

Effectiveness of foot massage on sleep quality among post-surgical patients in Dr. H Abdul Moeloek Hospital, Lampung-Indonesia

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Abstract

Background: Republic of Indonesia's Health Survey in 2009, finding that the therapy through surgery was the 11th, because of surgery conduct in Indonesia in 2012 reached 1.2 million. The problem that often arises after surgery is a sleep disorder, pain and uncomfortable.

Purpose: To identify effectiveness of foot massage on sleep quality among post-surgical patients in Dr. H Abdul Moeloek Hospital, Lampung-Indonesia

Methods: The design of this research is quasy experiment with pretest design with posttest with control group design. This type of quantitative research using consecutive sampling techniques. The population in the study were 64 participants. The analysis used is the dependent and independent t test.

Results: Indicating the average score of sleep quality in the control group post intervention 9.12. Whereas sleep quality in the intervention group was obtained at 4.78 post intervention. A p-value 0.000 was obtained which showed differences in sleep quality scores both groups and interventions.

Conclusion: There is effectiveness of foot massage on sleep quality among post-surgical patients in Dr. H Abdul Moeloek Hospital, Lampung-Indonesia. It is recommended that hospitals can include foot massage therapy as an alternative therapy in overcoming sleep disorders in postoperative clients.

Keywords: Foot massage; Sleep quality; Post-surgical patients; Hospital

INTRODUCTION

Surgery is a treatment procedure that uses an invasive method by opening or displaying the body parts to be treated or surgery (Sjamsuhidajat & Wim de Jing, 2010). Surgery is a unique experience of planned changes in the body which following three phases: pre-operative, intra-operative, and postoperatively (Koizzer, Berman & Snyder, 2011).

The base on data, the number of surgery patients increases every year. In 2011, 140 million patients recorded had undergo of surgery worldwide, and the following by 2012, that number increased to 148 million patients. Meanwhile, in Indonesia in 2012 reached 1.2 million patients. In fact, in 2009, based on tabulation data from the Indonesian Ministry of Health, the therapy through surgery were the 11th most frequently performed (Ministry of Health of the Republic of Indonesia, 2010; Angraini, 2018).

Post-operative is an advanced stage of treatment of preoperative and intraoperative, which begins when the client received in the room recovery (recovery room) to end up in the

evaluation of further action on the order of clinic or home. During the postoperative phase, the act of nursing examines the client's psychological and physiological responses to surgery. Post-operative conditions can usually cause physical discomfort to clients, including pain and pain followed by anxiety and resulting in difficulty sleeping (Rosdahl & Kowalski 2020), besides pain and anxiety that cause clients to have trouble sleeping there are also uncomfortable environmental factors. Kozier, Berman, & Snyder 2010).

The results of previous research The effect of slow stroke back massage (SSBM) therapy on the sleep quality of post surgery patients at Sultan Agung Hospital Semarang, Indonesia found that the most complaints data for postoperative patients was pain (34.5%) in early adult patients and (32.8%).) in middle adult patients (Melastuti & Avianti, 2015).

Pain that is felt by individuals is one of the stimulants for sleep quality disorders (Scott, Jane, James et al, 2010). According to the World Health Organization (WHO), 18% of the population world's has sleep disorders and it is increasing every year.

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Based on research data international conducted by the US Census Bureau International Data Base in 2004 on the Indonesian population, it was stated that of the 238.452 million Indonesians, 28.035 million (11.7%) had insomnia or sleep disorders. This figure is one of the most disturbances complained by the Indonesian patients (Mading 2015).

Fulfilling the need for sleep is a basic physiological need in postoperative patients sleep is very important, because sleep is part of healing and improvement, achieving excellent quality sleep is important for health, and recovering from illness (Mariani, 2019; Mouch, Baskin, Yearling, Miller, & Dossett, 2020). A person's poor sleep quality can disrupt the physiological and psychological balance (Melastuti & Avianti, 2015). Coupled with the hospital environment or care facilities and the activities of service providers often add to client sleep problems because of hospitalization (Potter & Perry, 2009). The results of the survey by Melastuti & Avianti (2010) found that 6 out of 8 postoperative patients experienced a decrease in sleep quality as the major cause of pain. Actions taken by nurses to overcome the decline in the quality of sleep for patients include turning off some of the room lights during night hours outside visiting hours, and limiting the number of visitors.

