Effectiveness of Deep Breathing Relaxation and Music Therapy as a Pain-Reducing Intervention in Post-Caesarean Section Patients

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ABSTRACT

Post-cesarean section women may experience severe pain due to operative procedure in which most of them might have unpleasant experiences due to inadequate pain management. Pharmacological and non-pharmacological treatments can be used to minimize the pain. A combination of deep breathing relaxation techniques and music therapy is a non-pharmacological method to reduce pain, but there is limited study on combination technique intervention for post-cesarean section. The purpose of this study was to examine the effectiveness of a combination of deep breath relaxation technique and music therapy in reducing pain severity in post-cesarean section patients. This study applied a quasi-experiment method with purposive sampling using control group. The sample of this study was 52 respondents (26 respondents for the control group and 26 respondents for the experimental group) from two private hospitals in Jakarta. Women in the experimental group received the combination technique and those in the control group received only deep breathing relaxation technique. The outcome pain severity was measured by NRS (Numeric Rating Scale) before and after intervention. This study conducted both univariate and bivariate analyses. The result of this study showed that the combination of deep breath relaxation techniques and music therapy was more effective in reducing pain severity in post-cesarean section patients (p value <0.0001; r -0.857) compared to deep breathing relaxation techniques alone (p value <0.0001; r -0.766). It is therefore important to consider implementing the combination techniques in hospital settings.

Keywords: Post cesarean section, Deep breath relaxation techniques, Music therapy.

1. INTRODUCTION

A caesarean section (CS) is a major surgery with an estimated 18.5 million procedures being performed each year in the world [1]. According to the World Health Organization (WHO), 10-15% of all deliveries are by CS [2]. In Indonesia, CS rates increased from 1.6% (95% CI 1.3 to1.9) in 1991 to 17.6% (95% CI 16.7 to 18.5) in 2017[3].

Patients who undergo any type of surgery will experience moderate to intense pain. After a surgery, postoperative pain is inevitable after a CS [4]. Therefore, pain management is needed for post CS patients. An adequate pain management should be administered since pain can also be influenced by individual's emotional and cognitive factors [5]. In general, there are two types of pain management including pharmacological and non-pharmacological management [6].

Postoperative pain can be seen as a physiological pain. However, uncontrolled postoperative pain can cause both physiological and psychological effects toward patients [7]. Thus, nurses' role is to manage patients' postoperative pain effectively [8]. Some postoperative pain management can be conducted by nurses independently including complementary therapy, music therapy, cold application, and guided imagery [9].

Some previous research showed that nursing care management such as providing relaxation techniques, deep breathing and music therapy can be used to

reduce patients' pain [10], [11]. A relaxation therapy can reduce an individual's adrenaline hormone that causes feeling of calm and decrease sympathetic nerve activity that could be useful for reducing pain [12]. A study by Pujiarto identified that utilization in regard with combination of deep breathing relaxation techniques and music therapy can reduce pain severity for patients with post open reductional internal fixation/ORIF [13]. However, it is noted that there is limited study in regard with using the combination of deep breathing relaxation technique and music therapy for post-cesarean section women. As CS also can lead to pain severity due to the surgical incision, it is important for supporting the CS-women for managing their pain severity.

Deep breathing relaxation technique is one of many non-pharmacology managements for reducing pain post-operative [10]. On the other hand, a previous study further argued that combination therapies such as music therapy and deep breathing relaxation techniques can also decrease post-operative pain [13].

Based on the above discussion, it is crucial for nurses to provide effective pain management for post-CS patients in which previous studies suggested using one or more non-pharmacologic pain management. Therefore, this study examined the effectiveness of combination of deep breathing relaxation technique and music therapy in post-CS patients using control group.

2. METHOD

This study was a quasi-experimental study using pre-post design with control group [14]. A purposive sampling was applied in this study with inclusion criteria including post-caesarean section women on day 1 (H+1), cooperative, fully alert , and aged 25-45 years.

The instruments used in this study were MP3/mobile phone with a classical music and a headset as well as a guideline for deep breathing relaxation technique. The pain severity was measured using the NRS (Numeric Rating Scale) [15] ten minutes before and ten minutes after intervention. The pain scale on the NRS was categorized into 0 (no pain), 1-3 (mild pain), 4-6 (moderate pain), 7-10 (severe pain).

The population of the study was 118 post-caesarean section women (three months population) consisted of 74 women at Hospital A and 44 women at Hospital B in which the average of the monthly

population was 40 women. The sample size of this study was calculated using Slovin's formula, $n = \frac{N}{1+Ne^2}$ whereby e = 10%. The calculations are displayed below:

$$n = \frac{N}{1 + Ne^2}$$

$$n = \frac{40}{1 + 40 \ (0,1)^2}$$

$n = \frac{40}{1,4}$ = 28.57 + 10% = 31.42; adjusted to 32 respondents. This also means that this study should recruit 32 respondents for control group and 32 respondents for experimental group (t otal of 66 respondents).

This study also used a proportion of 2:1 according to the population size in each hospital. Therefore, the target respondents at Hospital A were 44 respondents (22 respondents for control group and 22 respondents for experimental group). The target respondents at Hospital B were 22 respondents (11 respondents for control group and 11 respondents for experimental group). Based on the calculation of the sample size, this study should recruit 66 respondents. However, this study only recruited 52 respondents (78.78% of the target sample). This study was carried out between April – May 2021. The statistical test of this study was applied using the IBM SPSS version 27. In addition, this study achieved an ethical approval from the Mochtar Riady Institute for Nanotechnology (MRIN) Ethical Review with number 2101003-04.

