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by Siti Cholifah

Submission date: 07-Jun-2023 07:54AM (UTC+0700)

Submission ID: 2110650777

File name: 6._NYERI_SC_ERACS_2023.pdf (501.71K)

Word count: 5211

Character count: 25161



ISSN 2354-7642 (Print), ISSN 2503-1856 (Online)
Jurnal Ners dan Kebidanan Indonesia
Indonesian Journal of Nursing and Midwifery
Tersedia online pada:
<http://ejournal.almaata.ac.id/index.php/JNKI>

JNKI (Jurnal Ners dan Kebidanan Indonesia)
(Indonesian Journal of Nursing
and Midwifery)

Pain score and quality of post cesarean section recovery with ERACS method

Ida Ruspita, Siti Cholifah, Rafhani Rosyidah*

Department of Midwifery, Faculty of Health Sciences, University of Muhammadiyah Sidoarjo
Jalan Mojopahit No.666 B, Sidowayah, Celep, Kec. Sidoarjo, Kab.Sidoarjo, Jawa Timur

*Corresponding author: rafhani.rosyida@umsida.ac.id

ABSTRAK

Latar belakang: Operasi caesar harus dilakukan ketika persalinan normal tidak memungkinkan karena masalah kesehatan janin atau ibu. Salah satu komplikasi operasi caesar adalah rasa sakit dan kualitas pemulihan. Strategi penatalaksanaan nyeri dan kualitas pemulihan menggunakan metode ERACS. Metode ini merupakan teknik baru dalam anestesi dengan prinsip perawatan perioperatif berbasis bukti, pendekatan multidisiplin yang dilakukan secara tim, dilakukan secara berkesinambungan, dan terus dikembangkan.

Tujuan: Penelitian ini bertujuan untuk menggunakan metode ERACS untuk menghitung skor nyeri dan kualitas pemulihan setelah operasi caesar.

Metode: Jenis penelitian ini adalah eksperimen semu dengan desain kelompok kontrol pascates. Partisipan dalam penelitian ini adalah ibu yang menjalani operasi caesar. Besar sampel dalam penelitian ini adalah 70 yaitu 35 kelompok perlakuan dan 35 kelompok kontrol. Instrumen menggunakan VAS (Visual Analog Scale) dan obsQor 11

Hasil: Uji statistik untuk nyeri didapatkan P value = 0,000 dan untuk kualitas pemulihan didapatkan P value = 0,000

Kesimpulan: Terdapat perbedaan skor nyeri yang cukup besar yang dilakukan dengan metode ERACS dan Non ERACS, dimana skor nyeri yang dilakukan dengan metode ERACS lebih rendah dibandingkan dengan metode non-ERACS, dan terdapat perbedaan kualitas pemulihan antara Metode ERACS dan Non ERACS dimana skor kualitas pemulihan diberikan oleh metode tersebut. ERACS lebih tinggi dari metode non ERACS. Metode ERACS dapat menjadi metode alternatif untuk mengurangi morbiditas pasca operasi. Pengurangan komplikasi melalui pengurangan penggunaan dosis anestesi. Dan kedepannya, pengembangan teknik pembedahan memiliki tujuan yang wajar, seperti meningkatkan kesehatan masyarakat, meningkatkan kenyamanan dan ketenangan pasien selama pembedahan, serta mengurangi rawat inap, yang secara tidak langsung mengurangi biaya.

KATA KUNCI : peningkatan pemulihan setelah operasi caesar; nyeri; kualitas pemulih

ABSTRACT

Background: A cesarean section must be done when regular childbirth is impossible owing to fetal or maternal health issues. One of the complications of cesarean section is pain and quality of recovery. The strategy for managing pain and quality of recovery is using the ERACS method. This method is a new technique in anesthesia with the principles of evidence-based perioperative care, a multidisciplinary approach carried out in a team, carried out on an ongoing basis, and continues to be developed.

Objectives: The study aimed to use the ERACS method to calculate the pain score and the quality of recovery following cesarean section.

Methods: The study was quasi-experimental with a post-test control group design. Participants in this study were mothers who had a cesarean section. The sample size in this study was 70, namely 35 treatment groups and 35 control groups. The instrument uses VAS (Visual Analog Scale) and obsQor 11.