There are various types of pharmacological and non-pharmacological therapies that can be used to reduce sleep problems. Handling pharmacologically like drugs Antihistamines, Amitriptyline, trazodone, Clonazepam, antihistamine, chloral and Zolpidem (Al aziz & Maliya (2015). While the handling of non-pharmacological like therapy guided imagery, reading, listening to music, massage or massage (Perry & Potter 2010). In non-pharmacological medicine has advantages over pharmacology, pharmacological treatment such as drugs has side effects, namely dependence on drugs, decreased metabolism, decreased kidney function, and causes impaired cognitive function (Stanley, 2007). Whereas in non pharmacological treatment There are several treatment technique options, including massage therapy. Massage therapy is a technique that can increase the movement of several

structures of both muscles and subcutaneous tissue, by applying mechanical force to the tissue. This movement can increase lymph flow and venous return, reduce swelling and me mobilization of muscle fibers, tendons to skin. Therefore, massage therapy used to improve muscle relaxation to reduce pain, stress, and anxiety that helps patients to improve sleep quality and speed recovery. Massage therapy can also improve patient movement and recovery after surgery, allowing clients to carry out daily activities (Masadah, Cembun & Suleman, 2020; Keller, 2012; Avery, 2012).

In the application of therapy massage, many types developed massage have. Among them is a foot massage. Foot Massage is a massage action that is performed on the foot area. Foot Massage can provide a deep relaxing effect, reduce anxiety, reduce pain, physical discomfort, and improve sleep one's (Fitriani, 2015).

According to previous research at Hasan Sadikin Hospital in 2017, there were differences in the intervention group and the control group (Afianti, & Mardhiyah, 2017). The control group it known that the p value = 0.150 (p value > 0.05). This value shows that there is no significant difference in the mean score of sleep quality in the control group. Whereas in the intervention group it known that the significance value was 0.002 (p < 0.05), show that there was a significant difference in sleep quality scores in the intervention group before and after being given intervention foot massage at bedtime for 2 consecutive days with the duration of the massage, respectively. Each foot 10 minutes (Afianti, & Mardhiyah, 2017).

Based on pre-survey on March 5th, 2020 at Dr. H Abdul Moeloek Hospital, Lampung-Indonesia in 2020, about 80% of patients who post-surgery experienced poor sleep quality, and only by using pharmacological methods to solve client problems. The reason researchers use therapy foot massage in study this was because foot massage able to improve the quality of one's sleep, in this study there were differences with previous research studies, where foot massage in this study used on postoperative clients, participants in study this in a

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conscious state, in surgical ward whereas in previous studies in Intensive Care Unit (ICU).

RESEARCH METHODS

Quantitative study with a pretest posttest design with a control group design. The population of all post surgery clients of 64 patients and taken as total sampling who are in Dr. H Abdul Moeloek Hospital, Lampung-Indonesia. The sample divided into groups; intervention group and control group. The eligibility ethical Number: 026KEPKTJK / II / 2020, Tanjungkarang Health Polytechnic. The research taken a week, and all participants only took pain-killer drugs. The participants on intervention group, foot massage done for 2 consecutive days and duration for 24 minutes. The participant criteria with in a conscious, cooperative condition aged 18 to 65 years, beginning by first day when in a surgical ward.

The intervention given who participant without contra indication such as there was a fracture of the ankle (tibia, talus, fibula, heel bone, sesamoid

bone, toe bones, metatarsals), Good sleep quality is characterized by the length of sleep the patient has, does not frequently wake up at night, is accustomed to sleeping in less than 30 minutes, and in the morning feels refreshed when he wakes up from bed.

All clients need a sleeping environment with a comfortable temperature and good ventilation, minimal noise sources, a comfortable bed, and the right lighting. The controlling to environmental the hospital to make a comfortable from other things, close the door of the room, reducing the volume of the phone, use shoes padded rubber, turn off the tv and radio, have a low voice conversation and the other, and in daytime the participant given a questionnaire The Pittsburgh Sleep Quality Index Indonesian version of the (PSQI).

This instrument has standardized and widely used in sleep quality research (Masjid, 2014). The Scale Pittsburgh Sleep Quality Index (PSQI Indonesian version of the) consists of 9 questions.

