

# The Effectiveness Of Deep Breathing Relaxation Technique And Guided Imagery To Decrease Pain Intensity On Postoperative Fracture Patients In Bougenvile Ward Of Dr Soegiri Hospital Lamongan

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**Abstract:** Surgery is a tense complex procedure conducted in the operating theater. Pain is an unpleasant symptom experienced by post fracture surgery patients. The purpose of this study was to analyze the effectiveness of deep breathing relaxation technique and guided imagery to decrease pain intensity on postoperative fracture patients. The sampling method used was simple random sampling. Samples taken were 35 respondents within 2 months. Analysis used Wilcoxon Sign Rank Test statistic with significance level  $\alpha = <0.05$ . The result of this research showed that prior to the deep breathing technique relaxation and guided imagery, 25 respondents (71.4%) experienced moderate pain and 2 respondents (5.7%) experienced mild pain. After giving deep breathing relaxation technique and guided imagery, the patients' pain intensity was decreased, in which 25 respondents (71.4%) experienced mild pain. Result of Wilcoxon statistic test between deep breathing relaxation technique and guided imagery and pain revealed the influence between deep breathing relaxation technique and guided imagery and pain intensity with  $Z = -5.178^a$  and  $p = 0.000$ . It is necessary for nurses to increase extension and care to patients or families in attempt to guided patients using deep breathing relaxation technique and guided imagery to reduce the pain.

## 1 BACKGROUND

Fracture is a dissolution of bone continuity tissue and cartilage which is generally caused by injury. Trauma causing fractures can be in the form of direct and indirect trauma (Sjamsuhidajat and Jong, 2005). Fractures treatment can be done through conservative and surgery according to the severity of the fracture and the patients' attitude (Smeltzer and Bare, 2002). Surgery is a treatment which uses an invasive way by opening or displaying body parts to be treated (Sjamsuhidajat and Jong, 2005). Pain after surgery is physiological, but it is one of the most feared complaints by clients after surgery. The pain sensation is started prior to the patients' consciousness fully return, and increases when anesthetic effect decrease. The form of pain experienced by patients after surgery is an acute pain occurring due to the incision wound former surgery (Perry and Potter, 2005).

Fracture incidence in Indonesia was 1.3 million annually with a population of 238 million people, the largest in Southeast Asia. The incidence of fractures in Indonesia as reported by the MOH RI (2007) showed that approximately 8 million people had fractures with different types of fractures. Fracture incidence in Indonesia was 5.5% with range of each profession between 2.2 to 9% (MOH, 2007).

If it is not adequately treated, pain will affect the pulmonary, cardiovascular, gastrointestinal, endocrine, immunologic and stressful systems and can cause depression and disability. This inability ranges from restricting participation in activities to inability to meet personal needs such as eating and dressing up (Smatzler and bare, 2002). Pain management strategies include pharmacological and non-pharmacological approaches. The approaches are selected based on patients' needs and objectives. Treating the pain experienced by the patients through pharmacological intervention is performed in collaboration with the doctor or

primary care physician and patients. Pharmacological intervention with narcotics or non-narcotics, as well as with non-pharmacologists such as stimulation and massage, skin stimulation, Transcutaneous Electrical Nerve Stimulation (TENS), distraction, relaxation technique, guided imagery, hypnosis, neuron surgical methods (Lusianah, 2012).

Non-pharmacological techniques are believed can decrease pain through gate control mechanism and increase the stimulation of endorphin expenditure. The gate control theory for pain explains why rubbing or massaging painful part after injury can relieve pain. This is because the activity of small diameter fibers (pain) is closed (Silvia A, Price, 2005). According to Loie (2004), human body has a natural analgesic, which is endorphin. Endorphin is a neuron hormone associated with a pleasant sensation. When endorphins are released by the brain, they can reduce pain and activate the parasympathetic system for body relaxation and lower blood pressure, respiration and pulse. Pain management with non-pharmacological techniques is the main capital to comfort. In terms of costs and benefits, non-pharmacological management is more economical and has no side effects when compared with pharmacological management, besides reducing the patients' dependence on drugs. Non-pharmacological pain managements in this case are by giving deep breathing relaxation technique and guided imagery. The effort to treat postoperative fracture pain non-pharmacologically in this case is to use both pain management techniques.

