



## Influence Combination Therapy Benson Relaxation and Lemon Aromatherapy Against Change Pain Intensity in Post-Op Lower Extremity Fracture Patients

Ira Saputri Nofadillah <sup>1</sup>, Sri Mugianti <sup>1</sup>, Supono <sup>1</sup>, Rudi Hamarno <sup>1</sup>

<sup>1</sup> Polytechnic of the Ministry of Health, Malang

\*Corresponding author's email (CA): [irasaputri025@gmail.com](mailto:irasaputri025@gmail.com)

### Abstract

Pain in Lower Extremity Fracture postoperative patients is usually caused by the loss of anesthetic, so it must be addressed immediately because it can have an impact on the patient's healing process psychologically and physiologically. The purpose of this study was to determine the Effect of the Combination of Benson Relaxation Therapy and Lemon Aromatherapy on Changes in Pain Intensity of Post Op Patients with Lower Extremity Fractures in Yudistira Room, Jombang Hospital. This research method is a quasi experiment with a two group pre test - post test control group design. The population was post op lower extremity fracture patients in Yudistira Room, Jombang Hospital. Sampling using purposive sampling. The sample in this study amounted to 32 respondents who were divided into 2 experimental groups and a control group of 16 respondents. Analysis using the Wilcoxon Test of pain in experimental group respondents before treatment was given, namely experiencing moderate pain on a scale of 4-6 and in the control group on a scale of 5-6. The results of the pain score after treatment in the experimental group were mild pain on a scale of 1-2 and in the control group mild pain on a scale of 3 and moderate pain on a scale of 4. The test value obtained a value of 0.000 was smaller than the significant value of 0.05. So that the combination of Benson relaxation therapy and lemon aromatherapy has more effect on reducing the respondent's pain scale. This research can be an alternative in providing nursing interventions in reducing pain in post op lower limb fracture patients .

**Keywords:** Fracture, Benson Relaxation, Lemon Aromatherapy, Pain Scale

### INTRODUCTION

Fracture is a complete or incomplete bone structure disorder characterized by its type and degree. This occurs when the bone experiences pressure that exceeds the weight it can receive <sup>1</sup>. The main causes of fractures can be caused by a single terrible accident, a hard blow, a fall, an irregular or shifted position, dislocation, and abnormal bone weakness (pathological fracture). Another consequence of fractures is that they can cause pain. Pain is a defense system for the body and also as a control and warning of danger. For patients who experience fractures, rapid pain can cause frustration, tension, and psychological depression <sup>2</sup>.

World Health Organization World Health Organization *Health Of Organization* (WHO) year 2019 mentioned that fracture incident occurred around 15 million people with number prevalence 3.2% <sup>3</sup>. In 2017 there were 20 million people with prevalence by 4.2%, but in 2018 the number

increase to be 21 million people with prevalence 3.8% because incident accident. Then cross . 1,775 people experienced fracture event with prevalence. As many as 3.8% of 14,127 people experienced trauma due to object sharp and also blunt , with total number of 236 people with prevalence 1.7% experienced fracture in bone <sup>3</sup>. Incidence rate broken bones in East Java is 6.0% (RISKESDES, 2018). Fractures in limbs have lots negative impact . Based on studies preliminary work carried out , according to nurses in the Yudistira Room, Jombang Regional Hospital patients who experience extremity fractures lower in One year final that is as many as 237 people.

Procedure medical treatment used in fracture patients, one of which is with Surgery . Surgery is one of the methods applied to treat fractures, with the aim of returning the bone to its original condition. Maintenance surgery This use installation *Open Reductive External Fixation (OREF)* and *Open Reductive Internal Fixation (ORIF)* can be used For do procedure operative or surgery .

According to the nurse on duty in the Yudistira room of Jombang Regional Hospital, after undergoing surgery, the patient will feel pain that feels twice as excruciating. This is because of the impact of the loss of anesthesia , a fairly long, deep surgical scar and the presence of *an implant plate* to connect the bones. The feeling of pain can affect a person's psychology and physiology <sup>4</sup> .

