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Effectiveness of cognitive behavioral therapy (CBT) for pain management after cesarean section: A Non-Randomized clinical trial

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Abstract

Postoperative pain must be appropriately treated because poorly managed pain can cause discomfort and have an impact on one's respiratory, cardiovascular, gastrointestinal, endocrine, and immune systems. Cognitive behavioral therapy (CBT) has shown efficacy in improving patient outcomes, including depression and pain-related impairment, in cases of acute pain. This study aims to compare the efficacy and effectiveness of CBT with drug therapy for pain management following cesarean section. This research was a quasi-experimental study using a non-randomized pretest and posttest with a control group design. Was conducted from July 4, 2017, to September 4, 2017, at Syech Yusuf Hospital in Gowa, Indonesia. The research sample consisted of 46 respondents (23 in the intervention group and 23 in the control group) using a purposive sampling technique. Data analysis, findings in the intervention group showed that the average VAS at pretest was 8.00 ± 0.64 and the average VAS posttest was 5.00 ± 0.67, an increase of 3.00 ± 0.00 after the CBT intervention. The average VAS in the pretest control group was 8.00 ± 0.67, and the average VAS in the posttest was 7.65 ± 0.49, which also increased. The results showed that According to the trial's findings, CBT is both safe and efficient for minimizing pain and accelerating patient mobilization following cesarean section. After an elective cesarean section, CBT may be suggested to patients as a regular, adjunctive treatment for pain management.

Keywords: Cognitive Behavioral Therapy; CBT; Cesarean Section; Pain Management

1. Introduction

A more thorough comprehension of the pathophysiology and pharmacological aspects of nociception and the application of multimodal analgesic pathways tailored to the specifics of the surgical technique have increased the effectiveness of treatment for acute postoperative pain following various surgical procedures [1-3]. Inadequate usage of opioid analgesics may be the cause of the high levels of postoperative pain experienced by individuals who have had cesarean deliveries [4,5]. Due to the importance of childcare and nursing, drug therapy of postoperative pain following cesarean delivery is frequently constrained [6,7], and only a few analgesic medicines are consequently advised for such postoperative pain [6-8], None of the 13 research included in a comprehensive analysis of randomized clinical trials (RCTs) on oral analgesia for post-cesarean delivery pain reported satisfactory pain reduction [9]. Based on existing knowledge and efforts to reduce the high rate of postoperative opioid analgesic prescriptions, [10,11] consideration may be given to the use of non-pharmacological methods to complement postoperative pain management. CBT is one method that can be used.

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Cesarean section (CS) is one of the most common obstetric and gynecological surgeries and its prevalence is increasing due to various factors such as increasing age of marriage and increasing social and economic status in the society [12,13]. CS levels have increased worldwide and the dramatic increase in CS numbers has drawn public attention to the health problem. Based on data from SKDI in 2017, it was found that 17% of the total births in health facilities are carried out by caesarean section (SC) [14]. After all operations including CS the patient definitely experiences varying degrees of pain [15]. The experience of pain can cause discomfort for the patient as well as negative physiological effects such as failure to clear respiratory secretions of ileus and decreased mobility after surgery which increases deep vein thrombosis and other complications and postoperative recovery. Furthermore acute postoperative pain after CS may be associated with prolonged maternal-specific dissociation and impaired increased myocardial oxygen consumption and reactive hypoglycemia in successful breastfeeding immediately after birth resulting in delayed wound healing. In addition inferior analgesics may also contribute to chronic pain and increased postpartum depression [16,17]. So find the right way to manage the pain and provide maximum comfort to the patient. Reducing complications is one of the highest priorities after CS and remains an important public health issue.

2. Material and methods

2.1. Research Design

This research was a quasi-experimental study using a non-randomized pretest and posttest with a control group design. Was conducted from July 4, 2017, to September 4, 2017, at Syech Yusuf Hospital in Gowa, Indonesia. Eligible patients were invited to participate in a study in which they would receive CBT and drug therapy for pain management in the intervention group and drug therapy without being given CBT for pain management in the control group postoperatively after cesarean section. The patient agreed to participate and signed a consent form (Figure 1).