Results: Statistical test for pain obtained P value = 0.000 and for quality of recovery obtained P value = 0.000

Conclusions: There is a sizable distinction in pain scores carried out by the ERACS and Non ERACS methods, where the pain scores carried out by the ERACS method are lower than the non-ERACS methods, and there are differences in the quality of recovery between the ERACS and Non ERACS methods where the recovery quality scores are given by the method. ERACS is higher than non ERACS method. The ERACS method can be an alternative method to reduce postoperative morbidity. Reduction of complications through reduced use of anesthetic doses. And in the future, the development of surgical techniques has reasonable goals, such as improving public health, increasing patient comfort and peace of mind during surgery, and reducing hospitalization, which indirectly reduces costs

KEYWORD: enhanced recovery after cesarean section; pain; quality of recovery

Article Info :

Article submitted on November 02, 2022

Article revised on December 26, 2022

Article received on January 12, 2023

INTRODUCTION

A cesarean section is a medical technique used to help childbirth when it is unable to do so naturally because of the mother's health or the fetus's condition. This treatment is described as either a hysterotomy to deliver the fetus from within the uterus or surgery to deliver the fetus by opening the abdominal wall, uterine or vaginal walls (1). Data from the Indonesian Demographic and Health Survey (IDHS) show an increase in the number of cesarean sections in Indonesia from 1991 to 2017, as much as 1.2-6.8%. The organization for World Health (WHO) recommends the number of cesarean deliveries in the population ranges from 5-15%. In Indonesia, the rate of cesarean section delivery is still high. Data from Riskesdas (Basic Health Research) in 2018 shows the Caesarean birth rate in Indonesia is 17.6% (2). The cesarean section delivery rate at RSIA Kendangsari Surabaya, based on the report in the first quarter of 2022 is 72%.

Various problems experienced by

patients after cesarean section, such as pain that does not go away and a long recovery time, need to be adequately handled for patient comfort. Research conducted by Nurhayati (2015) shows that post-cesarean section mothers who experience severe pain are 36%, while those who experience moderate pain are 64% (3). Pain after cesarean section affects the mother's postpartum period. For example, it can reduce the quality of breastfeeding, postpartum depression and the length of hospitalization (4). Along with the increasing public interest in cesarean section, perioperative services have also increased. To increase the clinical benefits of caesarean section the ERACS method is effective way to do it. ERACS is a perioperative, intraoperative, and postoperative management that aims to accelerate the patient's recovery (5).

Cesarean section is one of the main options to save the mother and fetus. The cause of delivery by cesarean section can be

due to problems with the mother or baby. There are several indications for cesarean section, namely breech babies, fetal distress, surgical scars, and placenta previa (6). Many problems experienced by mothers after cesarean section is prolonged pain that affects the quality of recovery. Therefore, the ERACS method is used to reduce pain by applying various pain treatments. The dose of anesthetic drug administration is reduced so that by decreasing the dose, the recovery process is faster. A brief mobilization can speed up the recovery process (7).

ERACS is an evidence-based treatment created to reduce the opportunity for healing while minimizing the surgical stress reaction. To apply ERACS, the Society for Obstetric Anesthesia and Perinatology (SOAP) offers several preoperative, intraoperative, and postoperative guidelines focusing on recovery after a Caesarean section. ERACS is to assist all women with evidence-based, patient-centered care with appropriate standards and a multidisciplinary approach that optimizes recovery after cesarean section and improves maternal and newborn health (8).

Discuss the ERACS method because it reduces mothers' pain and makes it easier to return to normal activities (9). Most studies show a reduction in hospitalizations, a reduction in hospital costs, a reduction in opioid use, and an increase in maternal-infant bonding during hospitalization. Several studies have also proven that ERACS can reduce postoperative pain. Still, its impact on the quality of recovery of mothers after cesarean section is unknown (10). So far, there has been no published study on the effectiveness of the ERACS method on pain scores and the quality

of recovery after cesarean section. This study aimed to determine whether the ERACS method can accelerate the rate of recovery and reduce post-cesarean pain.

MATERIALS AND METHODS

The research used a quasi-experimental design with a post-test control group design, which compared the level of postoperative pain and the quality of recovery 24 hours after surgery in 2 groups, namely the group that did ERACS and the group that didn't ERACS.

