THE EFFECTIVENESS OF HAND MASSAGE, FOOT MASSAGE AND COMBINATION ON PAIN INTENSITY OF POST SECTIO CAESAREA

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ABSTRACT

This study was conducted due to there were several mothers who experienced the pain of post sectio caesarea and be afraid to do some activities at 3rd day post section caesarean. Previous studies stated that one of the non-pharmacology therapies is in order to release the pain by using hand and foot massage. This study was aimed at investigating the effectiveness of hand, foot and combinational on pain intensity in post sectio caesarea patients at Pringsewu general hospital, Lampung. This was a quasi-experimental study with non-randomized control group pretest-posttest design. Fifty-one post section caesarean patients were recruited as a sample in this study which consisted of 17 respondents in each group. There is a significant difference in the intensity of pain before and after with p-value 0,0005. mean difference hand massage 1,058; foot massage 0.882; and the combination of hand and foot massage -0.882. It is suggested that hand massage is more effective in lessening the pain intensity among post section patients comparing to the other two groups. The hand massage could be used as an independent nursing intervention on pain distraction among post section caesarean patients besides foot massage and combination groups.

KEYWORDS: *Post Section Caesarea, Hand and Foot Massage, Pain Intensity*

INTRODUCTION

SDGs *(Sustainable Development Goals)* are a sustainable development program in which there are 17 goals and 169 measurable targets with a specified grace period of 15 years, from 2015 to 2030. SDGs are world development agendas aimed at human welfare. Which the health sector is set at the third point of the goal reads "good health and prosperity". The health sector in the SDGs consists of 4 Goals/goals, 19 targets, and 31 indicators, where one of the goals /objectives is to ensure gender equality and empower all women (Ministry of Health, 2016).

In Indonesia sectio caesarea is generally performed if there are certain medical indications, as the terminate intervention for pregnancy with complications. Sectio caesarea is also an alternative choice of labor without medical indications, because it is considered easier and more convenient. 25% of the total numbers of births were performed by sectio caesarea in women who were not at high risk for normal delivery and other labor complications (Ministry of Health, 2016). In 2005 - 2011 the incidence of SC in Indonesia averaged 7% of the total number of births, whereas in 2006 to 2012 the average incidence of SC increased to 12% (WHO, 2014).

Based on the results of Basic Health Research (Riskesdas) in 2013,sectio caesarean births in Lampung Province were 9.8% with the highest proportion in DKI Jakarta (19.9%) and the lowest in Southeast Sulawesi (3.3%).

Childbirth is a physiological process, but complications can occur during pregnancy until the birth. One type of labor that often occurs is labor with Sectio caesarea (Ministry of Health, 2016). In the last 20 years, sectio caesarea(SC) has become a trend for various reasons. This increase occurs for several reasons, namely the existence of obstacles experienced by the fetus and mother, but not least the SC is done because of the mothers' request who do not want to give birth normally for reasons of fear.

Sectio caesarea is a surgical procedure as the birth of the fetus through the incision in the abdominal wall and uterine wall (Lawdermilk, 2013). One of the effects of post sectio caesarea is the pain in the spine, pain in the stitches, pain in the incision and also nausea and vomiting due to the effects of anesthesia. In post, sectio caesarea patients is also possible to feel the sense of confusion and fear in the daily activity and the conditions experienced by the client also need to adapt the condition of the post-surgery action. This pain and anxiety if not noticed, can slow down the healing process (Hassani, 2015).

Pain is a complex concept to be defined and understood. Melzack and Casey (1968) suggested that pain is not just a sensory experience but also related to the motivation and the individual affective components. *The International Association for the Study of Pain* (IASP) formulates the definition of pain as "*an unpleasant sensory and emotional experience associated with actual or potential tissue damage or is described in terms of such damage.* Referring to this definition, it is clear that pain experience involves sensory, emotional and cognitive phenomena.

Some studies related to relieving pain of *post* section are studies by Movarid I et al. (2015) entitled *The Effect of Hand and Foot Massage on Post-Cesarean Pain and Anxiety* where *postoperative* pain and anxiety can be relieved by foot and hand massage. In Abbaspoor's research, (2013) entitled *Effect of Foot and Hand Massage in Post-sectional Sectiocaesarea, Pain Control Section A Randomized Control Trial* explained that foot and hand massage can be considered as a complementary method to relieve pain effectively and to reduce the number of drugs and its side effects.

