Benson Relaxation Technique in Reducing Pain Intensity in Women After Cesarean Section

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Background: Post-cesarean section women experience pain due to operative trauma. Pain sensation can be reduced by pain management. Pharmacological and non-pharmacological treatments can be used. The Benson Relaxation Technique is a non-pharmacological way suitable to reduce pain, but there are limited studies on its post-cesarean section use.

Objectives: This study aimed to determine the effect of Benson Relaxation Technique in reducing pain intensity in women after cesarean section.

Patients and Methods: This was a quasi-experiment study with pre and post-test design. A prospective, not blind, randomized assign, two groups parallel study was conducted in Cibabat hospital Cimahi as intervention group (IG) and Sartika Asih hospital as control group (CG). Post cesarean section women with quota sampling who met the inclusion criteria were consecutively assigned to either experimental (n = 30) or control group (n = 30). Women in the experimental group received the Benson relaxation technique and those in the control group received regular care from the health workers. The outcome pain severity was measured by visual analogue scale. Those instruments were applied before and after intervention.

Results: The mean of pain score before intervention at CG was 4.43 cm. It was decreased to 4.40 cm (1 min), 4.27 cm (12 h), 4.10 cm (24 h), 4.00 cm (36 h), 3.93 cm (48 h), 3.83 cm (60 h), 3.67 cm (72 h) and 3.51 cm (84 h). Meanwhile, the IG was 4.97 cm. It was decreased to 4.90 cm (1 min), 4.23 cm (12 h), 3.57 cm (24 h), 3.03 cm (36 h), 2.77 cm (48 h), 2.73 cm (60 h), 2.67 cm (72 h) and 2.63 cm (84 h). The study found a significant difference comparing pain intensity before and after the intervention in CG and IG (P = 0.001), but pain reduced in IG more than CG.

Conclusions: The Benson relaxation could reduce pain intensity in women after cesarean section.

Keywords: Relaxation Technics; Pain; Cesarean Section

1. Background

Surgery threatens the integrity of body, such as bio-psycho-social-spiritual aspects and may cause discomfort such as pain response. Experience of pain is associated with many immediate and long-term negative outcomes (1). Experience of pain is a combination of physiological and psychological features and is a non-persistent tissue damage (2, 3). Pain is the main reason for someone to seek medical assistance. Pain sensitivity is more in females than males (4). Cesarean section is among surgery procedures that induces pain. There are several reasons to perform C-section. A study found that reasons for performing caesarean section were baby's weight more than normal, fetal distress, dystocia, placenta previa, placenta abruption, decreased fetal percentage and malposition (5-7). Besides, there is willingness to perform caesarean section by mothers' request in the absence of an obstetric indication (8-10). A research found that 75% of patients undergone surgery experienced moderate to severe pain after surgery. The duration of pain can last for 24 to 48 hours, but can last longer depending on how the client can withstand and respond to pain. A study showed that women experience higher levels of pain intensity during the first 24 hours post-caesarean section. There were no differences in pain intensity between elective caesarean section and emergency caesarean section (11). Recently, many methods being developed to address the problem of pain in women with severe post caesarean section pain, either by pharmacological and non-pharmacological approaches. One non-pharmacological way suitable to reduce pain intensity is relaxation (12). Relaxation aims to reduce anxiety, decrease muscle tension and bone and indirectly relieve pain and reduce tension related to the body's physiological status (12-14). Several studies showed that relaxation is effective in reducing pain (12, 14-22). Benson relaxation technique is simple, easy

to learn and implementation and does not require high cost (23). This relaxation is a combination of relaxation response techniques with individual belief system/faith factor (focused on a particular form of expression of the names of God or a word that has a calming sense to the client) repeatedly spoken with a regular rhythm with resignation. From the preliminary study conducted by researchers in the postpartum hospital Cibabat Cimahi, many patients had a continuing pain. Data of interviews in five women post caesarean section revealed that women felt pain on the first day after surgery. The pain intensity was 6-7 and women asked for pain-killer; 3 of 5 people said to be tortured by pain. Three women said that they were told by nurses to take a deep breath in case of pain, but were not given training.