The population in this study were mothers who had a cesarean section in July - August 2022. The inclusion criteria in this study were mothers with a minimum education of D3 and a normal BMI, while the exclusion criteria were mothers who had an emergency cesarean section. The sample size in this study was 70 mothers who had a cesarean section, namely 35 treatment groups (SC ERACS) and 35 control groups (conventional cesarean section). The sample size is determined based on the software power and sample size. The calculation version found that the sample size was 35 mothers giving birth per group.

Research location and time

The research was conducted at RSIA Kendangsari Surabaya. Data collection was carried out in July–August 2022.

Research Instruments and Data Collection Methods.

To assess post-cesarean pain, the VAS (Visual Analog Scale), and a questionnaire was used, and the ObsQoR 11 was used to evaluate the quality of the patient's recovery. ObsQor 11 has been tested for validity with an internal consistency of 0.85 and the reliability of the correlation coefficient $r_i > 0.6$.(11) VAS

Table 1. Intervention description

Period	Intervention ERACS	Intervention Non ERACS
Preoperative	Education, optimizing the condition of pregnant women, preparing for breastfeeding as early as possible, fasting solid food 6 hours before surgery, carbohydrate/sweet drinks 2 hours before surgery, inserting an infusion 2 hours before surgery, administering drugs - paracetamol 1 gram and omeprazole 40 mg drip NaCL 100 cc, given adequate intravenous fluids to avoid blood pressure drops and nausea and vomiting.	Education, optimizing the condition of pregnant women, preparing for breastfeeding as early as possible, fasting solid food 8 hours before surgery, inserting an infusion 2 hours before surgery, given adequate intravenous fluids to avoid blood pressure drops and nausea, and vomiting.
Intraoperative	Optimizing temperature, warmed IV fluids, giving <2 liters of infusion fluids, anesthetic technique by an anesthesiologist, spinal low dose bupivacaine 10 mg combined with fentanyl 2 mcg and morphine 75 mcg, spinocan size 27, administration of antibiotics to prevent infection, if possible in initiate early breastfeeding in the operating room by observing the condition of the mother and baby.	Optimizing temperature, warmed IV fluids, giving <2 liters of infusion fluids, anesthetic technique by an anesthesiologist, spinal full dose regivell 5% dose 80 mg, spinocan size 27, administration of antibiotics to prevent infection, if possible in initiate early breastfeeding in the operating room by observing the condition of the mother and baby.
Postoperative	Chewing gum to stimulate intestinal peristalsis, the initial oral intake may take 60 minutes if the patient is not nauseous and continues a regular diet, early mobilization may sit 0-6 hours and continue with walking as tolerated, can walk then the catheter is removed 6 hours after surgery, given oral therapy paracetamol 1000 mg every 8 hours and 600 mg of ibuprofen each day 6 hours given after administration of ketorolac 30 mg IV.	Initial oral intake may be drunk if the legs can be moved, if the patient does not experience nausea and vomiting, continue a regular diet, postoperative analgesic petidine 200 mg, ketorolac 90 mg, ondancentron 12 mg diluted with 50 cc of aquadest in a 2.5 cc running syringe pump /hour timed out in 20 hours. Early mobilization and removal of the catheter can be carried out after the syringe pump has run out, followed by mobilization walking according to tolerance

questionnaires were administered at 24 hours postoperatively, and ObsQoR-11 was administered 24 hours after surgery.

Respondents who met the inclusion criteria were given a choice to use the ERACS method or not. The determination of the sample into the treatment or control group was not randomized. After obtaining informed consent, the patients were divided into two groups in perspective. A total of 70 patients were allocated to the control group who received conventional perioperative patient care, and 35 patients were allocated to the treatment group who received care according to the ERACS protocol, the patient is given the freedom to choose what method of cesarean section to use. Researchers collaborated with obstetrics and gynecology specialists and anesthesiologists for cesarean section. The form of collaboration is carried out to report the patient's general condition to both doctors for therapy, and in patients who choose the ERACS method, it is carried out based on

standard operating procedures at the Hospital.

Data obtained directly/primary data. Data was collected by filling out data collection sheets and questionnaires. Data were analyzed univariably with frequency tabulation, bivariate with *independent sample T test*, then continued with Pearson correlation test to determine the correlation of age and parity with pain and quality of recovery. The ethics commission has approved this research of the University of Nadhatul Ulama Surabaya under Number 206/EC/KEPK/UNUSA/2022.