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RESEARCH RESULTS

Table 1. Demographic Characteristics of Participants N=64

Demographic		n	%	<i>M±SD</i>
Age (Year)(Range: 18-65)		64		43±14.25
Gender	Female	28	43.75	
	Male	36	56.25	
Education Levels	Elementary School	21	32.81	
	Junior High School	19	29.69	
	Senior High School	24	37.50	
Types of Surgery	Ca. Thyroid	6	9.38	
	Appendectomy	8	12.50	
	Kidney stones	6	9.38	
	Granuloma fibromes	1	1.56	
	Recti tumor	2	3.13	
	Hernia	2	3.13	
	Seluitic	1	1.56	
	Hmp ec sponditis	1	1.56	
	Ulcus pedis	1	1.56	
	Hil	2	3.13	
	Sol	1	1.56	
	CKR	1	1.56	
	Brain tumor	1	1.56	
	Uretrolithiosis	1	1.56	
	Nephrolithiasis	2	3.13	
	Peritonitis	6	9.38	
	Sponilitis Tb	1	1.56	
	Ca mameae	4	6.25	
	Subdural thigroma	1	1.56	
	Snnt	2	3.13	
	Miningioma	1	1.56	
	Impacted	2	3.13	
	Testicular tumor	1	1.56	
	Edh	2	3.13	
	Spinal cord tumor	1	1.56	
Hip Osteoarthritis	1	1.56		
Ca colon	1	1.56		
Ca recti	1	1.56		
Nefrocutar	1	1.56		
Osteosarcoma	1	1.56		
Colitis	1	1.56		
Frontal depression	1	1.56		

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Table 2. The Scores of Sleep Quality Among Post-Surgical Patients N=64

Variable		n	Mean ± SD	Min- Max	S. Error	p-value
Control Group.	Before	32	10.41± 3.573	4-17	0,223	0.000
	After	32	9.00 ± 2.959	4-17	0,186	
Intervention Group	Before	32	9.06± 2.285	5-13	0,223	0.000
	After	32	4.78 ± 1.184	3-7	0,186	

Based on table 2 The average sleep quality score in the pretest intervention group was 9.06 with a standard deviation (SD) of 2.285 and the lowest sleep quality score was 5 (good sleep quality) and the highest sleep quality score was 13 (poor quality sleep). Then after post intervention, it known that the average sleep quality score of the participants was 4.78 with a standard deviation (SD) of 1.184 and the lowest sleep quality score was 3 (good sleep quality) and the highest sleep quality score was 7 (poor sleep quality). The average sleep quality score of participants in the control group is 9.12 and the measurement of the average score for the sleep quality of participants in the intervention group is 4.78. The difference in the mean score of sleep quality index in the control group and the intervention group was 4.34. The results of statistical tests with test independent t results obtained p-value of 0.000 <(0.5). So it can be concluded that there is an effect of foot massage on the sleep quality of postoperative clients as evidenced by changes in the decrease in the average value of sleep quality with the control group and the intervention group with an average value in the control group of 9.12 and the intervention group of 4.78 with a value a difference of 4.78.

DISCUSSION

The Sleep Quality (Control Group)

The average sleep quality score in the control group shows that the pre-intervention score was 10.41 with a standard deviation (SD) of 3.573 and the lowest sleep quality score was 4 and the highest score was 17, while in the post intervention

that did not get treatment, the result was 9.12 with a standard deviation (SD) of 2.959 and the lowest sleep quality score was 4 and the highest score was 17. Based on these results, that there is no significant change. The pre-intervention and post-intervention control groups who have not therapy foot massage.

The comfort of the client may influence the absence of significant differences in the control group. Based on the description of the participants, it shows that the number of participants based on comfort is 38 participants (59.37%). Comfort can be obtained from the environment, and conversely an uncomfortable environment makes it difficult for participants to sleep, for example too bright light, hot or cold temperatures, and the number of visitors busy. Asmadi (2008) states that the environment can improve or prevent a person from sleeping. In a calm environment allows one to sleep soundly. Conversely, a noisy and rowdy environment will prevent a person from sleeping.

The researcher prove that the most underlying factor in creating a sense of comfort in the treatment room is how the client can adapt to the conditions of the treatment room.