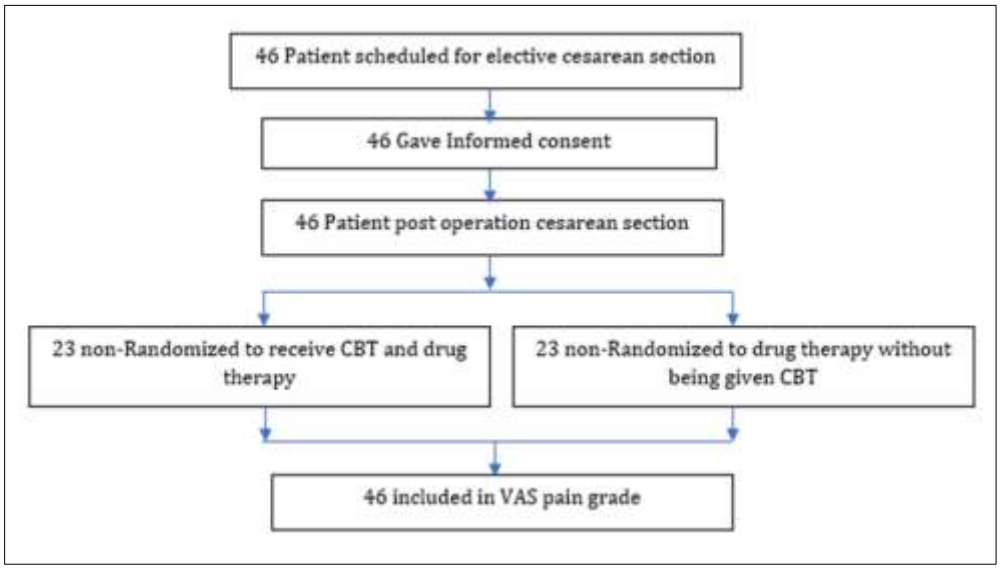

Figure 1 CONSORT Diagram

2.2. Subjects

The research sample consisted of 46 respondents (23 in the intervention group and 23 in the control group) using a purposive sampling technique.

2.3. Data collection Tools

Data was collected through utilizing the following tools:

2.3.1. Cognitive Behavioral Therapy

The measuring instrument used in this research is a modification of The Rosenberg Self-Esteem (RSES) [18]. Self-esteem is measured by Rosenberg self-esteem scale modified by researchers. Self-esteem is divided into three aspects, namely the thought aspect, the emotional aspect and the behavioral aspect (Table 1).

Table 1 Modified Rosenberg Self Esteem Scale (RSES)

No.	Aspect	SA	A	D	SD
1.	thinking that distracting myself can reduce the pain I feel				
2.	thought that listening to music could reduce the pain I was experiencing				
3.	thinking that doing crossword puzzles or other hobbies could reduce the pain I was experiencing				
4.	I feel the pain is increasing due to fatigue				
5.	I feel the pain is reduced by the presence of family or someone close to me				
6.	I feel the pain is reduced with aromatherapy				
7.	I feel less pain when I imagine pleasant things				
8.	Doing movement/activities can actually reduce the intensity of the pain I feel				
9.	Touching or stroking my back can reduce the pain I feel				
10.	Doing deep breathing can reduce the pain I feel				

This instrument has four answer categories, namely "Strongly Agree" (SA), "Agree" (A), "Disagree" (D), and "Strongly Disagree" (SD). For the scoring, the researcher gave the highest rating to the statement "Strongly Agree" (SA) and the lowest to the option "Strongly Disagree" (SD). These scores were then calculated, with the proportion of items with the following conditions: SA=3, A=2, D=1, SD=0. A score < 15 is categorized as a score for low self-esteem. A score > 25 is categorized as a score for high self-esteem. These scores are categorized as average individual scores.