Breathing relaxation technique is a form of nursing care, in which case the nurse trains the client how to do deep breathing, slow breathing (withholding inspiration maximally) and how to exhale slowly. Besides reducing pain intensity, deep breathing relaxation technique can increase lung ventilation and increase blood oxygenation (Smeltzer and Bare, 2002).

Relaxation technique which can be performed to intervene in postoperative fracture pain is guided imagery. Guided imagery is a relaxation technique aimed to reduce stress and increase calm and peace and a tranquilizer for difficult situations in life. Guided imagery or mental imagination is a technique for studying the power of either conscious or unconscious mind to create images which bring peace and silence (National Safety Council, 2004). Guided imagery is a process which uses the power of mind by directing the body to heal itself, to maintain health or relaxation through

communication in the body involving all senses (visual, touch, guidance, sight and hearing). Thus the balance of mind, body and soul is formed. Simple guided imagery is "the deliberate use of the imagination to gain relaxation and or away from unwanted sensations" (Smeltze and Bare, 2002). Guided imagery can be useful for reducing anxiety, muscle contraction and facilitating sleep (Black and Matassarini, 2005). Potter and Perry (2005) also stated that guided imagery can reduce pain. Relaxation reduces muscle activity; muscles dilate and create a physiological rhythm of the body. The guided imagery relaxation technique is expected to decrease the pain of postoperative fracture patients. Based on the above data, the researcher is interested in examining "the Effectiveness of Deep Breathing Relaxation Technique and Guided Imagery to Decrease Pain Intensity on Postoperative Fracture Patients in Bougenville Ward of Dr. Soegiri Hospital Lamongan".

## 2 METHOD

The design of this research was pre-experimental with One Group Pre-test-Post-Test Design (Nursalam, 2008), i.e the subject group was observed prior to intervention, then observed again after the intervention. Population was all postoperative fracture patients who experienced pain in Bougenville ward of Dr. Soegiri Hospital Lamongan in average per month as many as 19 patients that reached 38 patients in two months. While the sample in this study were some postoperative fracture patients who experienced pain in the Bougenville Ward of Dr. Soegiri Hospital Lamongan February to March 2015 which met the inclusion criteria of 35 people. This research employed Simple Random sampling technique. This study was conducted in Bougenville Ward at Dr. Soegiri Hospital Lamongan. The study was performed from October 2014 to March 2015. The instrument for data collection in this study was a bourbanis pain scale questionnaire through quantifying the postoperative fracture pain by marking the numeric number listed 0: no pain, 1-3: mild pain: objectively client can communicate well, 4-6: moderate pain: objectively the client hisses, grinned, can show the pain location, can describe it, can follow orders well, 7-9: severe pain: objectively clients sometimes cannot follow orders but still response to action, can show the pain location, cannot describe it., 10: very severe pain: the client is no longer able to communicate, beat.

With Code: 0: no pain, 1: mild pain, 2: moderate pain, 3: severe pain, 4: very severe pain. The data obtained were then analyzed by using Wilcoxon Signed Rank Test.

### 3 RESULTS

Here are the results of the effectiveness of deep breathing relaxation technique and guided imagery to decrease pain intensity on postoperative fracture patients in Dr. Soegiri Hospital Lamongan.

1) Table 1 Distribution of respondents by gender (postoperative fracture patients in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Gender	%
Male	62.9
Female	37.1
Total	100

2) Table 2 Distribution of respondents by age (postoperative fracture patients) in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Age	%
10-20 year	5.7
21-30 year	25.7
31-40 year	54.3
>40 year	14.3
Total	100

3) Table 3 Distribution of respondents by educational background (postoperative fracture patients) in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Educational Background	%
Primary school	2.9
JHS	20.0

SHS	68.6
University	8.6
Total	100

4) Table 4 Distribution of respondents by occupation (postoperative fracture patients) in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Occupation	%
Not working	11.4
Farmer	14.3
enerpreneur	68.6
police	5.7
Total	100

5) Table 5 Distribution of respondents by pain intensity frequency of postoperative fracture patients prior to giving deep breathing relaxation and guided imagery in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Pain Intensity	%
No pain	0.0
Mild pain	5.7
Moderate pain	71.4
Severe pain	22.9
Pain	0.0
Total	100

6) Table 6 Distribution of respondents by pain intensity frequency of postoperative fracture patients after giving deep breathing relaxation and guided imagery in Bougenville Ward of Dr. Soegiri Hospital Lamongan in February - March 2015.

