

Effect of Giving Left Oblique Position to Changes in the Scale of Back Pain in Post Patients Percutaneous Coronary Intervention

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Abstract: Percutaneous Coronary Intervention is an intervention or non-surgical action to open or dilate the coronary arteries that experience narrowing of the arteries. The impact of this action is back pain due to long bed rest or immobilization. Back pain can be reduced by practicing a slanted sleeping position with a pillow or support between the two legs. The purpose of this study was to determine the scale of back pain before and after treatment of left oblique position in post PCI patients. This study uses a quasi-experimental design Pre test and Post test. Measuring the scale of back pain in this study used the Numeric Rating Scale (NRS). The population in this study were post PCI patients at GrandMed Hospital. The number of respondents in this study were 10 respondents. Data was collected using an observation sheet to measure the scale of pain, then the data was analyzed using the Paired Sample t-test to get the value $p=0,081 > (\alpha=0,05)$. The results showed that there was no effect on giving the left sloping position to changes in the scale of back pain in post PCI patients. Based on the results of the study it was concluded that the administration of the left oblique position in post PCI patients could not reduce the scale of back pain. Recommendations for further research can be added to back massage interventions to reduce back muscle tension or the intensity of back pain.

1 INTRODUCTION

According to world statistics there are 9.4 million deaths each year caused by cardiovascular disease and 45% of these deaths are caused by coronary heart disease (Kundasamy, 2014). Coronary arteries are vessels blood that supplies oxygen and nutrition to the heart muscle have metabolic needs high on both things

While the 2014 World Health Statistics, there were 17.5 million or 46.2% of all deaths worldwide due to cardiovascular disease and it is estimated that the number will increase until 2030 to 23.4 million deaths (WHO, 2014). The World Health Organization (WHO) defines cardiovascular disease as a disease related to the heart and blood vessels, about 50% of the world's population experiences death each year.

Percutaneous Coronary Intervention is an intervention or non-surgical action to open / dilate / dilate the coronary arteries that are narrowed so that blood flow can return to the heart muscle and usually often done through the femoral artery in more than 95% of cases (Chair, et al., 2007). Percutaneous Coronary Intervention can cause some post-complications complications because of using arterial access (Kern, 2009). Transfemoral PCI procedures

can cause 5-10% complications, including hematoma, infection, arterial venous fistula or retroperineal hemorrhage. Reduction of complications after PCI can be done with immobilization such as sleeping for 6-8 hours.

Percutaneous Coronary Intervention (PCI, formerly known as angioplasty with stent) is a non-surgical procedure that uses a catheter (a thin flexible tube) to place a small structure called a stent to open up blood vessels in the heart that have been narrowed by plaque buildup, a condition known as atherosclerosis. PCI improves blood flow, thus decreasing heart-related chest pain (angina), making you feel better and increasing your ability to be active. PCI is usually scheduled ahead of time. A catheter is inserted into the blood vessels either in the groin or in the arm., Using a special type of X-ray called fluoroscopy, the catheter is threaded through the blood vessels into the heart where the coronary artery is narrowed, When the tip is in place, a balloon tip covered with a stent is inflated, The balloon tip compresses the plaque and expands the stent, Once the plaque is compressed and the stent is in place, the balloon is deflated and withdrawn, The stent stays in the artery, holding it open.

Through this process the patient feels pain and discomfort in the back of the body due to

immobilization (EBN, 2004 in Silber, 2006). Changing the position of the bed using a pillow after the post PCI action can effectively reduce back pain and stabilize hemodynamics without increasing vascular complications Razaeei, Morteza, Ahmadi, Mohamadi & Jafarabadi (2008). The complications that may arise such as bleeding, hematoma coronary artery rupture, aneurysm and arterial fistula (Hoek, et al., 2010). According to the Heart Lung and Blood Institute, complications include bleeding, infection and pain, damage to blood vessels and allergies to the contrast agents used.

According to Brunner and Suddarth (2002) states that the factors are affect the pain as follows: meaning of pain towards individuals (every individual has a different meaning in looked at the pain response, both on time different in the same individual nor the same complaints. Some individuals have positive responses and faster than other individuals, pit depends on the conditions and individual interpretation of the pain). The second factor is individual tolerance of pain, tolerance of someone related with the intensity of pain wherein the individual can respond well or otherwise. The third factor is threshold there is a limit to one's ability to want to adapt and respond to pain which influences behavior someone and the fourth factor is age, the age difference someone has different influences in looking at pain. At age adults are usually better able to tolerate pain well, but in children the upper pain threshold is low for distinguish pain and pressure, while people who are elderly experience failure in feeling tissue damage, due to changes degenerative pain in the nerve pathway compared to young age.

