



Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

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KEYWORDS

Relaxation techniques, deep breathing, pain, post-surgery, caesarean section

ABSTRACT

Post-*sectio Caesarea* results in abdominal pain at the surgical scar site. For non-pharmacological pain treatment, deep breathing relaxation techniques can be used. The purpose of this study is to apply deep breathing relaxation to reduce the pain scale in postoperative *Sectio Caesarea* patients. The design of this study is a case study. The subjects of this study were patients who experienced postoperative *sectio Caesarea* pain in the Amaryllis 5 room of Telogorejo Hospital Semarang. The research sampling technique used non-probability sampling with a purposive sampling approach, namely 4 respondents. Based on the results of the study, after applying deep breathing relaxation, 2 respondents experienced mild pain and 2 respondents experienced moderate pain. The conclusion of this study is that deep breathing relaxation techniques can be applied to reduce pain in postoperative *Sectio Caesarea* patients at Telogorejo Hospital Semarang.

INTRODUCTION

Childbirth is a complex physiological process characterized by the stretching and widening of the cervix due to rhythmic uterine contractions that facilitate the expulsion of the fetus and other products of conception (National Institute of Child Health and Human Development, 2025; “Normal labor” definition in StatPearls, 2023). The first stage of labor begins with regular uterine contractions leading to cervical dilation, ending when the cervix is fully dilated at 10 cm, followed by the second and third stages involving the delivery of the baby and placenta, respectively (National Library of Medicine, 2025). Sectio caesarean delivery (SC) is a surgical method involving an abdominal incision (laparotomy) and a uterine incision (hysterotomy) to deliver the fetus, and is generally indicated when vaginal birth poses risks to the mother or baby (S Sung, 2023; eMedicine, 2023). Common medical indications for SC include labor dystocia, fetal distress, abnormal fetal presentations (such as breech or transverse lie), and placental complications like placenta previa or accreta spectrum (StatPearls, 2023; Kathpalia et al., 2024). SC is considered a critical,

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

often life-saving intervention when complications arise that cannot be resolved through vaginal delivery (StatPearls, 2023), although it carries surgical risks and longer maternal recovery time (eMedicine, 2023).

The World Health Organization (WHO) sets the average caesarean section (CS) rate at approximately 5–15% of births at the population level, beyond which medical gains in maternal and neonatal outcomes do not notably improve (World Health Organization, 2015). Globally, CS rates have risen—from about 7% in 1990 to over 21% by 2020—an increase observed in regions such as Eastern Asia where rates can exceed 50% in some areas (Betrán et al., 2021; Angolile et al., 2023). In China, CS rates increased sharply—from 19.2% in 2003 to over 36% by 2011 (Long et al., 2022). Based on the 2017 Indonesian Demographic and Health Survey (IDHS), the CS rate in Indonesia was approximately 17–18%, with higher prevalence in urban areas compared to rural (Zahroh et al., 2024; Purniati et al., 2020). These data indicate that births via CS are becoming increasingly common, frequently exceeding the WHO's recommended range.

Childbirth with this SC method can have a beneficial impact or effect on mothers who are not able to give birth normally and spontaneously for various reasons. The result of SC surgery causes pain in the abdomen—pain that comes from the surgical wound. In childbirth, SC has higher pain levels of about 27.3% compared to normal childbirth, which is only about 9%. Generally, the pain is felt for a few days, with pain increasing on the first day post-SC surgery. Psychologically, SC procedures have an impact on the fear and anxiety regarding the pain felt after the analgesics wear off. In addition, they also have a negative impact on the mother's self-concept because the mother loses the experience of giving birth normally and loses self-esteem related to changes in body image due to surgery (Akbar et al., 2014; Scott, 2013; Pratiwi, 2013).

According to the International Association for the Study of Pain (IASP), pain itself is an unpleasant emotional and sensory experience resulting from actual or potential tissue damage and provides an overview of the occurrence of damage (Asmadi, 2020). Acute pain is an experience that is both sensory and emotional, related to damage to tissues—both actual and functional—with a sudden or slow onset and mild to severe intensity that occurs for less than 3 months (SDKI DPP PPNI Working Group Team, 2018). Pain in postoperative SC patients can cause negative effects such as limited mobility, Activities of Daily Living (ADL) disorders, delayed attachment, and delayed early initiation of breastfeeding (Latifah and Ragawati, 2014). Pain problems can be controlled with pharmacological therapy and non-pharmacological therapy. In the administration of pharmacological treatment, patients are given analgesic drug therapy, which is effective for moderate and severe pain. However, the administration of pharmacological therapy does not aim to improve the patient's own ability to control their pain, so a combination therapy between pharmacological therapy and non-pharmacological therapy is needed so that the pain sensation can be reduced and the recovery period does not take a long

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

time. Non-pharmacological pain management methods include massage therapy (such as Hokupointice Massage, Back Effleurage Massage, Counter Pressure), music therapy, *muromal* therapy, aromatherapy, warm compresses, breathing exercises (Breathing Exercise), deep breathing relaxation, Birthball exercises, and acupressure therapy (Solehati, 2018).