2. Objectives

Considering the problems mentioned above and lack of any research on the effect of Benson relaxation therapy to decrease pain intensity in women after Caesarean section, the researchers interested to assess women's level of pain after Caesarean section using Benson relaxation techniques.

3. Patients and Methods

The principle of the study protocol was approved by the Ethic Committee of both hospitals and a written informed consent was obtained from each patient. The study design used a quasi-experiment with pretest and posttest with control group design. In the intervention group, Benson relaxation technique was performed (respondents in the Cibabat hospital); whereas, those who were not given the intervention Benson relaxation considered as control group (respondents in the Sartika Asih hospital). The experimental group was given the intervention Benson relaxation two hours after the operation, after the effects of anesthesia were lost and women were conscious. Prior to the intervention, participants were trained how to use a visual analogue scale (VAS ranged 0-10); patients' pain scores were measured before the intervention. Then, the Benson relaxation was performed for participants. They were suggested to take a particular form of expression in the names of God or a word that has a calming sense to the participants, repeatedly spoken with a regular rhythm with resignation, they were suggested to take deep breath through nose and exhale with the lips while saying the names of God or the word that has a calming sense. After the intervention, patients' pain scores were measured. The Benson relaxation method was presented to IG and continued after the operation for 10 minutes to 4 days (84 hours): then the second day, third, and fourth every 12 hours at 6 am and 6 pm. In the control group, Benson relaxation was not performed and regular care as room procedure was performed. Measurement of pain in the control group was performed as the intervention group for four days every 12 hours.

Based on standard deviation of previous study about relaxation, SD = 1.30, at a significant 1% (Z1 - α /2 = 2.58), power 95% (Z1- β or Z 95% = 1.64), μ1 (mean before intervention) = 4.50, μ2 (mean after intervention) = 3.41, the sample size calculated as 24 subjects. The sample size increased to 30 patients to consider attrition rate. Therefore, the total sample size of 30 (30 samples in each group) was selected for the study. Patients were randomly assigned into two groups of 30 by a table of random numbers. The sample was recruited who met the inclusion criteria (first birth by cesarean section, using ketoprofen therapy, using spinal anesthesia, awareness compos mentis and never experienced the Benson relaxation yet). The exclusion criteria were repeated cesarean section and sub-consciousness. Data collection tool had two parts: first a questionnaire concerning demographic characteristics of respondents and the second instrument was using scale VAS pain questionnaires. Data was collected in April - June 2008. The Statistical Package for Social Sciences version 10.0 (SPSS Inc. Chicago, IL, USA) was used to analyze data. Kolmogorov-smirnov z test was performed to assess distribution normality. The analyses were performed using chi square, independent t tests, dependent t tests, repeated measure ANOVA and multiple linear regression.

4. Results

Table 1 shows that all the variables of respondent characteristics between CG and IG were equivalent homogeneous (P > 0.05, α = 0.05). There were two variables with significant differences regarding pain intensity namely education and parity. The average of pain intensity in the CG before the intervention was 4.43 cm decreased to 3.51 cm after the intervention period (84 hours), the difference in pain intensity was 0.93. In the IG, the average of pain intensity before Benson relaxation was 4.97 cm decreased to 2.63 cm after the intervention (84 hours), the difference in pain intensity was 2.34 cm. There was a significant difference in average pain intensity in both CG and IG before and after the intervention period (P < 0.005, α = 0.05) (Table 2). Based on the bivariate analysis, from the six variables, there were four variables eligible for entry into a multiple linear regression model, namely intervention group (P = 0.00), age (P = 0.00), education (P = 0017) and parity (P = 0.002). Because variables of nature and occupation had a value P value > 0.25, they did not enter the multivariate analysis. Further analysis using a backward method where the variable has a value P value > 0.05 was excluded from the model. A model was obtained as shown in Table 3.

The analysis was conducted in two stages: the first stage of the education variable (P = 0:44) was excluded from the model, then in the second stage variable of age (P = 0:17) was excluded from the model. The analysis can be seen in Table 4.