Risk factors for vascular complications after PCI action according to Lins, et al., (2006) include old age, female sex, low body weight, concomitant diseases such as hypertension, diabetes, kidney failure and others, drugs used such as thrombolytic therapy, heparin and PCI procedural actions such as length of procedure duration and large sheaths size $\geq 7F$. To avoid complications, patients are required to immobilate in supine or bed rest positions for 8-12 hours (Chair, et al., 2007). This causes complaints in patients with discomfort such as back pain (Agustin, et al., 2010).

To reduce complaints and patient discomforts nursing measures to improve patient comfort with changes in left tilt position do not affect the complications that will occur and can reduce back pain (Mohammady, et al., 2014). Client comfort and safety are one of the goals of post-catheterization nursing care management.

Progressive relaxation techniques are one of the non-pharmacological therapies to deal with pain developed by Edmun Jacobson (1930) in Banks

(2005). In addition, the benefits of progressive relaxation techniques for patients include reducing tension and anxiety (Paula, 2002).

Back pain can be reduced by practicing the sleeping position on the side with a pillow or a support between the legs (Archard, 2007). With the left side sleeping position using a pad can reduce the pressure on the large veins (inferior vena cava) in the front of the spine which returns blood from the lower body to the heart. This position will also ensure healthy blood circulation.

The left tilt position not only maximizes blood flow but also improves kidney function, which means better disposal of residual fluid products (Heidi, 2006). The role of nurses in dealing with back pain complaints is to provide health education about non-pharmacological therapies to reduce back pain, especially after PCI.

The patient immobilization process will because back pain complaints as pain receptor triggers (nociceptor) for influences the release of bradykinin, histamine and prostaglandins, ingredients that are sensitive to pain. Pain signal this will be passed on by sensory neurons in spinal cord, triggering the release of glutamate as a neurotransmitter that delivers pain signals from one neuron to one neuron other. This pain signal will be received by thalamus, then passed on to somato sensory cortex in the cerebrum where pain will be localized. Through this process the patient feels pain and feels no comfortable on the back of the body due to from immobilization (EBN, 2004 in Silber, 2006).

Based on preliminary survey results found the number of patients post percutaneous coronary intervention (pci) in grandmed hospital in the january 2019 period as many as 36 people. to reduce back pain in post pci patients, many factors are needed, including left tilting mobilization.

2 RESEARCH METHOD

This research was conducted at the Grandmed Poly Physiotherapy Hospital, located at Jl Raya Medan, No.66, Lubuk Pakam. The research was conducted in February - July 2019. This type of research is a quasi-experimental research design with pre-test and post-test one group. The research sample of 10 people.

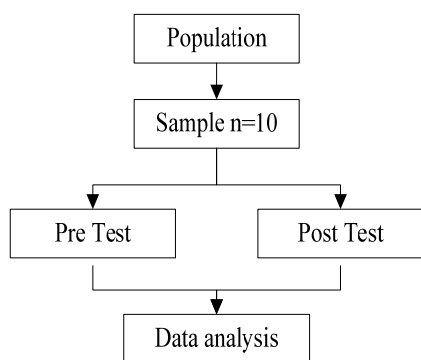


Figure 1: Research flow.

Pain measurement is performed using Verbal Analog Scale (VAS). VAS has been widely used in diverse adult populations, including those suffering from rheumatic diseases. VAS is an instrument used to assess pain intensity using a line 10 cm long (Figure 1) with a scale reading of 0-10 cm with a range of meanings: no pain (0.9 cm), mild pain (1-3 cm) moderate pain (3.1 -7 cm), and severe pain (7.1-8.9 cm). Pain measurement can be done by the respondent himself. Determination of VAS score is done by measuring the distance between the end of the line on the painless line to the point indicated by the patient, (Gillian A., Hawker, Mian, et al, 2011).

Pain examination procedure with VAS:

1. Explain to the patient about the purpose of the measurement carried out
2. Explain to sufferers that right angle means no pain, middle means moderate pain and left angle means very painful (front VAS)
3. Telling the patient to choose or move the direction of the VAS arrow on the pain scale in accordance with the intensity of pain felt before changing positions. Adjust the patient's position tilted to the left by using a pillow under the back as a support carried out for 15 minutes.
4. Record the pain scale expressed by the patient by using a VAS pain gauge.

Pain measurement in this study was done before and after treatment. Measurement data will be tested by Paired Sample t-test and independent t-test. The flow of this research can be seen in Figure 2.

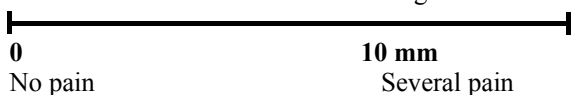


Figure 2: Visual Analogue Scale.