Pain intensity	%
No pain	17.4
Mild pain	71.4
Moderate pain	11.4
Severe pain	0.0
Pain	0.0
Total	100

7) Table 7 – Crosstab Table of Difference Test on Pain Intensity of Postoperative Fracture Patients prior to and after giving

	Pain Intensity											
	No Pain		Mild Pain		Moderate Pain		Severe pain		Uncontrollable pain		Total	
Prior to	0	0%	2	5.7%	25	(71.4%)	8	22.9 %	0	0 %	35	100 %
After	6	17.1%	25	71.4%	4	(11.4%)	0	0 %	0	0 %	35	100 %
Z= -5.178 <sup>a</sup> p = 0.000												

deep breathing technique and guided imagery in Bougenvil Ward of Dr. Soegiri Hospital Lamongan in February – March 2015



## 4 DISCUSSIONS

### 1. Pain Intensity of Postoperative Fracture Patients Prior To Giving Deep Breathing Relaxation Technique And Guided Imagery

Table 4.5 shows that 25 (71.4%) of postoperative fracture patients prior to giving deep breathing relaxation technique and guided imagery experienced moderate pain intensity.

From the results, it is obtained that most of the postoperative fracture patients prior to giving deep breathing relaxation technique and guided imagery experienced moderate pain intensity, which means that more than a half patient experienced moderate pain.

Based on the above fact, besides experiencing injury caused by trauma, patients also experienced endorphin-encephalin symptom as natural pain reliever to the hampered body. Pain is a subjective experience which is difficult to explain by the client and understand by the nurse. Pain is also influenced by the role of nurse and family, age, gender, anxiety, coping mechanism, previous experience on pain, and culture.

Potter and Perry (2005) stated that pain is caused by the decrease of one's health or while he is sick. Additionally, after having surgery pain is frequently experienced by the patients as the decrease of anesthesia. The surgery leaves different state of pain for individuals. The stimulation of pain after surgery is produced by mechanical stimulation namely incision in which it will stimulate mediator – chemical mediator from pain such as histamine, bradikinin, asetilkolin, and prostaglandin substance where the substances can increase pain receptor sensitivity causing pain sensation. Besides stimulating pain sensitiveness, body also has substance which inhibits pain namely endorphin and enkephalin to soothe the pain (Smeltzer and Suzanne C, 2002).

The previous theory explains that sick state impacts patient's body. It is also influenced by inconducive environment and level of anxiety. If postoperative fracture patients experiences pain, his body will be weak because of losing appetite. Then, the condition will lead to the decrease of protein inside the body, whereas protein is needed in curing the injury from the surgery. In fact, the pain experienced by the postoperative fracture patients varied from one individual to others due to the patients' different characteristics. Someone's

capability in feeling the pain is caused by many factors, including nurse role, family role, gender, culture, pain sense, caring, anxiety, weariness, coping style, pain intensity, and pain tolerance, in which the higher the factors that affect a, person the higher the pain also felt the person.

### 2. Pain Intensity On Postoperative Fracture Patients After Giving Deep Breathing Relaxation Technique And Guided Imagery

Table 6 shows that the pain intensity in postoperative fracture patients was found to be mostly mild pain by 25 patients (71.4%).

The results of the study showed that the pain intensity after being treated by deep breathing relaxation techniques and guided imagery could decrease pain. The effective non-pharmacological techniques for reducing pain in postoperative patients were deep breathing relaxation technique and guided imagery which could reduce physiological, stress, anxiety, and chronic pain in which the guided imagery was a distraction agent or as attention-shifting method. As a distraction agent, guided imagery worked by imagining delighted things to patients who previously experienced pain after a very disturbing surgery. It was found that the patients seemed more relaxed and calmer. Deep breath relaxation could increase the oxygen intake in the lungs and then distributed to all tissues in the body especially in muscle tissue, blood vessels, and brain tissue, so they could relax and improve patients comfort despite previous serious pain. In addition, it increased endogenous secretion in the form of endorphin so as to decrease pain intensity.