RESULTS AND DISCUSSION

RESULTS

Table 2 shows the proportion of respondents' demographic data. The two groups' research variables, namely age, and parity, were homogeneous.

Table 2. Demographic data of respondents

Characteristics	ERACS		P
	Yes Mean±SD	Not Mean±SD	
Age	29.94 ±2.743	29.60±3.704	0.661
Parity	1.74±780	1.57±698	0.336

Table 3 . Effect of ERACS on post-SC pain

ERACS	Postoperative Pain		
	Mean ± SD	95% CI	P
Yes	2.20±0.406	-2,292- (-1,879)	0.000
No	4.29±0.406		

Table 3 shows that the mean postoperative pain ERACS participants' scores were lower than those of non ERACS participants. From the Independent Sample T-Test, it was found that the P value < 0.000 with

95% CI -2.292-(-1.879). This shows that the decrease in labor pain scores after being given the ERACS method is not only statistically significant but also clinically significant.

Table 4. Effect of ERACS on the quality of post-SC recovery

ERACS	Recovery Quality		
	Mean ± SD	95% CI	P
Yes	90.57±2,800	15,193-18,292	0.000
No	73.83 ± 3.642		

Table 4 shows that the mean quality of recovery scores in the group using the ERACS method was higher than in the group not using the ERACS method. The Independent Sample T Test found that the P value < 0.000

with 95% CI -15,193–(-18,292). This shows that the improvement in the quality of recovery scores after being given the ERACS method is not only statistically significant but also clinically significant.

Table 5 . Pearson correlation test analysis between age, parity with post SC pain

Variable	Post SC pain		P
	n	Correlation coefficient	
Age	70	-0.067	0.579
Parity	70	-0.124	0.307

Table 5 shows the correlation between age and postoperative pain, the P value = 0.579 with a correlation coefficient of -0.067. A negative correlation means that the higher the age, the lower the decrease in post-SC pain scores. The Pearson correlation test found that the P value > 0.05 so that the correlation between age and postoperative pain score reduction was not statistically significant. The results of the Pearson correlation test between

parity and postoperative pain showed P value = 0.307 with a correlation coefficient of -0.124. A negative correlation means the higher the parity, the lower the decrease in postoperative pain scores. From the Pearson correlation test, P value > 0.05, so that the correlation between parity and postoperative pain was not statistically significant.

Table 6. Analysis of pearson correlation test between age, parity and quality of recovery

Variable	Recovery Quality		P
	n	Correlation coefficient	
Age	70	0.099	0.414
Parity	70	0.108	0.373

Table 6 shows the results of the Pearson correlation test between age and the quality of postoperative recovery, the P value = 0.414, with a correlation coefficient of -0.099. A negative correlation means that the higher the age, the lower the quality of postoperative recovery. The Pearson correlation test found that the P value > 0.05, so that the correlation

between age and decreased quality of postoperative recovery was not statistically significant. The results of the Pearson correlation test between parity and recovery quality showed a P value = 0.373 with a correlation coefficient of -0.108. A negative correlation means the higher the parity, the lower the decline in the quality of

postoperative recovery. The Pearson correlation test found that the P value > 0.05, so the correlation between parity and the quality of recovery was not statistically significant.

DISCUSSION

Women's health reaches its peak at 20-35 years old. Regarding biology, this age is the right time to get pregnant because the fertility rate is very high and the eggs produced are abundant. The risk of giving birth to a baby with defects is smaller because the quality of eggs produced at this age is generally still excellent (12). Therefore, in this study, both ERACS and non-ERACS deliveries were mainly in the age range of 20-35 years.

There are many causes or indications for a mother to have a cesarean section, both ERACS and non-ERACS. Research conducted at DKT Gubeng Pojok Hospital Surabaya in 2016 showed that the number of mothers giving birth to sections caesarea in the age group 20-35 years experienced the most section caesarea with indications of sectio caesarea, premature rupture of membranes, and position abnormalities (13). This is also related to the number of respondents based on parity. In this study, most of the respondents were multiparous. They chose the most cesarean section with indications of previous cesarean sections.

