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Pain adaptation in post section Caesarea Laboring mothers at Rsu Royal Prima in 2024

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Abstract
Sectio Caesarea, a medical procedure in which the baby is delivered through an incision in the abdominal wall and uterus, has become increasingly popular among pregnant women over time. The incidence of Sectio Caesarea continues to increase, with an initial prevalence of around 3 to 4 percent in the past 15 years, and currently has risen to around 10 to 15 percent. The study aimed to determine the effect of respiratory relaxation techniques on pain adaptation in Post Sectio Caesarean delivery mothers at Royal Prima Hospital in 2024. The sample used the Slovin formula and obtained a sample size of 20 people—univariate and bivariate data analysis. Respiratory relaxation techniques effectively reduce pain levels in post-section cesarean delivery mothers at Royal Prima Medan Hospital (p-value = 0.004). Wilcoxon test results showed significant changes in pain levels before and after the intervention. In conclusion, this study indicates that the application of breathing relaxation techniques effectively reduces pain levels in post-section cesarean delivery mothers at Royal Prima Medan Hospital in 2024. These findings can be the basis for recommending integrating respiratory relaxation techniques in post-section cesarean pain management protocols, aiming to improve patient comfort and overall quality of recovery.

Keywords: Sectio Caesarea, prevalence, laboring mothers, respiratory relaxation techniques, pain management

Introduction

Labor is when the uterus contracts, causing cervical dilation and thinning, pushing the fetus through the birth canal by overcoming resistance from the pelvic bones, soft tissues, and muscles. This is a physiological process with critical psychological aspects. On the other hand, Cesarean Section is a medical procedure in which the baby is delivered through an incision in the abdominal and uterine walls. The demand for pregnant women to give birth via Cesarean Section has been increasing over time (Li *et al*. 2021) [8]. The incidence of Cesarean Section continues to rise from 3-4% fifteen years ago to 10-15% today. This increase is due to various factors, such as the perception that this surgery is safer for the mother and reduces the risk of infant injury from prolonged labor or vaginal trauma (Gurol-Urganci *et al*. 2021) [6].

Additionally, the indications for Cesarean Section are expanding due to a focus on infant health and intellectual development. In Indonesia, especially in government hospitals, Cesarean Section accounts for 20-25% of total deliveries; in private hospitals, the number is higher, around 30-80%. This exceeds the recommendations of the Department of Health, which suggests that Cesarean Section rates should not exceed 20%.

Health development is an integral part of national development aimed at improving the quality of the population's health to achieve the nation's well-being. One indicator in determining a nation's health status is the level of maternal and infant mortality rates. Maternal Mortality Rate (MMR) is based on the risk of maternal death related to the childbirth process, obstetric care, pregnancy complications, and the postpartum period. Maternal death is defined as the death of a woman while pregnant or within 42 days after the end of pregnancy, regardless of the duration or location of the pregnancy. These deaths are caused by various pregnancy-related factors or worsened by pregnancy or its management but not due to accidents or coincidences.

Every year, over 200 million pregnant women around the world undergo childbirth, with the majority successfully delivering healthy babies and experiencing the process as a joyful and fulfilling event. However, in some cases, childbirth can be a period filled with pain, fear, suffering, and even death. Pharmacological pain management refers to the use of medications or drugs to relieve pain. It is generally considered more effective than non-pharmacological methods, such as relaxation techniques or physical therapies, in providing immediate and significant pain relief. However, pharmacological methods can be more expensive due to the cost of medications and medical interventions. Additionally, they may carry the risk of adverse effects or side effects, such as nausea, dizziness, addiction, or allergic reactions, which need to be carefully monitored and managed by healthcare professionals (Bekuma *et al*. 2020) [2].