A good environment can create the comfort of the treatment room and vice versa, but if the client cannot adapt to the environment of the treatment room (II and III) then it cannot be avoided from an uncomfortable atmosphere. However, comfort is not one of the factors that make it difficult for participants to sleep, but surgery or illness is a factor that makes it difficult for participants to sleep. Postoperative pain appears to be caused by mechanical stimulation of the wound which causes

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the body to produce chemical mediators of pain (Smeltzer & Bare, 2012). The acute pain usually starts suddenly and is generally associated with a specific injury. It draws attention to the fact that this pain does occur and teaches us to avoid similar situations that are potentially painful. The extent and severity of pain postoperative depends on the individual physiological and psychological assumptions, tolerance induced by pain, location of the incision, the nature of the surgical procedure, the depth of surgical trauma, and the type of agent anesthetic and how it is administered (Brunner & Suddarth, 2012). Meanwhile, according to gender it influences lifestyle. Where the wrong lifestyle tends to make it difficult to sleep. Previous research, stated that gender is closely related to lifestyle. Where the wrong lifestyle such as smoking and alcohol dependence are reported to have complaints for sleeping difficulties (Setyawan, 2017). Complaints about drowsiness daytime. And also the heavy burden of being the head of the family who thinks about family members makes sleep disturbance. The above is in line with the research of it was found that the data on sleep disorders for women was 36:28 (Varisella, & Nurmaguphita, 2016).

Base on age in table 1 shows that the largest number of participants based on age is the elderly at the end of 18 participants (28.13%). Age is the life span of the respondent which is stated by the respondent himself in annual terms. In this study, the age of most participants was 56-65 years, which means entering the late elderly. Age affects a person's sleep quality, where increasing age can affect sleep one's. Sleep needs of children will be different from adults, as well as the elderly, their sleep needs are different from adults.

The things above are in line with research conducted by Melastuti & Avianti (2010), it was found that 6 out of 8 postoperative patients experienced a decrease in sleep quality as the main cause of pain. According to researchers poor sleep quality indicated by the participants in room the operating include postoperative pain, environment, and anxiety.

Likewise, this study is in line with research conducted by Afianti, Mardhiyah (2017), the effect

of foot massage on the quality of sleep of patients in the ICU room at Hasan Sadikin hospital shows that there is no significant difference in the mean sleep quality score ($p = 0.150$), while in the treatment group, there was a significant difference in the mean sleep quality score ($p = 0.002$). The difference between sleep quality scores in the control group and the treatment group was significantly different ($p = 0.026$). There is also a research. These results also support the research conducted by Raharjo, P (2010), regarding the factors that influence the occurrence of insomnia in the elderly in Demak Regency, which shows that physical pain affects the occurrence of insomnia more.

The Sleep Quality (Intervention Group)

The average sleep quality score in the intervention group shows that the pre-intervention score was 9.06 with a standard deviation (SD) of 2.285 and the lowest sleep quality score was 5 and the highest score was 13, while in the post intervention that received treatment the result was 4.78 with a standard deviation (SD) of 1.184 and the lowest sleep quality score was 3 and the highest score was 7.

Based on these results, it concluded that there were significant changes in the treatment group. Pre-intervention and postintervention given therapy foot massage. The provision of foot massage carried out because foot massage carried out with easy access, which carried out in the area leg that is easily accessible and the patient does not need repositioned, it will not affect the equipment used by the respondent, besides giving foot massage has a lot of benefits, the benefits of foot massage, among others. Improves blood circulation in muscles thereby reducing pain and inflammation as massage improves circulation of both blood and lymph. Foot massage can provide a deep relaxing effect, reduce anxiety, reduce pain, reduce physical discomfort, and improve sleep in a person. By giving massage to the foot area can accelerate the circulatory system, because massage provides a comfortable, sedative effect and is able to stimulate the system nervous and increase activity muscle, so massage on the feet can relax the

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muscles making the patient relax. The Mechanism, foot massage which starts with a massage foot and ends with a foot massage, responds to the nerve sensors in the feet, which then increases the neurotransmitters serotonin and dopamine, which stimulate the hypothalamus and produce Corticotropin Releasing Factor (CRF) which stimulates the pituitary gland to increase production. Proopiomelanocortin (POMC) and stimulates the adrenal medulla to increase the secretion of endorphins which activate the parasympathetic so that vasodilation occurs in vessels and increases blood flow so that it helps tense muscles relax so that RAS (Reticular Activating System) is stimulated to release serotonin and helps stimulate sleep and improve one's sleep quality (Afianti, & Mardhiyah, 2017). The results of this study are in line with research conducted by Afianti & Mardhiyah (2017), The effect of foot massage on the sleep quality of patients in the ICU was a significant difference in the mean sleep quality score ($p = 0.002$).