Table 1. Distribution of the Respondents and Homogeneity Between the Control and Intervention Groups [a]

Characteristic	CG (n = 30)	IG (n = 30)	Total	Homogeneity	Pain Intensity	
				P Value	**Mean**	**P Value**
Age, y				0.75		0.39
≤ 35	23 (76.70)	25 (83.30)	48 (80.00)		4.77	
> 35	7 (23.30)	5 (16.70)	12 (20.00)		4.42	
Education						0.00
Basic	13 (43.30)	15 (50.00)	28 (46.70)	0.80	5.61	
Advanced	17 (56.70)	115 (50.00)	32 (53.30)		3.91	
Occupation				0.79		0.38
Have a job	11 (36.70)	13 (43.30)	24 (40.00)		4.88	
Do not have a job	19 (63.30)	17 (56.70)	36 (60.00)		4.58	
Parity				0.12		0.01
Primiparity	16 (53.30)	9 (30.00)	25 (41.70)		5.16	
Multiparity	14 (46.70)	21 (70.00)	35 (58.30)		4.37	
Nature				0.78		0.93
Emergency	22 (73.30)	20 (66.70)	42 (70.00)		4.69	
Elective	8 (26.70)	10 (33.30)	18 (30.00)		4.72	

[a] Abbreviations: CG, Control Group; and IG, Intervention group.

Table 2. Distribution of the Average of Pain Intensity Before and After the Intervention [a,b]

	Pain, Pre Intervention	Pain, 1 min	Pain, 12 h	Pain, 24 h	Pain, 36 h	Pain, 48 h	Pain, 60 h	Pain, 72 h	Pain, 84 h	P Value[c]	Dif
CG	4.43 ± 1.28	4.40 ± 1.23	4.27 ± 1.26	4.10 ± 1.03	4.00 ± 0.98	3.93 ± 0.94	3.83 ± 0.99	3.67 ± 0.84	3.51 ± 0.97	0.001	0.93
IG	4.97 ± 1.19	4.90 ± 1.24	4.23 ± 1.04	3.57 ± 1.01	3.03 ± 0.96	2.77 ± 0.86	2.73 ± 0.83	2.67 ± 0.76	2.63 ± 0.69	0.001	2.34
P Value[d]	0.10										

[a] Abbreviations: CG, Control Group; diff, Differences of average of pain after-before the intervention; and IG, Intervention group.
[b] Data are presented as Mean ± SD.
[c] P Value after-before the intervention.
[d] P Value between CG and IG.

Table 3. The First Step Analysis of the Modeling Process Multiple Linear Regression to Decrease Pain Intensity After Benson Relaxation in Cibabat and Sartika Asih Hospitals, April to June 2008 (n = 60)

Independent Variable	Coefficient B	SE	Coefficient Beta	P Value
Constant	1.89	0.27		0.00
Intervention group (Benson)	1.32	0.12	0.75	0.00
Age	-0.01	0.01	-0.12	0.17
Education	-0.11	0.15	-0.06	0.44
Parity	-0.19	0.07	-0.23	0.01

Table 4. Distribution of the Pure Effect of Benson Relaxation Techniques to Decrease Pain Intensity (By Education, Age, Parity, Nature Caesarean Section and Occupation, in June 2008 (n = 60)

Independent Variable	Coefficient B	SE	Coefficient Beta	P Value
Constant	1.43	0.13		0.00
Intervention group (Benson)	1.37	0.12	0.78	0.00
Parity	-0.28	0.06	-0.33	0.00

Table 4 shows that the variable that most affected determination of pain intensity was an intervention group (intervention Benson) (the Beta coefficient = 0.78 and P value = 0.00, α 0.05). Variable intervention group (intervention Benson) was positive, while the variable parity was negative. Equation 1 obtained as follows:

$$(1) \quad 1.43 + 1.37 \text{ intervention group} - 0.28 \text{ primiparity}$$

In the equations model, it can be estimated that:

1. Decreasing value variation in pain intensity after the Benson relaxation intervention would be increased by 1.37 cm after controlled by parity variable,

2. In multiparity pregnancy the pain intensity would decrease by 0.28 cm compared to the variable primiparas after controlled by intervention group (intervention Benson).