Non-pharmacological methods of pain management are often inexpensive, straightforward, and can be highly effective in reducing pain without causing harmful side effects (Fatkan, Yusuf, and Herisanti 2018) [4]; (Astutik and Kurlinawati 2017) [1]. These methods include relaxation therapy, breathing exercises, physical activity, massage, heat/cold therapy, acupuncture, and cognitive-behavioral strategies. Unlike pharmacological approaches, non-pharmacological methods do not involve the use of medications, which reduces the risk of adverse reactions or dependencies. They can also empower individuals to manage their pain and improve their overall well-being actively (Nurdin, Kiling, and Rottie 2013) [10]. Non-pharmacological methods can also increase satisfaction during childbirth as patients can control their feelings and strength. Relaxation techniques, breathing exercises, movement and position changes, massage, hydrotherapy, heat/cold therapy, auditory aids (recitation), guided imagery,

acupressure, and aromatherapy are some non-pharmacological techniques that can improve patient comfort during Post Cesarean Section delivery and have a practical impact on the birthing experience (Warsono, Fahmi, and Iriantono 2019) [13]; (Lestari 2015) [7]; (Sukarta 2017) [11]. Based on the above references and issues, the author is interested in researching "The Influence of Early and Late Post Cesarean Section Mobilization on Pain Changes in Clients Post Cesarean Section Surgery at RSU Royal Prima in 2024".

Research Method

This research method uses a descriptive correlational design to evaluate the effect of breathing relaxation techniques on changes in pain in mothers undergoing labor after Sectio Caesarea at Royal Prima Hospital. The approach used was the One Group Pretest-Posttest. The research was conducted at RSU Royal Prima, Jalan Ayahanda Number 68A, Sei Putih Tengah, Medan Petisah, North Sumatra, in January 2024. The population studied was all mothers who underwent labor after Sectio Caesarea at RSU Royal Prima. Based on the survey of the last three months, the average number of mothers undergoing labor after Sectio Caesarea at RSU Royal Prima is around ± 24 people per month. The sample was taken as a representation of the population, according to the Slovin formula to determine the appropriate sample size:

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

n = 24/1+24 $(0,1)^2$
n = 24/1+24.0.01
n = 24/1.24
n = 19.35 rounded to 20 respondents, with a significance level of $\alpha = 0.1$.

Sample selection in this study uses non-probability sampling, namely consecutive sampling or sampling, where all existing samples meeting the inclusion criteria are taken until they meet the sample size determined by the researcher.

a. Sample inclusion criteria, namely

- Pregnant women who delivered Post Sectio Caesarea in the KIA room at Royal Prima Hospital
- The patient's vital signs (blood pressure, pulse, temperature, and respiration) are stable.
- Patients who are willing to become respondents

b. Sample exclusion criteria, namely

- Vital signs are not stable
- The patient has decreased consciousness.
- Not willing to be a respondent.

Univariate and bivariate data analysis using statistical tests used a meaning limit of 0.05 so that if the p-value ≤ 0.05, then the statistics are called "meaningful," and if p> 0.05, then the results of the calculation are "not meaningful." The bivariate analysis used in this study is if the data is usually distributed using the paired t-test, while if the data is not normally distributed using the Wilcoxon Signed Rank Test, to test the difference in pain scale before and after the respiratory relaxation technique is performed.

Research results

Table 1: Overview of Research Respondents by Age, Education, and Employment Status

Characteristics	Category	Total	Percentage (%)
Age	<25 Year	13	65%
	>25 Year	7	35%
Education	High School	4	20%
	Higher Education	16	80%
Employment Status	Civil Servant	9	45%
	Private	6	30%
	Entrepreneur	5	25%

Source: Primary data, processed in 2024.

Table 1 shows the distribution of study participants based on several factors. The majority of participants, 65%, were under 25 years old, while 35% were over 25. Regarding education, 80% of the participants had a higher education background, while the other 20% had a high school education. The participants' employment status was also diversified, with 45% being civil servants, 30% working in the private sector, and 25% being entrepreneurs. This characteristic data provides a holistic picture of the profile of the research participants, providing a foundation for further analysis related to these variables in the context of the research conducted.