Deep breathing relaxation is a technique that is easy to perform with slow, regular abdominal breathing. The client can do this by closing their eyes while breathing slowly and feeling the comfort. The deep breathing relaxation technique will produce impulses that are sent through the nonnociceptor afferent nerve, resulting in a closed gelatinous substance so that pain stimuli are inhibited and reduced. According to the World Health Organization (WHO), the incidence of mothers giving birth by cesarean section averages 5% to 15% per 1000 births worldwide; in government hospitals, it currently stands at around 11%, while private hospitals have higher rates at 30% (Nurhayati et al., 2015). According to the Indonesian Ministry of Health, in 2017, maternal cesarean section delivery in developing countries, including Indonesia, amounted to 6%—a fairly high ranking of 480,622 cases (Kartikasari & Apriningrum, 2020).

Based on data from the Lampung Provincial Health Office (2017), mothers gave birth with cases of *sectio caesarea* representing 28% of the total 200,000 deliveries (Wahyuni & Rohani, 2019). The pain from *sectio caesarean* delivery is higher at about 27.3% compared to normal vaginal delivery at only about 9%. Pain on the first day after *sectio caesarea* surgery causes psychological fear and anxiety regarding the pain when the drug effects have worn off (Haryani et al., 2021).

Postoperative pain following a Caesarean section (*Sectio Caesarea*) is a common experience that can interfere with recovery and patient comfort. While pharmacological interventions are commonly used, non-pharmacological methods, such as deep breathing relaxation, offer a complementary approach to pain management.

This study aims to examine the effect of deep breathing relaxation on reducing pain levels in postoperative Caesarean patients. A case study design was employed, focusing on patients experiencing postoperative pain in the Amaryllis 5 room at Telogorejo Hospital, Semarang. The study involved four respondents selected using a non-probability purposive sampling technique. Pain levels were assessed before and after the intervention using a standardized pain scale. These findings suggest that deep breathing relaxation can be effectively implemented as a non-pharmacological intervention to manage postoperative pain in Caesarean section patients. The study highlights the potential of integrating simple relaxation techniques into postoperative care protocols to improve patient comfort, enhance recovery experiences, and reduce reliance on pharmacological interventions. Further studies with larger sample sizes and control groups are recommended to strengthen evidence and generalize the findings.

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

METHOD

The type of design used in this study is a case study. The research was conducted in the Amaryllis 5 room of Telogorejo Hospital Semarang. The subjects of this study were 4 patients who experienced postoperative *sectio caesarean* pain. The inclusion criteria used in the study were postoperative patients on day 1, cooperative patients, and mild to severe pain scale (1-9). The research instruments used are in the form of observation sheets containing general data of respondents and pain assessment sheets consisting of respondents' names, addresses, age, education level, occupation, and pain scales before and after deep breathing relaxation techniques using numerical pain intensity scales. The assessment uses a [A1] scale of 0 to 10. Pain assessed by the patient will be categorized as painless (0), mild pain (1-3) where objectively the patient can communicate well, moderate pain (4-6) where objectively the patient hisses, grimaces, and can indicate the location of pain, severe pain (7-9) where objectively patients are sometimes unable to follow commands but still respond to actions, can indicate the location of pain, cannot describe it, and cannot be overcome by deep breathing or distractions, and severe pain (10) where patients are no longer able to communicate or respond.

RESULT AND DISCUSSION

From 4 cases of SC patients with indications of CPD, KPD, PEB, and Haemorrhoids, the main diagnosis was obtained, namely acute pain related to physical injury agents. To overcome acute pain problems, all cases use pain management, which is a deep breathing relaxation technique. Childbirth with the SC method that the mother went through, made several problems arise. The problems that are often complained by mothers after post SC are the presence of pain, anxiety and mobility disorders. Pain is an unpleasant sensory and emotional experience that involves actual and potential tissue damage, very disturbing and difficult. The Indonesian Nursing Intervention Standard (SIKI) used is pain management (I.08238) including observation: identification of location, characteristics, duration, frequency, quality, intensity of pain, identification of pain scales, therapeutic: provide non-pharmacological techniques to reduce pain (e.g. tens, massage therapy, warm or cold compresses), control of environments that aggravate pain (e.g. room temperature, lighting, noise), facilitation of rest and sleep, Education: Explain the causes, periods, and triggers of pain, recommend monitoring pain independently. Providing non-pharmacological techniques to reduce pain in the form of breathing relaxation techniques in 5-10 minutes, the nurse teaches clients how to do deep breaths, slow breathing (holding inspiration to the maximum) and how to exhale slowly. The administration of deep breathing relaxation techniques can be done when pain arises at any time. Deep breathing relaxation therapy is a technique related to human behavior and is effective in overcoming acute pain, especially pain due to diagnostic and surgical

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

procedures. It usually takes 5-10 minutes of training before the patient can effectively minimize pain. Where the main goal of deep breathing relaxation is to help patients relax and improve various aspects of physical health

In terms of age in 4 patients, it ranged from 29-34 years. Some of the factors that affect postoperative pain in the case section are age, gender, culture, education level, previous pain experience, coping mechanisms and anxiety. Age is an important variable that affects pain, especially in children and the elderly. The developmental differences found between these age groups can affect how a person reacts to pain. Adults will experience neurophysiological changes and may experience decreased sensory perception of stimuli as well as increased pain thresholds (J. Nugrahanintyas. W.U., 2018). But in this case study age did not affect postoperative pain.