2.1 Mobilization

Mobilization is the ability to move freely, easily, regularly, has the goal of fulfilling the needs of a healthy life, and is important for independence (Koizer, 2010). Mobilization aims to improve blood circulation, maintain muscle tone and restore certain activities so that it can meet the needs of daily movement (Garrison, 2004). Left tilted position is a position given to bed rest patients to reduce the pressure for too long and prevent pressure sores (Effendi, 2011).



Figure 3: Draw Position.

2.2 Back Pain

Pain is a multidimensional phenomenon and it is very difficult to interpret because pain is a subjective and personal experience (Black & Hawks, 2009). The McGill Pain Questionnaire (MPQ) is a multidimensional assessment scale consisting of pain relief, pain index (PRI), pain questions regarding past pain and its location, and pain intensity index experienced at this time.

Back pain is one of the most common reasons people go to the doctor or miss work, and it is a leading cause of disability worldwide. Most people have back pain at least once.

Fortunately, you can take measures to prevent or relieve most back pain episodes. If prevention fails, simple home treatment and proper body mechanics often will heal your back within a few weeks and keep it functional. Surgery is rarely needed to treat back pain.

2.3 Percutaneous Coronary Intervention

Percutaneous Coronary Intervention is an invasive diagnostic procedure where one or more catheters are inserted into the heart and blood vessels to measure the pressure of the heart's chamber to determine oxygen saturation in the blood (Smeltzer & Bare,

2010). Angioplasty works by stretching the arteries and pressing the plaque toward the vessel wall, away from the lumen, widening the entire vessel. This procedure rarely causes the embolization of atherosclerotic material.



Figure 4: Back Pain.

3 RESULTS AND DISCUSSION

3.1 Characteristics of Respondents

Data distribution of respondents based on the age of majority aged 50-60 years as many as 5 people (50%). Based on gender, there were 7 male respondents (70%). In Table 1. This is consistent with the theory that the average age of back pain post Percutaneous Coronary Intervention is between 57 to 60 years (Mohammady et al, 2013). Price and Wilson (2006); Woods, et al., (2005), which states that men have a higher risk factor suffering from CAD associated with patterns / lifestyles such as smoking and eating habits, and activities / breaks that are less regular.

Table 1: Characteristics Table of Respondents.

Age	Frequency (f)	Percentage (%)
40-50	4	40,0
50-60	5	50,0
60-70	1	10,0
Total	10	100

Gender	Frequency (f)	Percentage (%)
Male	7	70,0
Female	3	30,0
Total	10	100

3.2 Mean before and after Administration of Left Tilt Position to the Scale of Back Pain in Post Percutaneous Coronary Intervention Patients

The results of back pain scale analysis in post Percutaneous Coronary Intervention patients before being given a left tilt position treatment were 1.90 with a standard deviation (large difference from the sample value to the average) 0.994 and the average after being given a left tilt position treatment were 1.30 with a standard deviation of 0.483

Table 2: Pain Measurement Scale Results.

No	Respondent Code	Pain Scale	
		Pre Test	Post Test
1	R1	6	3
2	R2	6	2
3	R3	5	3
4	R4	5	3
5	R5	7	3
6	R6	6	3
7	R7	5	2
8	R8	6	3
9	R9	6	3
10	R10	5	2

Table 3: Mean Pain Scale Table Before and After Left Tilting Position Intervention.

	Mean	n	Std. Deviation	Std. Error Mean
Before	1.90	10	0.994	0.314
After	1.30	10	0.483	0.153

Back pain is a problem that often occurs in patients with Percutaneous Coronary Intervention related to immobilization and limited position. Prolonged bed rest causes muscle weakness due to continuous pressure being applied to the same muscle, while muscle weakness is what causes back pain. Given the left tilt position, it is expected to relieve muscle tension, and most of all is able to overcome back pain (Razaei et al, 2008).

Mobilization in bed includes changes in position (tilted to the left and right, sitting in bed), passive and active movements (Suardika, 2005). Mobilization should be done in stages to help the patient cure. Psychologically mobilization can increase confidence in patients to feel better. This change in movement and position must be explained to the patient and family to find out the benefits of mobilization, so as to participate in the implementation of mobilization.

The addition of progressive relaxation techniques, optimizing stimulation in muscle spindles and organ tendon golgi is maximal because there is an autohogenic inhibition response arising from the presence of isometric principles that provide a relaxed response through tension in the muscles then assisted with expiration at the end of isometric implementation. This will cause optimal release of adhesion to the connective tissue of the muscles (fasciadan tendons), so that optimal relaxation of the muscles occurs then pain decreases (Silbernagl, 2014).