There are several non-pharmacological therapeutic alternatives that have been studied to relieve pain including classical music therapy, distraction, guided imagery*,* warm compresses, breath relaxation techniques, effleurage massage. In several research journals of hand and foot massage are the alternative that can provide relaxation for the diversion of pain, so that the researcher inovate to provide non-pharmacological therapy to relieve pain in post sectio caesarea patients.

RESEARCH METHODS

This study used a quantitative approach with quasi-experimental research method with non-randomized control group pretest-posttest design. 51 respondents participated in this study. Then they are divided into three intervention groups, each group as many as 17 respondents. Group A (hand massage), B (foot massage) and C (hand and foot massage).

All intervention groups will be carried out on different days. The first research assistant was assigned the intervention task of hand massage, while the second assistant was responsible for the intervention of foot massage. After the respondent sufficed, it was followed by the third intervention, namely hand, and foot massage. The massage duration in group A and B was 10-15 minutes and group C was 15-20 minutes.

Data were processed using the computer. Ethics Assessment were conducted by the Research Ethics Committee of Faculty of Nursing, University of Muhammadiyah Jakarta

RESULTS

Univariate Analysis

Respondent Characteristics

Table 1: Characteristics of Respondents Post SC Patients at Pringsewu General Hospital, Lampung (N = 51)

Variables	Group								p *value* Test Homogeneity
	Hand Massage		Foot Massage		Hand and Foot Massage		Total		
	N	%	N	%	N	%	N	%	
Characteristics of mothers									
Age									
<20 years	1	2	0	0	0	0	1	2	0.222
20 - 34 years	14	27.5	13	25.5	15	29.4	42	82.3	
≥ 35 years	2	3.9	4	7.8	2	3.9	8	15.7	
Religion									
Non Moslem	1	2	1	2	1	2	3	5.9	0.221
Moslem	16	31.4	16	31.4	16	31.4	48	94.1	
Education Level									
Elementary	0	0	2	3.9	1	2	3	5.9	
Junior high school	4	7.8	0	0	0	0	4	7.8	0.475
Senior high school	10	19.6	13	25.5	13	25.5	36	70.6	
University	3	5.9	2	3.9	3	3.9	8	15.7	
Occupational status									
Not Work	11	21.6	13	25.5	10	19.6	34	66.7	0,568
Working	6	11.8	4	7.8	7	13.7	17	33.3	
Parity status									
Primiparous	9	17.6	7	13.7	12	23.5	28	55	0.220
Multiparous	8	15.7	10	19.6	5	9.8	23	45	

Based on the table shows that 51 respondents, 42 people (82.3%) are in childbearing age (20 - 34 years), Islam is 48 people (94.1%), high school education level is 36 people (70.6), 34 people did not work(66.7%), primiparous are 28 people (55%) and multiparous are 23 people (45%).

In this study, the variables tested for homogeneity were the characteristics of age with the significant value was 0.222, religion 0.221, education 0.475, occupational status 0.568 and parity 0.220. Based on these results it can be concluded that the significance value of the respondent's characteristics was α> 0.05, mean that the data group was the same or homogeneous variant, while the normality test was done by looking at the histogram chart in the bell shape, so that it can be concluded that the data is normally distributed.

Pain intensity before and after Intervention in Group Hand Massage, Foot Massage, and Group Hand-Foot Massage

Table 2: Distribution of Respondent Frequency Based on Pain Intensity in Group Hand Massage, Foot Massage and Combination (Hand and Foot Massage) Pre and Post Test (N = 51)

	The Group							
	Hand Massage		Foot Massage		Hand and Foot Massage		Total	
	N	%	N	%	N	%	N	%
Pain intensity before intervention								
Pain Average (scale 4-6)	0	0	0	0	0	0	0	0
Severe pain control (scale 7-9)	17	33.3	17	33.3	17	33.3	51	100
Pain intensity after intervention								
Medium pain (scale 4 - 6)	13	25.5	11	21.6	12	23.5	36	70.6
Severely controlled pain (scale 7 - 9)	4	7.8	6	11.8	5	9.8	15	29.4

Based on table 2 the pain intensity before intervention in three groups was found that 51 respondents (100%) complained of severe pain controlled with an average scale at number 8, where the range of controlled severe pain scale was 7-9. The intensity of pain at the posttest (after) intervention in three groups was mostly in moderate pain with an average reduced pain was 2 scales which became 6.