In terms of surgery experience, patients Mrs. N, Mrs. M, and Mrs. R have never had surgery before, experiencing pain around 6 and 7, For patients Mrs. G have experienced SC surgery, with a pain scale of 7. According to (Syarifah et al., 2019) A person who has successfully overcome pain in the past, and currently the same pain arises, then he will more easily overcome his pain. Whether or not a person is able to overcome pain depends on past experience in overcoming pain. From this case, the experience of surgery does not affect the pain.

The level of education is often associated with knowledge, therefore a highly educated person is assumed to be easier to absorb information, so that in the provision of nursing care can be adjusted to the level of education. The level of education is one of the factors that determines the level of the patient's ability to understand the pain experienced (Wijaya et al., 2021). From the review of cases in this group, the level of education does not affect a person's pain, this is proven that even though Mrs. M graduated from high school, her pain scale is the same as Mrs. N's S1 education, while Mrs. R's S1 education is the same as Mrs. G's education after graduating from high school.

Table 1. before and after deep breathing relaxation

No	Respondent Name	Before deep breathing relaxation	After deep breathing relaxation
1	Mrs. N	6	2
2	Ny. M	6	4
3	Mrs. R	7	3
4	Mrs. G	7	4

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

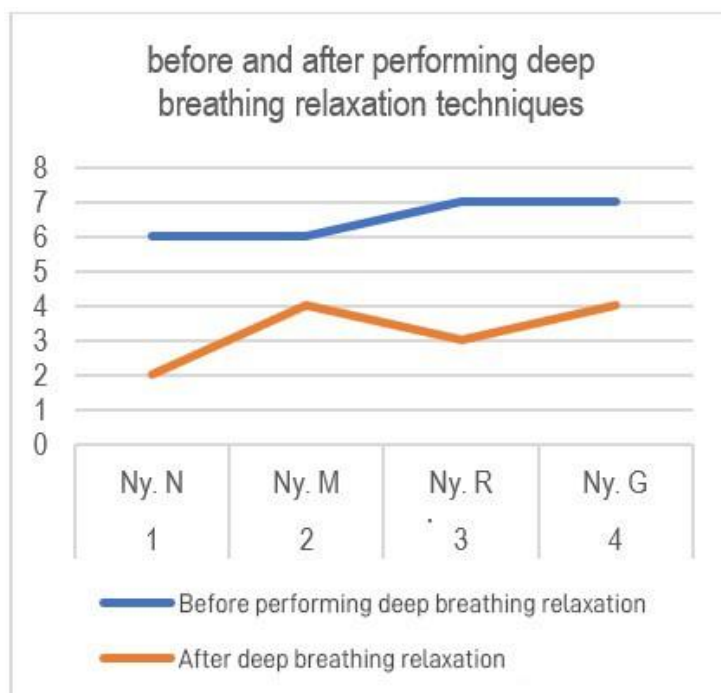


Figure 1. before and after deep breathing relaxation

From table 1 and figure 1, the results of 4 patients who experienced pain using non-pharmacological interventions, namely deep breathing relaxation techniques, the pain scale decreased. This is evidenced by the evaluation of the patient on the 3rd day after deep breathing relaxation, the patient Mrs. N on the pain scale of 6 to 2, Mrs. M on the pain scale of 6 to 4, Mrs. R on the pain scale of 7 to 3, and Mrs. G on the pain scale of 7 to 4. So it can be concluded that deep breathing relaxation techniques can be applied to reduce pain.

The pain felt by the respondents is one of the physiological stresses (neuroendocrine response) caused by surgery. The pain felt by postpartum mothers with sectio caesarea comes from a wound from the abdomen. The degree and severity of postoperative pain depends on the physiological and psychological nature of the individual and the tolerance of the pain caused. An individual's tolerance to pain is a point where there is an unwillingness to accept pain of higher severity and longer duration. This is reinforced by the opinion that tolerance depends on one's attitudes, motivations and values (Morita et al., 2020). So it can be concluded from the case study of 4 patients that were studied for age, surgical experience, and education level did not affect a person's pain level.

CONCLUSION

The main diagnosis that emerged from the case study was acute pain associated with physical injury agents. The pain management intervention

Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

used in the case is pain management using non-pharmacological techniques, namely deep breathing relaxation. Deep breathing relaxation techniques can be applied to reduce the patient's pain scale; this is evidenced by a decrease in pain in 4 patients post-SC surgery. From this review of cases, a person's age, surgical experience, and education level do not affect a person's pain level.

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Application of Deep Breathing Relaxation Techniques to Reduce Pain Scale in Postoperative Patients of Sectio Caesarea

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