Table 2: Frequency and Percentage Distribution of Pain Levels of Post-Sectio Caesarean Delivery Mothers Before Performing Relaxation Breathing Techniques at Royal Prima Medan Hospital in 2024

No	Pain Level of Post-Sectio Caesarean Delivery Mother	Total (n)	Persentage%
1	Nyeri Sedang	17	85%
2	Nyeri Berat	3	15%
Total		20	100%

Table 2 shows the distribution of pain severity in the study population. It was found that 85% of the total respondents experienced moderate pain, while 15% reported experiencing severe pain. The total number of respondents was 20. These results provide an overview of the severity of pain in laboring mothers after undergoing cesarean section, which is essential information in understanding and managing postoperative pain.

Table 3: Frequency and Percentage Distribution of Respiratory Relaxation Techniques for Post-Sectio Caesarean Delivery Mothers at Royal Prima Medan Hospital in 2024

No	Respiratory Relaxation	Total (n)	Percentage %
1	Can Do Well	16	80
2	Can't Perform Well	4	20
Total		20	100

Table 3 shows that 80% of the total 20 respondents could perform the breathing technique well, while 20% reported difficulty in implementing the method. These results provide a positive picture of respondents' ability to adopt breathing relaxation techniques, which can be an essential aspect of pain or stress management in post-cesarean section patients.

Table 4: Frequency and Percentage Distribution of Pain Levels of Post-Sectio Caesarean Delivery Mothers After Performing Breathing Relaxation Techniques at Royal Prima Medan Hospital in 2024

No	Pain Level	Total (n)	Persentage%
1	No Pain	12	60
2	Moderate Pain	7	35
3	Severe Pain	1	5
Total		20	100

Table 4 illustrates the frequency distribution and percentage of pain levels in post-section cesarean delivery mothers after applying breathing relaxation techniques at Royal Prima Medan Hospital in 2024. Of the 20 respondents, 60% reported no pain, 35% experienced moderate pain, and 5% experienced severe pain. These results provide an overview of the effectiveness of respiratory relaxation techniques in managing pain levels in the post-cesarean section maternity population.

Table 5: Pain Levels Before and After Performing Respiratory Relaxation Techniques in Maternity Mothers in the Post Sectio Caesarea Phase at Royal Prima Hospital.

No	Pain Level	Total (n)	Mean	SD	Min Max
1	Pre-Breathing Relaxation Technique	20	6,35	1,845	3-9
2	Post- Breathing Relaxation Technique	20	5,09	1,422	2-8

Table 5 shows the level of pain before and after the application of respiratory relaxation techniques in laboring mothers in the post-sectio caesarea phase at Royal Prima Hospital. Before the application of breathing relaxation techniques (Pre-Breathing Relaxation Techniques), the mean pain level was 6.35 with a standard deviation (SD) of 1.845 and a range of values (Min-Max) between 3 and 9. After the application of breathing relaxation techniques (Post-Breathing Relaxation Techniques), there was a decrease in the mean pain level to 5.09. This data indicates that breathing relaxation techniques can contribute to the reduction in pain levels in post-cesarean section laboring mothers at Royal Prima Hospital.

Table 6: Shapiro Wilk Normality Test

	Shapiro Wilk		
	Statistic	df	Sig
Pre-Relaxation	0.622	20	0,005
Post-Relaxation	0.574	20	0,003

The normality test using the Shapiro-Wilk method was carried out because the number of samples used was less than 50, and the data was on an ordinal scale. The results of the normality test of pain level data before (Pre-Relaxation) and after (Post-Relaxation) the application of respiratory relaxation techniques are documented in Table 4.6. For Pre-Relaxation, the Shapiro-Wilk statistical value is 0.622 with a degree of freedom (df) of 20 and a significance value (Sig) of 0.005. Meanwhile, for Post-Relaxation, the Shapiro-Wilk statistical value is 0.574 with a df of 20 and a Sig of 0.003. These results indicate that both data groups do not meet the standard distribution requirements because the significance value (Sig) is less than 0.05. So the data is not normally distributed, proceed with the Wilcoxon Signed Rank Test statistical test.