Delivery by cesarean section can lead to higher complications than vaginal delivery or vaginal delivery. Complications that can arise in post-section Caesarea include hemorrhage, bladder injury, infection, swelling in the lower limbs, the possibility of thrombosis, the chance of functional impairment, decreased suppleness of the

abdominal and pelvic floor muscles, pain in the location of the incision, and problems with lactation (3). Based on the Pan study (2020) the postoperative pain assessment was lower in the ERACS group than in the control group at rest and movement. In the ERACS group, the incidence of nausea was significantly lower than in the control group (14).

ERACS can relieve pain in postoperative patients via an intraoperative route to induce multimodal analgesia, including intrathecal 50-150 grams of morphine or epidural morphine administration (1-3 mg). (15) To control pain, post-ERACS patients usually receive an intrathecal opioid every 6 hours, acetaminophen and nonsteroidal pain relievers, anti-inflammatory medicines (NSAIDs). The patient was scheduled to receive acetaminophen was administered intravenously (IV) for 24 hours before being taken orally. Inpatient pain management aims to separate the administration of opioids from other analgesics (such as NSAIDs and acetaminophen). Implementing the ERACS program was linked to decreased inpatient and outpatient opioid exposure and adjustments in surgical care in patients having elective cesarean sections without deteriorating the surgical results (15).

To replace this pain treatment was associated with increased pain scores patient reports. The latest high-quality corrective action for removal routine use of oral opioids for post analgesia caesarea section was also associated with a decrease in hospital use of oral opioids from 68% to 40% (16). The research results showed that the weakness of the conventional caesarea section method is the long mobilization process which is 24

hours after surgery, causing pain in the surgical wound for fear of moving and mobilizing early (17).

ERACS is a cesarean section recovery program evaluated for its benefits, such as minimizing complications and producing faster functional recovery. The implementation of the ERACS program has also been assessed to provide other benefits, such as improving the quality of care and aiming to provide patient comfort with a superior service experience, and accelerating the process of patient care and recovery by prioritizing patient safety. Early mobilization in the ERACS protocol reduces the incidence of postoperative infections, such as postoperative wound infections and urinary tract infections. Proper use of analgesics and intraoperative heating can improve patient comfort during surgery. Early postoperative oral nutrition is also very important to maintain body homeostasis, speed up recovery, and enable the patient to return to activities (2).

Liu, Du, and Yuu (2020) developed a modified ObsQoR 11 score from ObsQoR 15. Assess the quality recovery ObsQoR-11 by bodily health (vomiting, dizziness, chills), pain treatment, physical independence (mobilization, personal cleanliness), emotional state (controllable, comfortable), and the capacity to care for the infant are some of the important factors that are measured (18). With the ERACS method, the patient will be able to mobilize faster so that the patient's recovery will also be faster.

The results of research conducted by Metasari and Sianipar (2018) show that early mobilization affects reducing pain. The study found that the pain level decreased with early mobilization in moderate and mild pain. Given

the great responsibility of the mother for the recovery and care of the baby, early mobilization is an effort to gradually gain independence from the patient. In addition, early mobilization can train the mother's autonomy (19).

This study found that age and parity were not barriers to the ERACS method because the results showed that age and parity were not correlated with post-cesarean pain scores and post-cesarean recovery quality. This concurs with the findings of studies by Jasim (2017) that there is no relationship between parity age and postoperative pain scores. Numerous factors, such as the length of the procedure due to more significant dissection and lower levels of dermatomal sensory anesthesia at the incision, may enhance the nociceptive input to the spinal cord and induce central sensitization (20). As for the quality of post-cesarean maternal recovery, apart from the use of anesthetic drugs, it is also influenced by early mobilization and breastfeeding because there are efforts to improve postoperative recovery by increasing the bond between mother and baby (21).

For women aged ≤ 16 years and women aged ≥ 35 years, the total number of maternal complications when compared with primigravida aged 20-35 years. Based on the study results, the respondents' age range was 25-33 years, which is included in the fertile age range. One factor that influences pain response is age. Age is a crucial variable that affect pain. Developmental differences between the two age groups can affect how you react to pain (22).

CONCLUSION AND RECOMMENDATION

ERACS effectively reduces pain after cesarean section and improves the quality of postoperative recovery. The ERACS method can be an alternative method to reduce postoperative morbidity. Reduction of complications through reduced use of anesthetic doses. And in the future, the development of surgical techniques has reasonable goals, such as improving public health, increasing patient comfort and peace of mind during surgery, and reducing hospitalization, which indirectly reduces costs.

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