Efforts made are through pain management to relieve and reduce pain to a level of comfort that is acceptable to the client. There are two basic types of nursing interventions in its management, namely pharmacological and non-pharmacological interventions <sup>5</sup> . Pharmacological intervention is through the administration of drugs to reduce or minimize the intensity of pain, while non-pharmacological intervention is treatment without the use of drugs but through distraction or relaxation to reduce the intensity of pain. Non-pharmacological pain treatment is a method that can be used by independent nursing functions to reduce pain in addition to pharmacological therapy.

Relaxation is one of part from therapy non -pharmacological treatment , namely complementary and alternative therapies (CATs) which are grouped to in *Mind-body* and spiritual therapy . Several types of relaxation therapy, namely the Benson relaxation method and aromatherapy <sup>6</sup>. Benson Relaxation Therapy is a relaxation method that uses individual belief or faith factors.

In addition to the Benson relaxation method, there are non-pharmacological pain relief therapies, such as lemon aromatherapy. Healing through the brain's limbic system is the part associated with feelings and memories. The body utilizes this aromatherapy through air circulation and smell. The scent of lemon connects to the cilia receptors in the brain, and is then transmitted to the brain's nerves, which are associated with mood. *Linoleic* acid in lemons helps balance the nervous system, has a

calming effect <sup>7</sup> . Meanwhile, the therapy provided by nurses in the Yudhistira Room of the Jombang Regional General Hospital uses pharmacological techniques by providing medical drugs and non-pharmacological therapies such as deep breathing.

Based on the description above, the explanation of Benson relaxation therapy and lemon aromatherapy can provide a calming effect. Like previous studies on the effect of Benson relaxation can reduce high blood pressure, vomiting, and pain, but no one has combined it with lemon aromatherapy to reduce the pain of patients with fractures and the technique has not been used in the room to treat pain, so researchers are interested in conducting research on "The Effect of Combination of Benson Relaxation Therapy and Lemon Aromatherapy on Changes in Pain Intensity in *Post-Op* Lower Extremity Fracture Patients" .

The purpose of this study was to determine the effect of the combination of Benson Relaxation Therapy and Lemon Aromatherapy on changes in pain intensity in post-op patients with lower extremity fractures in the Yudhistira Room, Jombang District Hospital.

## RESEARCH METHODS

This type of research uses a quantitative research approach with a quasi-experimental design . This research was conducted at the Jombang District Hospital in May 2024. The population of this study included all post-op lower extremity fracture patients in the Yudistira Room of the Jombang District Hospital. In this study This using *purposive sampling* technique so that amount sample used is 32 people. Variable independent study This is combination therapy relaxation benson and aromatherapy . Variables dependent study This is level painful post op limb fracture respondents lower

Data collection was carried out with Providing Characteristic Data Interview Sheets Respondents , questionnaire *Numeric Rating Scale* which contains level pain felt , Sheet observation For take notes results that include level pain , Recapitulation sheet level painful For recap all results measurement level painful before and after given treatment , and combination SOP relaxation benson , lemon, and home SOP Sick .

Analysis univariate used For to obtain The general data displayed is the frequency distribution of the category data types, namely name, gender, age, education, surgical history and pain scale . Analysis bivariate using non- parametric tests which if variable dependent use *Wilcoxon* and if variable independent use *Mann Whitney* . This research has gone through the ethical feasibility test stage with No: 29/KEPK/IV/2024.