5. Discussion

5.1. Association Between Characteristics of Respondents With Women Pain Intensity After Caesarean Section

Age was not associated with pain intensity. It is consistent to the opinion (24) indicating that age was not a significant factor regarding pain. In this study, an association was found between education and pain intensity. Lack of knowledge about something, causes people to have a positive attitude towards it. Education level is related with knowledge, one about how to cope with post-caesarean section pain. This is consistent with the opinion (25) on the theory of transcultural environmental. In this case, education is one of the factors able to affect a person's behavior. In this study, there was no association between employment (24) and pain intensity, but there was an association between parity and pain intensity. Parity effect is probably due to parity-related coping strategies in dealing with pain experience. In primiparity, the possibility is no experience of labor pain and how to cope with compared to those multiparous mothers. This is in accordance with the statement (26) that previous pain experience would affect client's pain response. In this study, there was no significant correlation between the nature of caesarean section and pain intensity. This is consistent with a research (11), which found no differences between elective caesarean section and emergencies regarding pain level. In this study, characteristics of age, nature and work did not affect the intensity of pain, meaning that pain has a different meaning for each person. Pain has an important protective function by giving a warning that a damage is happening (12). In addition, it is likely that the intensity of pain experienced by clients affected by other factors such as environment and culture. At both hospitals under research, data showed a calm and comfortable environment. Environment would affect the intensity of pain. Besides, the pain intensity is influenced by cultural factors. Culture has a role in tolerating pain (26). This aspect has a high impact on the psychological perception of pain. A research (27) found that cultural factors influence the perception of pain.

5.2. The Difference in Average Pain Intensity of the Respondents

The result showed that the average pain intensity immediately after caesarean section before the intervention was moderate in the CG (4.43 cm) and severe in IG (4.97 cm). During this period, no significant difference was obtained regarding the average pain intensity in the both groups (P value = 0.10). This is in accordance with the statement (28) that post-caesarean section pain is moderate or severe. Likewise, a study (27) found that 75% of surgical patients experienced moderate to severe pain after surgery. In both hospitals, the intervention given to mothers after caesarean section reduced pain, but there was a significant difference in decreasing mean pain intensity after the intervention between CG and IG. Average pain intensity immediately after the caesarean section after the intervention was moderate (3.51 cm) in CG and mild (2.63 cm) in IG. The average pain of mothers in the CG was significantly different between before and after the intervention. This might be due to maternal post-caesarean section adaptation to pain as the wound healing process. When the wound is still wet, the tissue has not fused so that severe pain is felt. Once the wound is dry and tissue connection happens, pain is reduced. While in IG, pain reduction was due to Benson relaxation intervention. There was a decrease in pain intensity as 2.34 cm in the group given Benson intervention compared to the control group as 0.93 cm. Some other studies (14, 18) found that this relaxation technique is effective in reducing pain. The results are reinforced by research (15, 20, 21, 23, 29-32).

In multivariate analysis using multiple linear regression, it was found that the Benson relaxation had the greatest effect on reduction of pain intensity in women after caesarean section (P = 0.01). According to some studies (23, 33-37), Benson relaxation has a healing effect to decrease anxiety level, cognitive and somatic anxiety, mood disturbance, body discomfort and to a level capable of relieving pain. The results found that Benson relaxation techniques had the greatest influence to decrease pain intensity. Benson relaxation technique is a simple and inexpensive technique (23, 37) and nurses can use to manage pain. Thus, the researchers suggest, especially the maternity nursing services, to use the technique of Benson relaxation as one of the standard operating procedures as non-pharmacological pain management in maternal post caesarean section. Besides, Benson relaxation training can be used as training material for nurses/midwives in the maternity room. This study had some limitations. One was its small sample size. By in-

creasing the sample size, the possibility of a markedly deviant sample diminishes. The large samples lead to removing atypical values (31).

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Authors' Contributions

Concept and design: Tetti Solehati. Analysis and interpretation: Tetti Solehati, Yeni Rustina. Manuscript preparation: Tetti Solehati. Collection of data: Tetti Solehati. Critical revision: Tetti Solehati.

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