3. RESULT

Table 1 shows the pain level of respondents in both control-experimental groups before intervention. Both groups reported moderate level of pain that consisted of 76.9% for control group and 69.2% for experimental group. Both groups also identified similar minimum pain's scale. H owever, their maximum pain's scale, mean and SD (Standard Deviation) were slightly different.

Based on table 2, both groups reported that almost two-third of the respondents were in moderate level of pain with 73.1% for control group and 65.4% for experimental group after intervention. Both groups also reported similar minimum pain's scale. However, both groups revealed obvious differences in their maximum pain's scale, mean and SD. This study further examined the differences of pre-post

intervention in both groups. A Wilcoxon signed rank test was used to analyze the differences of before-after interventions. The test was chosen due to the data in

Table 3 shows that there were significant differences of pain severities between pre-post intervention in the two groups with p value <0.0001. This also means that both interventions in both groups were significant in reducing pain severities. In other words, the combination of deep breathing relaxation technique and music therapy or deep breathing relaxation technique alone can reduce the pain severity in post-caesarean section patients. In addition, this study showed that the effects of the intervention in the

this study was not normally distributed. The results of the test can be seen in the table 3.

groups were negative (r = -0.766 for control group and r = -0.857 for experimental group). This means that both interventions had decreased the respondents' pain severity. However, the effect of the intervention in the experimental group was higher than in control group (r value of experimental group > control group). This result indicated that the combination of deep breathing relaxation and music therapy technique was more effective than deep breathing relaxation technique alone.

Table 1 The pain level of control-experimental groups in pre-intervention (n=26)

Group	Min	Max	Mean	SD	Pain level	n (%)
Control	3	8	5.3	1.2985	Mild	1 (3.9)
					Moderate	20 (76.9)
					Severe	5 (19.2)
Experimental	3	7	5.5	1.2056	Mild	2 (7.7)
					Moderate	18 (69.2)
					Severe	6 (23.1)

Table 2 The pain level of control-experimental group in post intervention (n=26)

Group	Min	Max	Mean	SD	Pain level	n (%)
Control	2	8	4.3	1.4077	Mild	5 (19.2)
					Moderate	19 (73.1)
					Severe	2 (7.7)
Experimental	2	5	3.7	1.0792	Mild	9 (34.6)
					Moderate	17 (65.4)
					Severe	0

Table 3 The difference between pre- post pain severity in the control-experimental group

Group	Wilcoxon Test			
	Median (Pre)	Median (Post)	p value	r
Control	5	4	<0.0001	-0.766
Experimental	6	4	<0.0001	-0.857

4. DISCUSSION

This study aimed to examine the effectiveness of combination of deep breathing relaxation technique and music therapy for reducing pain in post SC patients using control group. The control group in this study only received deep breathing relaxation technique. Both groups were assessed for their pain severity before and after interventions.

The results of this study indicated that both groups were in the level of moderate pain before the intervention (experimental group: Mean 5.3; SD 1.2985 and control group: Mean 5.5; SD 1.2056). The result of this study is supported by two previous studies [10], [11]. Amita's study using deep breathing relaxation technique reported that their respondents were in moderate level of pain (Mean 5; SD 0.516) before the intervention. Meanwhile, Utomo's study using the combination of deep breathing relaxation technique and music therapy also revealed that their respondents pain level before the intervention were moderate (Mean 5; SD 0.47) [11].

This study also showed that after receiving intervention in both groups, the pain severities of the respondents were also in moderate level of pain. However, the results of pain's maximum scale and mean were reduced. This showed that there was reduction of pain level after the interventions. In other words, both interventions can be used to reduce pain level in post-caesarean section patients. Two previous studies further reported that both intervention techniques can decrease individual's pain along with individual's fatigue and anxiety [16], [17].

Moreover, this study examined post-CS patients' pain severity differences before and after intervention using a Wilcoxon signed rank test. Both groups revealed that the interventions can decrease their pain severity (p value <0.0001). This also means that there were significant differences of pain severity before and after intervention in both groups with more effect shown in the intervention group (r value of experimental group > control group). A previous study was supported that the combination technique was significantly decreasing pain severity [11]. Though not specifically on post-SC, the result of this study is in accordance with the results of previous research conducted by Utomo at Ungaran Hospital [11]. This study argued that the combination of music therapy and deep breathing relaxation technique had more effect in reducing pain than only deep breathing relaxation techniques in post-major surgery patients (p

value 0.0001) by conducting a Mann Whitney test. A study by Mutiarasari also supported that the combination of deep breathing relaxation technique and music therapy had a significant effect on reducing the pain scale of postoperative patients (p value 0.0001), especially for patients with upper and lower extremity fractures [18].

It is noted that this study provides evidence in regard with the effectiveness of combination of deep breathing relaxation technique and music therapy in reducing pain severity. However, this study only recruited respondents at two hospitals which could not be representative for all post-caesarean section women in Indonesia. Thus, generalizing the results of this study is warranted. This study also only recruited 78.78% of the target sample. Further study using larger number of respondents is recommended.

5. CONCLUSIONS AND SUGGESTIONS

Deep breathing relaxation technique and music therapy can be administered to reduce pain as non-pharmacology therapy. The results of this study support the view that both therapies can be useful intervention to alleviate pain severity in post-caesarean section. This study also shows that pain was significantly decreased both in experimental and control group. However, the combination of deep breathing relaxation technique and music therapy was more effective than deep breathing relaxation technique alone. Therefore, it is hoped that pain-nurse at hospital can provide non-pharmacologic pain management using the combination therapies instead of only deep breathing relaxation technique. Further study is recommended using larger number respondents and exploring the experiences in the therapy activities for pain-reducing in hospitals using qualitative study.

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