## RESEARCH RESULTS AND DISCUSSION

General data in study This show characteristics Postoperative respondents for Lower Extremity Fractures as subject study that is covering type gender , age , marital status , education , employment , support family , use medication and history Operation . Characteristics Postoperative

Lower Extremity Fracture Patients at Jombang Regional General Hospital can be described in table 1 as follows :

**Table 1. Distribution Frequency Characteristics Respondents Postoperative Lower Extremity Fracture Patients at Jombang Regional Hospital Year 2024**

Characteristics Respondents	Treatment		Control 1.	
	<i>f</i>	%	<i>f</i>	%
<b>Type Sex</b>				
Man	11	68.8	8	50
Woman	5	31.3	8	50
total	16	100	16	100
<b>Age</b>				
20-30 Year	8	50	8	50
31-40 Year	2	12.5	1	6.3
41-50 Year	3	18.8	3	18.8
51-60 Year	3	18.8	4	25
total	16	100	16	100
<b>Marital status</b>				
Marry	7	43.8	8	50
Not yet Marry	9	56.3	8	50
total	16	100	16	100
<b>Education</b>				
SD	4	25	4	25
JUNIOR HIGH SCHOOL	0	0	1	6.3
SENIOR HIGH SCHOOL	9	56.3	10	62.5
S1	3	18.8	1	6.3
total	16	100	16	100
<b>Work</b>				
civil servant	1	6.3	1	6.3
Self-employed	6	37.5	5	31.3
Laborer	1	6.3	2	12.5
Farmer	1	6.3	3	18.8
Other	7	43.8	5	31.3
total	16	100	16	100
<b>Family Support</b>				
Person old	9	56.3	8	50
You	2	12.5	1	6.3
Partner	5	31.3	7	43.8
total	16	100	16	100
<b>Usage Drug</b>				
Yes No	2	12.5	2	12.5
total	14	87.5	14	87.5
	16	100	16	100
<b>Operation History</b>				

Once	4	25	3	18.8
No Once	12	75	13	81.3
total	16	100	16	100

Source : Primary Data, 2024

Pain level before and after therapy combination technique relaxation benson and lemon aromatherapy in the group treatment served in form table and explained in a way descriptive in table 2.

**Table 2. Distribution Respondents Based on Pain Level Before and After Done Therapy Combination of Benson Relaxation Technique and Benson Aromatherapy in Groups Treatment in the Yudistira Room , Jombang Regional Hospital**

Pain Level	Before Treatment		After Treatment	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No Painful	0	0	3	18.8
Painful	3	18.8	12	75
Light				
Painful	13	81.3	1	6.3
Currently				
Total	16	100	16	100

Pain level before and after in group control served in table form and explained in a way descriptive in table 3.

**Table 3. Distribution Respondents Based on Pain Level Before and After only using Hospital SOP in Group Control in the Yudistira Room , Jombang Regional Hospital**

Pain Level	Before Control		After Control	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
No Painful	0	0	0	0
Painful	0	0	7	43.8
Light				
Painful	16	100	9	56.3
Currently				
Total	16	100	16	100

Study This statistical tests were conducted non- parametric comparative using the Wilcoxon Signed Rank Test with results in table 4 and table 5

**Table 4. Paired Non-Parametric Comparative Statistical Test on treatment groups**

Statistical Test	N	Mean	Min	Max	Std. Deviation	Asymp-2 tailed
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Treatment					
Group Pretest	16	4	3	5	0.632
Posttest					0,000
Treatment	16	2	1	3	0.619
Group					

**Table 5. Statistical Test Non- Parametric Comparative pair up in a group control**

Test Statistics	N	Mean	Min	Max	Std. Deviation	Asymp- 2 tails
Pretest Control						
Group	16	4	4	5	0.512	0,000
Posttest						
Control Group	16	3	3	4	0.447	

Next test will Mann test was conducted withney on before and after data done treatment in groups treatment and group control For see difference both of them .

**Table 6. Non- Parametric Comparative Test No in pairs after given treatment**

Statistical Test	N	Asymp.Sig 2- tailed
Group Posttest	16	
Implementation		0,000
Group Posttest		
Control	16	

## DISCUSSION

**Pain levels in post- operative patients with extremity fractures lower before and after given action combination technique relaxation benson and lemon aromatherapy group Treatment**

Based on results analysis in table 3 regarding distribution Respondents based on Pain Level before and after done therapy combination technique relaxation benson and lemon aromatherapy in the group treatment obtained results level painful before and after given treatment that is almost (81.3%) pain moderate and partial small painful light (18.8%).