In the hand massage group, 13people (25.5%) experienced reduced pain intensity after the intervention, with an average pain scale change to the moderate pain (4 - 6). In the foot massage group, 11 people (21.6%) experienced reduced pain intensity after the intervention and the hand and foot massage group, the 12 people (23.5%) also experienced reduced pain intensity after intervention with 4 - 6 pain scale (moderate pain)

Bivariate Analysis

Paired T-Test

Table 3: Distribution of Respondents' Average Pain Intensity Before and After Intervention (N = 51)

Variables	Mean	SD	SE	p *value*
Hand Massage				
Before the intervention	7.82	0.529	0.128	0.0005
After the intervention	5.41	1.004	0.243	
Foot Massage				
Before intervention	7.59	0.507	0.123	0.0005
After intervention	6.06	0.827	0.201	
Hand and Foot Massage				
Before intervention	7.71	0.470	0.114	0.0005
After intervention	6.06	0.748	0.181	

Based on table 3 the average pain intensity in the hand massage group before the intervention was 7.82 (severe controlled pain) with the standard deviation of 0.529, whereas after the intervention was obtained a change in pain intensity with an average of 5.41 (moderate pain) with a standard deviation of 1.004. In the foot massage group before the intervention was 7.59 (severe controlled pain) with a standard deviation of 0.507, whereas after the intervention was obtained changes in pain intensity with an average of 6.06 (moderate pain) with a standard deviation of 0.827.

The hand and foot massage group before the intervention, the average pain intensity was 7.71 (severe controlled pain) with the standard deviation of 0.470, while after the intervention was obtained changes in pain intensity with an average of 6.06 (moderate pain) with the standard deviation of 0.748. Statistical test results obtained p-*value* 0.0005, it can be concluded that there was a significant difference between pain intensity before and after the intervention.

Anova Test

Table 4: Distribution of Average Pain Intensity of Hand Massage, Foot Massage and Combination (Hand and Foot Massage) Post Intervention at Pringsewu General Hospital in 2018 (N = 51)

Variables	Mean	SD	95% CI	P *Value*
Pain intensity of Hand Massage	5.29	1.105	4.73 - 5.68	
Pain intensity of Foot Massage	6.06	0.664	5.41 - 6, 63	0.004
Pain intensity of Hand and Foot Massage	6.24	0.993	5.89 - 6.58	

Based on Table 4 it can be seen that the average pain intensity of post-intervention in the hand massage group was 5.29, the foot massage group was 6.06 and the pain intensity in the combination or hand and foot massage group was 6.24.

Statistical results test obtained p-*value* 0.004, mean that at alpha 5% it can be concluded that there was a difference in pain intensity in the three interventions.

Table 5: Group Distribution of Differences in Average Pain Intensity of Hand Massage, Foot Massage and Combination (Hand and Foot Massage)Post Intervention at Pringsewu General Hospital in 2018 (N = 51)

Variable	Mean Difference	95% CI	P *Value*
Pain intensity of Hand Massage	1.059	0.26 - 1.86	0.006
Pain intensity of Foot Massage	0.882	0.08 - 1.68	0.026
pain intensity of Hand and Foot Massage	-0.888	1.68 - 0.08	0.026

Based on table 5 it can be seen the difference in the average pain intensity of post-intervention in the hand massage group was 1.059, the foot massage group was 0.882 and the pain intensity in the combination or hand and foot massage groups was -0,882.

Statistical test results obtained *p*-value 0.006 in the hand massage group, 0.026 in the foot massage group and 0.026 in the combination or hand and foot massage group, mean that at 5% alpha it can be concluded that there was a difference in pain intensity in the three interventions. Further analysis proved that there were significant differences in the intervention group of hand massage, foot massage and also the combination or hand and foot massage group.

DISCUSSIONS

The results of the analysis in group A showed that there was an effect of hand massage on pain intensity before and after the intervention. It is proved by the decrease in pain scale of respondents from the controlled pain scale to medium scale, with an average decrease in two pain scales. In accordance with the theory which states that giving stimulation under the skin tissue with gentle touch and pressure can divert the pain that is felt. Where it impulse come from the release of several pain mediators that cause peripheral sensitization. Furthermore, the stimulus sends impulses through the afferent peripheral nervous system which stimulates nosireseptors / pain receptors which are then transmitted to the cranial nerve to the somatosensory cortex in the cerebral cortex. Hand massage intervention can provide a relaxation effect by stimulating the release of *endorphin* hormones so as to control pain impulses delivered to the hypothalamus. Most of the parity status in the hand massage group was primiparous, this can be related to the pain threshold value in the group

because never experienced the post *sectiocaesarea* painbefore so that the pain felt at this time is the heaviest pain experienced by the respondents.