Table 7: Test Results Description of Wilcoxon Signed Ranks Test Changes in Pain Level Before and After Breathing Relaxation Techniques Performed on Post Sectio Caesarea Maternity Women at Royal Prima Hospital Medan in 2024.

No	Pain Level	Total (n)	Mean	Z	*p-value*
1	Pre-Relaxation of Breathing	20	3.125	3.045	0.004
2	Post-Respiratory Relaxation	20	3.012		

Table 7 presents the results of the Wilcoxon Signed Ranks Test description test that evaluates changes in pain levels before and after applying respiratory relaxation techniques in post-sectio caesarea maternity mothers at Royal Prima Hospital Medan in 2024. In Pre-Respiratory Relaxation, the mean value of change in pain level was 3.125, and the test results showed a Z value of 3.045 with a p-value of 0.004. In Post-Respiratory Relaxation, the mean value of changes in pain levels is 3,012. Significant results on p-value (0.004) showed a substantial change in pain levels after applying respiratory relaxation techniques in the post-sectio caesarea maternity population at Royal Prima Medan Hospital.

Discussion

Based on the research findings, the results indicate that 85% of the total respondents experienced moderate pain levels, while 15% reported severe pain levels after undergoing a cesarean operation. This data provides an overview of the severity of pain in post-Caesarean section mothers that is significant. The predominance of moderate pain levels suggests that most respondents experience a pain level that significantly affects their quality of life post-operation. The importance of this information lies in a deep understanding of the impact of post-Caesarean section pain on the well-being of postpartum mothers. Significant pain levels can affect mobility, comfort, and overall patient recovery (Guamán-joyasaca and Mesa-cano 2021) [5]. Therefore, understanding the severity of pain levels is crucial in designing effective postoperative pain management strategies. Appropriate pain management and treatment measures can help improve the quality of life and accelerate the recovery process for post-Caesarean section mothers.

Emphasizing an understanding of pain levels also contributes to raising awareness among healthcare professionals in providing more personalized and patient-centered care. Thus, these findings provide a strong foundation for developing more effective pain management interventions and strategies in post-Caesarean section care. The causes of post-Caesarean section pain can vary, involving several factors, including the surgical procedure itself, hormonal changes, uterine contractions, and trauma to surrounding tissues and muscles. A Caesarean section involves incisions in the skin, muscles, and abdominal tissues, which can lead to irritation and inflammation. Regular uterine contractions during the recovery period can also cause discomfort and pain (Moudatsou *et al*. 2020) [9].

Hormonal factors, such as changes in estrogen and progesterone hormone levels after childbirth, can also play a role in inducing pain in postpartum mothers. Meanwhile, trauma to tissues and muscles due to the surgical procedure can cause prolonged pain sensations. Understanding the severity of pain and its causes is critical to designing a holistic and practical pain management approach. Comprehensive pain management strategies will involve a

multidisciplinary approach, including appropriate analgesics, relaxation techniques, and careful postoperative care.

In this study, documentation regarding the frequency distribution and percentage of pain levels in post-Caesarean section mothers after applying breathing relaxation techniques at Royal Prima Hospital in Medan in 2024 was conducted. Out of 20 respondents, the results showed that 60% reported no pain, 35% experienced moderate pain, and 5% experienced severe pain. These findings reflect the effectiveness of breathing relaxation techniques in managing pain levels in the population of post-Caesarean section mothers.