Extremity fracture lower is disconnection network continuity bones in the extremities below what happened Because existence pressure excessive so that bone No capable For hold it back . Management action on extremity fractures lower that is one of them with method surgery . Surgical process will leave receptor painful acute on wound used incision and pain increase when drug anesthetic influenced by several factor that is type gender , age , level education , and also experience operation previously .



Gender affects a person's pain level. In this study, the gender of respondents is presented in table 1. that the gender that experiences the most pain is male, which is 68.8%. According to <sup>7</sup> studies, the intensity of pain in male fracture patients is higher than in females, with a p value of 0.00414. Researchers assume that men are more responsive to pain than women, because women tend to have more experience in dealing with pain than men.

Age affects a person's pain level. In this study, the age of respondents is presented in table 4.1 where the age of the treatment group with the most is 20-30 years, amounting to 8 respondents (50%). This is in accordance with results research that shows existence connection age with response pain . In the elderly, patients are more ready to perform, accept the impact, effects and complications of surgery than adults. According to researchers, in adulthood, a person's pain threshold will increase, but at that age a person can tolerate the pain they feel <sup>7</sup>.

The level of education also becomes factor affecting level pain . In the study This level education presented in table 1. In the group treatment part big level education Respondent namely 9 people (56.3%) have graduated from high school . Education level have negative relationship with perception pain , getting worse low level education cause improvement intensity pain and disability due to pain 4. According to researcher that somebody with level low education will own low knowledge too . Low knowledge can affect the coping strategies that are owned . If the coping strategy bad will impact increase scale painful .

Previous surgical experience is a factor in a person's pain level. In this study, previous surgical experience was presented in the treatment group, where most of them had never had surgery, amounting to 12 respondents (75%). Surgical history will affect pain in clients, because patients who have just had one surgery will feel pain compared to people who have had several surgeries. This is due to Because patient the Not yet Once feel that <sup>4</sup>. According to ADDIN CSL\_CITATION {"citationItems":[{"id":"ITEM-1","itemData":{"author":{"dropping-particle":"","family":"Eldawati","given":"","non-dropping-particle":"","parse-names":false,"suffix":""},"container-title":"Keperawatan","id":"ITEM-1","issue":"1","issued":{"date-parts":[["2020"]]},"title":"Pengaruh Latihan Kekuatan Otot Pre Operasi Terhadap Kemampuan Ambulasi Dini Pasien Pasca Operasi Fraktur Ekstremitas Bawah Di Rsup Fatmawati Jakarta","type":"article-journal","volume":"14"},"uris":["http://www.mendeley.com/documents/?uuid=9ec45e34-2df6-44ea-a7d0-c7f84c4262ea"]},"mendeley":{"formattedCitation":"<sup>4</sup>","plainTextFormattedCitation":"4","previouslyFormattedCitation":"<sup>4</sup>"},"properties":{"noteIndex":0},"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"} assumption researcher experience operation previously influential to change level pain

, where someone who has undergone operation will be able to tolerate pain after operation like experience previous .

For lower level painful post operative patient with extremity fracture down on research This that is use study non- pharmacological techniques that is with combine technique relaxation benson and lemon aromatherapy with the results that have been presented in table 4.3 with level painful before given treatment that is A total of 13 respondents (81.4%) experienced painful moderate and 3 respondents (18.8%) pain light , while after given therapy combination technique relaxation benson and lemon aromatherapy part big painful light a total of 12 respondents (75%) where scale painful that is ranging from 1-2 only , pain currently a total of 1 respondent (6.3%) and no painful a total of 3 respondents (18.8%).

Benson relaxation technique is a technique to reduce pain by diverting attention through relaxation, thus reducing the patient's pain. Benson relaxation is achieved by combining the relaxation given with the patient's belief <sup>8</sup>. Relaxation Benson can cause effect calm , body produce endorphin hormone which is hormone experience yes produced body human and have function as painkiller in a way experience .