The difference between sleep quality scores in the control group and the treatment group was significantly different ($p = 0.026$). There is also research conducted by Ariani & Suryanti. (2019). The effect of foot massage on the quality of sleep in the elderly at Panti Wredha Dharma Bakti Kasih Surakarta showed that in the intervention group after foot massage and soaking the feet with warm water, the results had a significant increase with a value of $P = 0.001$ (<0.005). meaning that there is an effect of foot soaking and foot massage on sleep quality in the elderly.

Analysis of Effectiveness of Foot Massage on Sleep Quality Among Post-Surgical Patients

The average sleep quality score of participants in the control group is 9.12 and the measurement of the average sleep quality score of the participants in the intervention group is 4.78. The difference in the mean score of sleep quality index in the control group and the intervention group was 4.34. The results of statistical tests with test independent t results obtained p-value of 0.000 (<0.5). So it can be concluded that there is an effect of foot massage on the sleep quality of

postoperative clients as evidenced by changes in the decrease in the average value of sleep quality with the control group and the intervention group with an average value in the control group of 9.12 and the intervention group of 4.78 with a value a difference of 4.78.

The post surgery pain or after surgery can cause physical discomfort to the patient, including nausea, vomiting, pain, anxiety and makes a person's sleep quality worse. Poor sleep quality can result in disrupted healing process and consequently psychological and physiological disturbances in participants. The pain felt by the patient can be reduced by using massage where the stimulation of the massage is able to reach the brain faster than the pain itself, the impact is an increase in serotonin, dopamine and a decrease in substances and an increase in the production of endorphins during massage which results in a relaxing effect and increased sleep. Massage therapy can be used. to improve muscle relaxation, to reduce pain, stress, and anxiety which helps the patient improve sleep quality and speed of recovery. In addition, massage therapy can improve patient movement and recovery after surgery, allowing patients to carry out activities. There are massage therapy many kinds of, one of them is foot massage. Foot massage is a massage action that is performed in the area foot. Performing a foot massage can provide a deep relaxing effect, reduce anxiety, reduce pain, reduce physical discomfort, and improve sleep in a person (Damayanti, Imania & Irfan, 2019).

The results of this study are in line with Ariani's research, Suryanti (2018) regarding the effect of foot massage on sleep quality in the elderly at the Nursing BaktiHome, DharmaSurakarta. With the results of the Wilcoxon test, the value of 0.003 with the criteria $P < 0.05$, so that there is a change in sleep quality in the elderly, indicated by the number 0.003 < 0.05 , which means that H_a is accepted and H_0 is rejected.

Likewise with the research of Santi Varisella (2016), The Effect of Relaxation Therapy on Massage Insomnia Scores in Chronic Kidney Failure Patients Underwent Hemodialysis at PKU Muhammadiyah hospital Yogyakarta, showed a

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positive change in the insomnia score in the experimental group with p value 0.000, $\alpha = 0.05$. Further data analysis using independent t-test showed statistically significant differences between the experimental group and the control group with p value 0.000, $\alpha = 0.05$. It shows there are significant relaxation therapy massage to score insomnia in patients with chronic renal failure undergoing hemodialysis.

According to the researcher, if you look at the univariate and bivariate analysis, there are differences in the scores in the two groups, namely the control and intervention groups. In the control group, when pre-intervention was carried out, it was obtained a value of 10.41 and after being carried out post intervention it was obtained a value of 9.12.

Whereas in the intervention group, the pre-intervention score was 9.06 and the post-intervention score was 4.78. And then after an independent t test, the p-value result is 0.000 <(0.5). It can be concluded that there is an effect of giving foot massage on the sleep quality of postoperative clients.

CONCLUSION

Statistical test results using a T test-dependent obtained p-value 0.000 ($\alpha < 0.05$), which means there are significant effectiveness of foot massage on sleep quality among post-surgical patients

SUGGESTION

Hospital management to consider applying foot massage as therapy companion or as part of nursing interventions in providing nursing care, especially in handling postoperative clients. This study may be information that in preparing the nursing intervention in overcoming sleep disorders can use non-pharmacological, namely therapeutic foot massage as an alternative. Further research in order to conduct research using method, massage such as massage back, or hand massage.

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