This was influenced by the willingness and increased knowledge of postoperative patient fractures which could affect respondents' perceptions of the benefits of deep breathing relaxation technique and guided imagery. Deep breathing relaxation and guided imagery could be used in many situations such as relieving stress and pain, sleeping disorder, allergies or asthma, dizziness, migraine, hypertension, and other conditions. According to Martin (2002) in Kalsum, (2007) deep breathing relaxation and guided imagery are also safe and convenient to use by various age groups, from children to the elderly. Some benefits of guided imagery according to some experts in Potter & Perry (2006) are as follows: According to Fontainer (2005), imagination often leads to strong psychophysiological responses such as changes in immune function, according to Huth et.al (2004) is to control or reduce pain, and according to

Borysenko (1987) is to achieve serenity and calmness. Meanwhile, according to Donssey (2005), imagination also helps in treating chronic conditions such as problems of pain, asthma, hypertension, premenstrual syndrome and menstruation, and gastrointestinal disorders. At the time of giving deep breathing relaxation and guided imagery, the patient seemed relaxed and calmer with occasional eyes closed when the treatment given, so the patients' attention focus, who initially complained of pain and anxiety, switched by doing guided imagery relaxation techniques.

### **3. The Effectiveness of Deep Breathing Relaxation Technique and Guided Imagery to Decrease Pain on Postoperative Fracture Patients**

From table 7, it is obtained that there was different intensity of pain. For before treatment (pre) group and after treatment (post) group based on statistical test results Wilcoxon sign rank test SPSS with version 18 yielded  $Z = -5,178^a$  and significant value  $p \leq 0,000$  at significance level  $p \leq 0.05$ . Thus,  $H_0$  was rejected, which meant there was an influence of the use of deep breathing relaxation technique and guided imagery to decrease pain intensity on postoperative fracture patients in Bougenvil ward of Dr. Soegiri Hospital Lamongan.

According to the above facts, postoperative fracture patients other than injury-induced trauma, they also experienced a fairly complex endogenous opiate disorder, in which endogenous opiate or better known as endorphins-encephalin as a natural pain reliever was disrupted. Thus, most of the postoperative fracture patients experienced pain with intensity of severe to moderate. Yet, after being given treatment of deep breathing relaxation technique and guided imagery, the pain intensity decreased to mild pain.

Nursing intervention for pain is by using relaxation techniques, including deep breathing relaxation technique and guided imagery (Potter and Perry, 2005). Breathing relaxation provides positive responses against mass discharge, in stress response from sympathetic nervous system. The condition is to decrease total peripheral resistance as a result of arterial vasoconstriction tonus. The decrease of arterial vasoconstriction affects blood flows which pass through arterial and capillary that have time to distribute oxygen and nutrition to cells especially brain tissue and heart, causing cell metabolism be better because ATP production increases. This leads to the better condition of the body, decreasing pain, and relaxing mind. Guided imagery is a technique

which requires someone to shape an imagination about any pleasure things. The shaped imagination will be accepted as a stimulation by various senses in which the stimulation will be continued to thalamustrough brainstem (Guytone and Hall, 2002). Guided imagery is a cognitive technique which employs one mind to create mental imagination to meet sleeping needs. Patients can imagine pleasure place (Hawthron and Redmond, 2004). The intensity pain difference is perceived on postoperative fracture patients prior to and after giving deep breathing relaxation technique and guided imagery. In addition to be relaxation agent, deep breathing relaxation also influences endorphin-encephalin, while guided imagery as distractor can be explained with gate control theory (Ellwood, 2007).

The theory approves that deep breathing relaxation and guided imagery give positive impact on reducing pain. This condition can be perceived when the patients seem relaxed and calm and occasionally close their eyes while the treatment given. Besides, deep breathing relaxation technique and guided imagery also speed up healing process, meet sleeping needs, and help the body to reduce any kind of diseases such as depression, allergy, and asthma. Deep breathing relaxation technique and guided imagery are kind of cognitive behavior therapy specialized in pain management. Some literatures also suggest combining the two techniques to gain more effective result in treating postoperative fracture pain. The decrease of pain on postoperative fracture patients is strongly required to heal the injury. Those two techniques are kind of therapy which could be utilized in nursing care if there is pain matter. The decrease of pain intensity on postoperative fracture patients can be perceived from the fresh face, no grinning, relaxed, enough sleep, and no pain felt.

## **5 CONCLUSIONS**

1. Most of the postoperative fracture patients prior to being treated using deep breathing relaxation technique and guided imagery experienced moderate pain intensity.
2. Most of the postoperative fracture patients after being treated using deep breathing relaxation technique and guided imagery experienced mild pain intensity.
3. Deep breathing relaxation technique and guided imagery are effective to decrease pain on postoperative fracture patients.

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