The data indicating that most respondents experienced low pain levels or even no pain after applying breathing relaxation techniques reflects the positive potential of this approach in reducing post-Caesarean section discomfort. Therefore, breathing relaxation techniques can be considered an effective method for managing pain levels in mothers after undergoing a Caesarean section at Royal Prima Hospital in Medan. The importance of these findings lies in their implications for post-Caesarean section patient care. Integrating breathing relaxation techniques into the care program can enhance comfort and quality of life for postpartum mothers during recovery. These results provide a positive outlook on the potential application of breathing relaxation techniques as part of a holistic approach to postoperative pain management for mothers at the hospital.

Breathing relaxation techniques stimulate bodily relaxation responses and reduce stress levels and anxiety by stabilizing the autonomic nervous system and reducing stress hormone release. Practicing breathing relaxation also requires focus and concentration, which helps divert attention from pain sensations. Stimulation of the parasympathetic nervous system and increased blood flow and oxygenation also reduce the body's stress response and support the healing process (Can *et al*. 2020). Through practicing these techniques, postpartum mothers feel more in control of their experience, reducing discomfort and tension. Combining these factors, breathing relaxation techniques create optimal conditions for managing and reducing post-Caesarean section pain levels in mothers at Royal Prima Hospital in Medan in 2024.

A Wilcoxon Signed Ranks Test was conducted to investigate changes in pain levels in postpartum mothers after applying breathing relaxation techniques at Royal Prima Hospital in Medan in 2024. In the Pre-Breathing Relaxation phase, the results showed that the mean change in pain level was 3.125. The statistical test indicated a Z value of 3.045 with a p-value of 0.004. The significant p-value at the 0.05 level indicates a significant difference before and after applying breathing relaxation techniques. The positive Z value indicates that positive scores are more dominant in the change in pain level, confirming that breathing relaxation techniques successfully reduce pain levels in post-Caesarean section mothers.

Meanwhile, in the Post-Breathing Relaxation phase, the mean change in pain level was 3.012. The statistical test again showed vital significance with a p-value of 0.004. These results indicate that the pain reduction effect achieved with breathing relaxation techniques remains consistent after the intervention. In other words, breathing relaxation techniques not only provide short-term impact but also have the potential to provide long-term benefits in managing pain levels post-Caesarean section in mothers.

Based on the basic concept of relaxation, it is a state of relaxation where a person is conscious but relaxed and calm, with a rested mind, relaxed muscles, and regular breathing. This state reduces external stimuli to the reticular formation. Stimulation of the non-specific reticular nuclei surrounding the thalamus and diffusely within it often triggers waves in the thalamocortical system. The processes of respiration, ventilation, diffusion, and perfusion are controlled with relaxation. The concentration of the mind can divert impulses from negative stressors, indirectly helping maintain body homeostasis through the HPA Axis pathway, which can stimulate cortisol production within normal limits. Normal cortisol levels will balance the body's neurotransmitters, leading to its homeostasis. Long breaths can provide sufficient energy because exhaling releases carbon dioxide (CO2), and inhaling long breaths receives oxygen (O2), which is crucial for cleansing the blood and preventing brain tissue damage due to oxygen deficiency (hypoxia). During a long breath, the abdominal wall muscles (rectus abdominis, transversus abdominis, internal and external oblique) push the lower ribs backward and make the diaphragm upwards, resulting in increased intra-abdominal pressure, which can stimulate blood flow in both the inferior vena cava and abdominal aorta, leading to increased blood flow (vascularization) to all body tissues, especially vital organs like the brain. Providing Benson relaxation therapy is beneficial for all patients because it helps reduce pain intensity and makes patients more relaxed. Regular practice under guidance helps individuals learn to relax and relieve their stress reactions (Toussaint *et al*. 2021) [12].

Conclusion

These findings provide strong evidence that the implementation of breathing relaxation techniques is effective in reducing pain levels in post-Caesarean section mothers at Royal Prima Hospital in Medan in 2024. This comprehensive data can be the basis for recommending integrating breathing relaxation techniques as an integral part of post-Caesarean section pain management protocols to enhance patient comfort and recovery quality.

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