Active movement can cause contractions in large skeletal muscle fibers which involve the influence of where the function of the muscle spindle is to control any changes in muscle length and the tendon of the organ functions to inhibit muscle contraction. Both of these components will work consciously and then there is an adaptation response to the muscles with a reduction in tension in the muscles, repairing ischemia in the tissue so that it will eventually cause a decrease in pain (Guyton, 2006).

Progressive relaxation is a skill that can be learned and used to reduce or eliminate tension and experience comfort without relying on things / subjects outside of him. According to Jacobson, tension has to do with shrinking muscle fibers, while the opposite of tension is the absence of contractions (Soesmalijah Soewondo, 2016). This progressive relaxation is a method of relaxation technique that combines deep breathing exercises and a series of series of contractions and certain muscle relaxation (Kustanti & Widodo, 2008 in Setyoadi & Kushariyadi, 20

3.3 Effect of Giving Left Slanted Position on Changes in Back Pain Scale in Post Percutaneous Coronary Intervention Patients

The results of data processing using paired t-test, before and after the administration of the intervention in the experimental group got $p = 0.081 > (\alpha = 0.05)$, it can be concluded that the hypothesis in the study was rejected, ie there was no effect of giving a left tilt to changes in the scale of back pain in Post Percutaneous Coronary Intervention (PCI) patients at GrandMed Lubuk Pakam Hospital in 2019.

In addition, muscle relaxation movements progressives can stimulate spending endorphin hormone which gives comfort on the body. This hormone can function as a natural sedative which is produced in the brain and structure spinal cord.

Endorphin works by binding to existing opiate receptors in the limbic system, midbrain, medulla spinal cord and intestine. Opiate and opiate receptors This endogenous then forms a intrinsic pain suppression system. Bond between opiates and these receptors will be able to reduce pain with prevent his release as pain-producing neurotransmitters (Price & Wilson, 2006).

Table 4: Effect of Giving Left Tilting Position on Changes in Back Pain Scale in Post Percutaneous Coronary Patients.

Changes in back pain scale	Paired Sample t - Test			P Value
	Mean	Std. Deviasi	95% Interval Confidence	
Pre Test – Post Test	0.600	0.966	- 0.091 1.291	0.081

According to the researchers' assumptions, it was concluded that the treatment of the left sloping position could not provide a response to a significant decrease in back pain in post Percutaneous Coronary Intervention (PCI) patients and increased comfort for patients by reducing pressure on the back and long bed rest in bed without increasing the incidence of complications such as bleeding in the area of cardiac catheterization.

According to Setyoadi & Kushariyadi, (2011) progressive muscle relaxation is one of the complementary therapies that can be given by nurses or midwives in the process of providing care can be given to clients who experience sleep disorders (insomnia), stress, anxiety, neck muscle pain and upper back and down, and depression so that it can provide a relaxing effect to smooth the blood flow, reduce muscle tension.

The principle that underlies muscle relaxation in the body's mind approach is anything that relaxes our muscles and mind. Stretching and relaxing each muscle group at a time will result in progressive relaxation of the entire body, as well as calming the mind by stretching each muscle group for five seconds and focusing. This is followed by breathing deeply then releasing tension so that the muscles become completely limp, (Bruce Goldberg, 2007).

Exercise therapy is body movement, physical activity carried out systematically with the aim of: 1) correcting or avoiding complaints, 2) improving or increasing functional activity 3) avoiding or preventing preventive measures from decreasing the health status of risk factors 4) optimizing healthy status, fitness or good condition (Kisner, 2007).

Provision of tilted position left with post PCI is a combination of changes in position during immobilization in patients with tilt and helps reduce complaints back pain and help fulfill patient needs such as eating, drinking and patient elimination needs (Benson in Bigatello, 2006).

Provision of tilted position left and head elevation given to Post PCI patients with vascular closure device affects the reduction in pain (back pain). In patients who are immobilized then the patient must lie on the bed, gravity pressure will increased, the burden is on the back so the microcirculation is disrupted, the patient's pain response will appear (EBN, 2004).

4 CONCLUSION

- a. Based on the results of the statistical tests and the discussion above, it can be concluded that the administration of the left tilt position has no effect on the change in the scale of back pain in post percutaneous coronary intervention patients at Grandmed Lubuk Pakam Hospital in 2019.
- b. Progressive muscle relaxation has so far been one of the cheapest methods of relaxation, requires no imagination, has no side effects, and is easy to do. Relaxation therapy with tightening and relaxing muscles at a time to give a feeling of physical relaxation.

5 SUGGESTIONS

Do not apply the left sloping position as a nursing care to get a decrease in the scale of back pain in post percutaneous coronary intervention patients and look for other interventions related to the reduction in back pain scale in post percutaneous coronary intervention patients.

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