Lemon aromatherapy is one of the the fragrance in it contain linalool substance . Fragrance can influence condition psychic , power remember , and emotion someone . Lemon aromatherapy is a type of aromatherapy used to treat pain and anxiety. One of the substances contained in lemon is linalool which is useful for stabilizing the nervous system so that it can have a calming effect on anyone who inhales it.

In the research article conducted by <sup>2</sup> entitled Benson Relaxation on Reducing Pain in Post-Femur Fracture Surgery Patients at Meuraxa Regional General Hospital, Banda Aceh and given an intervention for 10-15 minutes for 3 days can reduce the pain of post-femur fracture surgery clients and in article <sup>9</sup> entitled Use of Lemon Aromatherapy to Reduce Pain in Post-Operative Patients given twice a day for 3 days has a great effect on reducing pain.

According to assumption researchers , changes in scale painful after given combination technique relaxation Benson and lemon aromatherapy twice a day for 2 times it happened very significantly against 16 people in the group treatment this . In the technique relaxation Benson increase relaxation with factor belief For give decline activity nerve sympathetic and will press release of neurotransmitters resulting hinder impulse pain . While The content of lemon aromatherapy triggers change in system limbic , part from brain related with memory and emotion . The mechanism of aromatherapy in the body occurs through air circulation and smell. The smell inhaled from aromatherapy is related to cilia receptors and the smell is transmitted to the brain which is related to mood or mood so that it can cause a calming effect and reduce pain. Pain in fracture patients can be overcome with pain management. This aims to reduce or minimize pain



and reduce the pain scale to the level of comfort felt by post-operative lower extremity fracture patients.

### **Pain levels in post-operative lower extremity fracture patients before and after being given treatment according to hospital SOP in the control group**

Based on the results of the analysis in table 4 regarding the distribution of respondents based on the level of pain before and after deep breathing techniques were performed in the control group, the results showed that the level of pain before treatment was seeding pain for 16 respondents (100%).

Fracture pain is pain caused disconnection continuity network so that send impulse to the hypothalamus. Surgery is one of management of fracture patients , in the post-operative process surgery will leave a feeling of pain consequence plate installed , former incision and medication the anesthetic that has been finished . The emergence painful influenced by several factor that is type gender , age , level education , and also experience operation previously .

Gender affects a person's pain level. In this study, the gender of respondents is presented in table 1. that the gender experiencing pain is comparable between men and women, namely 8 men (50%) and 8 women (50%). According to the article (Amir & Rantesigi, 2021) the intensity of pain in fracture patients in men is higher than in women with a p-value = 0.00414. According to the researcher's assumption, the pain felt is comparable, namely men are more responsive to pain than women and are able to withstand pain. However, women have more pain experiences than men.

Age affects a person's pain level, in this study the age of respondents is presented in table 2. The highest age of the control group is at the age of 20-30, amounting to 8 people (50%). Differences in development at age can provide different responses and perceptions of pain. According to researchers, in adulthood a person's pain threshold will increase, but at that age a person can tolerate the pain they feel.

Education level is also a factor that affects the level of pain. In this study, the level of education is presented in table 1. In the control group, most of the respondents' education level was high school, 10 people (62.5%) out of 16 respondents. According to research in article <sup>4</sup> education level has a negative relationship with pain perception, the lower the level of education causes an increase in pain intensity and disability due to pain. According to the researcher's assumption, someone with a low level of education will also have low knowledge. Low knowledge can affect the coping strategies they have. If the coping strategy is bad, it will have an impact on increasing the pain scale.

Previous surgical experience is a factor in a person's pain level. In this study, previous surgical experience was presented in the control group,

where most of them had never had surgery, 13 respondents (81.3%) out of 16 respondents. Surgical history will affect pain in clients, because patients who have just had one surgery will feel pain compared to people who have had several surgeries. This due to Because patient the Not yet Once feel matter said. According to researcher experience operation previously influential to change level pain, where someone who has undergo operation will can tolerate pain after operation like experience previous.

