on age in Ngrambe Village, Ngawi Regency, the highest number were those aged 58-60, namely 10 people. This is because age is a strong cause. The causal mechanism is not yet clear, but it is very continuous with the natural processes of the joints, the process of increasing age actually reduces the number of chondrocytes in the joint cartilage and will be directly related to the condition of cartilage damage<sup>(4)</sup>. The results of this research showed that the frequency distribution of research subjects based on gender in Ngrambe Village, Ngawi Regency was the highest, namely women with 21 people. This is because hormones play a role in the

mechanism of knee pain. Usually, men and women aged under 45 years have the same ratio of suffering from knee pain, while those aged over 50 years have a higher frequency of suffering from knee pain compared to men<sup>(4)</sup>.

From this research, the results obtained from the frequency distribution of research subjects based on occupation in Ngrambe Village, Ngawi Regency, namely farmers and housewives with 8 people. This is because repetitive joint movements can predispose to knee pain, but proper movement of the knee joints and muscles in the knee area can improve and keep the joints in a stable condition thereby reducing the risk of knee pain<sup>(4)</sup>. Work factors and physical activity that contribute to loads on the knee joints can increase the risk of developing knee pain, such as work that places heavy physical demands, such as those that use force that is placed on the knees<sup>(5)</sup>. From this research, the results obtained from the frequency distribution of research subjects based on syndromes in Ngrambe Village, Ngawi Regency, the highest number, namely Renal Deficiency with 13 people. This is because old age and congenital weakness can cause qi and blood deficiency, resulting in muscle weakness which in turn can easily be exposed to exogenous pathogens<sup>(6)</sup>.

Based on the discussion above, to find out whether the herbal combination treatment of clove oil (*Syzygium aromaticum*) and local point acupuncture is more effective, it can be determined through the mean value or average reduction in the degree of pain. It was found that the average value of reducing the level of knee pain in the herbal combination of clove oil (*Syzygium aromaticum*) and local point acupuncture was 23.8055, while the average value of reducing the level of knee pain when administering clove oil (*Syzygium aromaticum*) was 17.537. This means that the combination of local herbal point acupuncture therapy with clove oil

(*Syzygium aromaticum*) is more effective than giving clove oil (*Syzygium aromaticum*) in Ngrambe Village, Ngawi Regency.

These results are in line with research conducted by Aditya et al., that local point acupuncture intervention using a stabbing method of 10 treatments 2-3 times a week has proven effective in reducing pain in knee pain patients<sup>(7)</sup>. This explanation is in accordance with theory states that because active cells are electrical conductors that have low levels of electrical resistance, acupuncture will deliver more electricity than other cells. Providing acupuncture therapy for knee pain can improve blood flow, improve the performance of the cartilage matrix, reduce the narrowing of bones and joints, and eliminate pain.

The stimulation of stabbing acupuncture points will activate the hypothalamus-pituitary axis so that beta-endorphins are released into the blood and cerebrospinal fluid. This causes analgesia and homeostasis effects on various systems, such as the immune, cardiac, respiratory, and tissue healing systems. The acupuncture mechanism of analgesia or pain through neural transmission to the brain is suitable for triggering the pain modulation system

by suppressing transmission and perception originating from pain stimulation at different levels of the central nervous system<sup>(6)</sup>.

The part of the clove plant that is used is the flower. Apart from that, dried clove flowers are usually served whole. However, there are quite a few presentations of clove flowers in several other forms, namely in powder and the form of clove oil (clove essential oil). Eugenol in cloves can be used for human healing because it has properties and roles such as anticancer, antimetastatic, antiproliferation, antibacterial, antifungal, antioxidant and anti-inflammatory<sup>(8)</sup>.

Based on the discussion above, the results of this research show It turns out that local point acupuncture therapy combined with herbal clove oil has a significant effect on changes in knee pain.

## V. CONCLUSION

Both local point acupuncture with an herbal combination of clove oil and local point acupuncture alone can reduce knee pain in Ngrambe District, Ngawi Regency. However, if acupuncture therapy is combined with herbal clove oil, it provides better results. This method can be used as a combination of acupuncture therapy for knee pain case.

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