2.3.2. Visual Analoque Scale (VAS)

Pain intensity was measured using the visual analogue scale from Potter & Perry [19]. Pain intensity is indicated by a straight line on the Visual Analogue Scale (VAS). According to Potter & Perry [19], VAS is a powerful, accurate, and repeatable measure for expressing pain intensity. The VAS is better represented as a horizontal, straight, blank line 10 cm long.

2.4. Data Analysis

2.4.1. Descriptive statistics

Univariate analysis was carried out to get an overview of the distribution and frequency of the dependent and independent variables. Data is presented in tabular form and interpreted.

2.4.2. Inferential statistic

Inferential analysis is carried out to see the relationship between the independent variable and the dependent variable. Do these variables have a significant relationship or are they only related by chance? Data analysis using the Paired sample t test. If the data is not normally distributed then an alternative Wilcoxon Signed test is carried out.

3. Results and discussion

3.1. Demographic data

Based on Table (1), it can be seen that more than half (78.1% of the intervention group, 82.6% of the control group) were aged between 21-35 years. More than half (78.3% of the intervention group and 87% of the control group) had a high school education. More than half (78.1% of the intervention group and 87% of the control group) worked as self-employed.

Table 1 Demographic data

Intervention group ***n* = 23**			**Control group** ***n* = 23**	
	n	%	*n*	%
Age (years)				
> 35 years old	1	(4.3)	2	(8.7)
21 – 35 years old	18	(78.1)	19	(82.6)
< 21 years old	4	(17.4)	2	(8.7)
Education background				
College	3	(13)	1	(4.3)
High School	18	(78.3)	20	(87)
Junior High School Elementary School	10	(4.3) (0)	20	(8.7) (0)
Employment				
Self-employed	18	(78.1)	20	(87)
Worker	3	(13)	2	(8.7)
Employee	2	(8.7)	1	(4.3)
Total	23	(100)	23	(100)

Source: primary data

3.2. Comparison of Results Between the Intervention Group and the Control Group

Table 2 Distribution of Respondents' Pain Levels before and after intervention in the Treatment and Control Groups

Group	**VAS level (Pre test)**	**VAS level (Post test)**						**The pain is reduced**	
		9	8	7	6	5	4	Yes	No
Intervention (n=23)	9	0	0	0	5	0	0	23 (100%)	0 (0%)
	8	0	0	0	0	13	0		
	7	0	0	0	0	0	5		
	6 5 4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		
Control (n=23)	9	0	5	0	0	0	0	8 (34.8%)	15 (65%)
	8	0	10	3	0	0	0		
	7	0	0	5	0	0	0		
	6 5 4	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0	0 0 0		

Source: primary data

Based on table 2, it can be seen that the level of pain before and after the intervention in both the treatment group and the control group changed. Significant changes occurred in the treatment group where before the intervention the

majority of respondents were at pain level 8 as many as 13 people and after the intervention with CBT and drug therapy there were 23 respondents (100%) who experienced a decrease in pain levels. Meanwhile, in the control group, the majority of 15 respondents (65%) did not experience a decrease in pain levels and 8 respondents (34.8%) experienced a decrease in pain levels.

3.3. Comparison of reduction in pain levels between the intervention group and the control group

Table 3 Decrease in respondents' pain levels after intervention in the intervention group and control group

Group	Decreased pain levels				Total
	unchanged/fixed	1 stage	2 stages	3 stages	
Intervention(n=23)	0(0%)	0(0%)	0(0%)	23(100%)	23 (100%)
Control (n=23)	15(65%)	8(34.8%)	0(0%)	0(0%)	23 (100%)
Total	15(65%)	8(34.8%)	0(0%)	23(21.9%)	46(100%)

Source: primary data

Based on table 3, it can be seen that there was a significant change in reducing pain levels in the intervention group after administering CBT and drug therapy for pain management where a total of 23 people (100%) experienced a decrease in pain levels by 3 stages. Meanwhile, in the control group, 8 people (34.8%) experienced a decrease in pain level of 1 stage and 15 people (65%) did not experience a decrease in pain level.