Level results pain in the group control with using SOP from House Sick as explained in table 4.4, namely before treatment majority patient experience painful currently namely 16 respondents and after given treatment according to house SOP sick in group control all in all Still painful currently that is a total of 9 people (56.3%) and 7 respondents (43.8%) had pain light.

Deep breathing relaxation techniques namely relaxation techniques consists of on abdominal breathing with frequency slow, rhythmic. Patient can close his eyes and breathing with slowly with comfortable. According to article with title Effect of Relaxation Techniques Deep Breath against Pain Reduction in Fracture Patients Using technique deep breathing relaxation (Aini & Reskita, 2018) is done for 10-15 minutes for 3 days can lower pain in post-fracture surgery clients.

According to researchers, changes in the pain scale after being given breathing relaxation techniques according to hospital SOPs twice a day for 2 days, there was a change in pain in 16 respondents in the control group. Where deep breathing uses abdominal breathing with a slow, rhythmic frequency. Relaxation techniques can reduce pain by relaxing muscle tension that supports pain in postoperative patients with lower extremity fractures. Pain management can be done to reduce and lower the pain scale to the level of comfort felt by the patient.

### **Analysis of the effect of the combination of Benson relaxation techniques and Benson aromatherapy on pain levels**

In a non-parametric unpaired comparative study using Mann-Whitney on the pain scale after treatment in the control group and the treatment group, the results in table 4.7 are p value 0.000 where  $<0.005$  means  $H_0$  is rejected and the hypothesis is accepted with the conclusion that there is a difference or there is an effect of the combination of Benson relaxation therapy and lemon aromatherapy on the level of pain in post-operative patients with lower extremity fractures.

Based on study This obtained results that therapy combination relaxation benson and lemon aromatherapy more influential compared to with treatment in groups control that only given therapy deep breathing relaxation. Table 4.3 shows results end distribution that respondents who experienced painful while 1 person (6.3%), pain light 12 people (75%) and no pain 3 respondents (18.8%) of 16 respondents, while in the treatment

control Respondent majority painful while 9 people (56.3%) and pain light 7 people (43.8%) of total 16 respondents .

Research result This in accordance with research results <sup>5</sup> , that relaxation Benson can reduce painful patient section cesarean in a way significant . According to articles on research influence lemon aromatherapy and guided imagery on decline scale pain in patients with extremity fractures . There is a difference in the average pain score before and after being given lemon aromatherapy intervention <sup>7</sup>. Meanwhile, the results of the study <sup>11</sup> the effect of deep breathing relaxation techniques on reducing the pain scale in fracture patients at RSI Siti Khadijah Palembang showed a difference in reducing the pain scale from severe pain after being given deep breathing relaxation

According to the researchers, both treatments in the treatment group and the control group had an effect on reducing pain, but the significance value in the treatment group was higher, where the combination therapy of Benson relaxation and lemon aromatherapy reduced pain more than the control group which was only given deep breathing relaxation. Giving a combination therapy of Benson relaxation and lemon aromatherapy is one alternative that can be done independently, this therapy is suitable for respondents who are experiencing mental pressure or stress, and most importantly to reduce the intensity of pain.

The decrease in pain experienced by respondents was caused by Benson relaxation and lemon aromatherapy. Giving non-pharmacological therapy in Benson relaxation techniques can cause the body to produce endorphin hormones which are natural hormones produced by the human body and function as natural pain relievers, combined with lemon aromatherapy which contains substances that can make respondents relax and calm, so that the pain felt can be reduced.

## CONCLUSION

Based on the results of the study, it can be concluded that the combination of Benson relaxation therapy and lemon aromatherapy is effective in reducing pain intensity in post-operative patients with lower extremity fractures. Most respondents who received the combination therapy experienced a decrease in pain to mild pain (75%) and no pain (18.8%). In the control group, more than half experienced a decrease in pain to moderate pain (56.3%) and mild pain (43.8%). The Mann-Whitney test showed a significance value (p-value) of 0.000, which means that there is a significant effect of the combination of therapies on reducing pain intensity, more effective than deep breathing relaxation alone.

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