The explanation above is in line with the previous research conducted by Ramesh et al (2015) that hand massage techniques have several benefits, such as helping the body pump more oxygen and nutrients to all vital tissues and organs by increasing circulation and relaxing muscles, and stimulating the production of *endorphin* hormones that can relieve the pain scientifically. The benefits of massage on the hands are also explained in another study conducted by Erol in 2014 in Istanbul for elderly patients to relieve pain and reduce the level of depression in homes, where hand massage techniques can inhibit pain stimuli because *A Delta* fibers will close the gate so that the *cortex cerebri* not receiving pain messages and causing pain perception is change.

Group B showed the influence of intervention before and after giving foot massage on pain intensity in *post sectio caesarea* patients. This is evidenced by relieve in the pain scale of the controlled severe pain scale to moderate pain, with an average reduction in one pain scale. These results are in accordance with the theory which explains that gentle suppression of the feet can stimulate the release of *endorphin* hormones in the body which also gives a relaxing effect so as to suppress pain impulses in the posterior cornucle of the spinal cord. The pain process occurs through afferent peripheral nerves then transmitted to spinothalamic. Where on the peripheral nerves there are two fibers that control the pain stimulus, namely *A-delta* fibers and C fibers. Foot massage makes the *A-delta* fibers that are veiled by myelin will move across the spinal cord to close the cerebral cortex gate so that the pain will be perceived. The parity status of the respondents in the foot massage group was mostly multiparous, which had already experienced labor with *sectio caesarea* before. This can be related to the pain threshold value in the group, because has felt *post sectio caesarea* pain then the respondent is more able to adapt to perceived pain.

The results of this study were also strengthened by a previous study by Chan if in 2013 entitled "*Does Foot Hand Massage Relieve Acute Postoperative Pain? A Literature Review*", the study explains that postoperative pain is caused by tissue damage that induces the release of chemical mediators from surgical wounds. The four pain processes are transduction, transmission, modulation, and perception. Massage stimulates large nerve fibers and layers of dermatomes that contain tactile receptors and pressure. The receptor then sends nerve impulses to the central nervous system. The gate control system on the dorsal horn is activated through an inhibitory interneuron, thus closing the gate then the brain does not receive a message of pain.

In group C (hand and foot massage) showed the influence of intervention before and after being given hand and foot massage on pain intensity in post *sectio caesarea* patients. This is evidenced by the decrease in the pain scale of the controlled severe pain scale to moderate pain, with an average reduction of one pain scale. In accordance with the theory which explains that gentle suppression of the hands and feet can stimulate *endorphin* hormone which gives a relaxing effect on the body. In this group, the majority of respondents' parity status is primiparous, where respondents have never had labor with the *Sectio caesarea*before.

Based on the description above, the researcher believes that the results of this study are in accordance with the theory and results of previous studies. This is consistent with the interim answers from the research questions compiled by researchers in the research hypothesis which stated that there are differences in pain intensity before and after hand massage, foot massage and hand and foot massage for post *sectio caesarea* patients at Pringsewu General Hospital,

Lampung. It can be seen from the analysis results that the effectiveness of the three intervention groups namely (1) hand massage (2) foot massage (3) hand and foot massage. The first intervention group was more effective than the other two groups. This is due to the effect of spinal anesthesia effects. As we know, spinal anesthesia can disappear gradually from 2 hours after postoperative, but long-term effects are often not understood. As explained in a previous study conducted by Isabella et al (2015) entitled "*Effect Of Regional Anaesthesia On The Cutaneous Reflexes Of Foot Muscles*", this study showed that the effects of regional anesthesia, one of which is spinal anesthesia, causes sensitivity to relieve especially on the peripheral part.

RESEARCH LIMITATIONS

- A researcher cannot control other factors that can affect pain in *post Sectio caesarea* mothers such as support system, social culture, anxiety, and coping patterns.

- The limited sources or books that explain hand and foot massage, so researchers only use several journals as reference material.

- The sampling technique used was not only using *purposive sampling* but researchers also used *accidental sampling techniques* because of the limited number of patients during the study.

- There were several mothers *post sectio caesarea* on the second and third days to be respondents.

CONCLUSIONS

- The majority of respondents aged between 20-34 years, Islam, high school education level, no job and the parity status of primiparous.

- The results of the study in the intervention group showed differences in pain intensity before and after the intervention of hand massage, foot massage and hand, and foot massage.

- Hand massage is more effective in relieving pain intensity in *post sectio caesarea* patients than the other two groups, as evidenced by the results of $p = 0.006$ and the mean difference of 1.059.

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