3.4. The effect of CBT intervention and drug therapy for pain management on reducing pain levels in post-cesarean section patients

Table 4 Comparison of respondents' pain levels before and after CBT intervention and drug therapy for pain management

Group	VAS (mean±SD)		Change	*p value*
	Pretest	Posttest	mean±SD	
Intervention (n=32)	8.00±0.67	5.00±0.67	3.00±0.00	0.000*
Control (n=32)	8.00±0.67	7.65±0.49	0.35±0.49	0.005*

* Wilcoxon test

In table 4 above, you can see the difference in the mean before and after the intervention with the results in the treatment group being 3.00 and in the control group being 0.35 with a p value <0.005, meaning that there is a significant effect of CBT intervention and drug therapy on reducing pain levels after SC surgery.

The impact that often occurs from the act of giving birth by caesarean section is the emergence of pain from the surgical wound. The management to reduce pain in surgical scars is to use drug therapy and it will be more effective if you add non-drug therapy. The emergence of pain is closely related to receptors and the presence of stimulation. The pain receptors in question are nociceptors, which are very free nerve endings that have or are even myelinated and spread across the skin and mucosa, especially in visceral organs, joints, artery walls, liver and gallbladder. Pain receptors can respond due to stimulation or stimulation. This stimulation can be in the form of chemical substances such as histamine, prostaglandins, and various acids which are released if there is damage to the tissue due to lack of oxygenation. Other stimulation can be thermal, electrical or mechanical.

Cognitive behavioral intervention is also non-pharmacological pain management such as relaxation. Skeletal muscle relaxation is believed to reduce pain by relaxing muscle tension that supports pain. Relaxation techniques may need to be taught several times to achieve optimal results. By relaxing, patients can change their perception of pain. Another behavioral stimulation is hypnosis. Hypnosis can help change the perception of pain through the influence of positive suggestions [20].

Another form of behavioral stimulation is guided imagery, specifically asking the client to imagine pleasant things. This action requires a quiet atmosphere and space as well as customer concentration. If the client feels anxious, he or she should stop doing so. This action is performed when the client feels comfortable and does not feel acute pain [21]. Deep

breathing techniques and guided imagery have been shown to be effective in reducing pain intensity in SC patients after surgery [22].

4. Conclusion

Based on the objectives, results and discussion of research regarding the effect of providing cognitive behavioral therapy (CBT) on reducing pain levels in post-operative patients in the surgical treatment room at Syech Yusuf Gowa Hospital, the following conclusions can be drawn:

- There were 23 respondents (100%) who experienced a decrease in pain levels in the treatment group. Meanwhile, in the control group, 15 respondents (65%) did not experience a decrease in pain levels and 8 respondents (34.8%) experienced a decrease in pain levels.
- There were 23 people (100%) who experienced a decrease in pain levels by 3 stages in the treatment group. Meanwhile, in the control group, 8 people (34.8%) experienced a decrease in pain level by 1 stage and 15 people (65.%) did not experience a decrease in pain level.
- The difference between the mean before and after the intervention and the results of the treatment group was 3.00 and for the control group was 0.35 with a p value <0.005, meaning that there was a significant effect of the intervention on reducing pain levels after the CBT intervention and drug therapy for pain management.

Compliance with ethical standards

Acknowledgements

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Disclosure of conflict of interest

The authors declared no conflicts of interest.

Statement of ethical approval

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The required approval was obtained from the relevant Ethics Committee prior to conducting the research. Moreover, participating in the study was voluntary, and the study results are available to the study samples upon request.

Statement of informed consent

The relevant, informed consent form was obtained from all study participants.

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