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Analysis of Differences in Delivery Outcomes of Cesarean Section Eracs Method with Conventional Methods at Hanau Hospital

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Keywords

Enhanced Recovery After Cesarean Section, Conventional methods, Hospitalization postoperative pain level, recovery time after cesarean section, Postoperative complications

Abstract. This study aims to analyze the difference in delivery outcomes between the Cesarean Section method with the Enhanced Recovery After Cesarean Section (ERACS) approach and the conventional method at Hanau Hospital. The ERACS method is applied to improve patient recovery after cesarean section by optimizing pain management, early mobilization, and fluid management. This study used a retrospective design on data of patients undergoing Cesarean Section at Hanau Hospital during a certain period. The data collected involved variables such as duration of hospitalization, postoperative pain level, recovery time after cesarean section, and postoperative complications. Statistical analyses, including independent t-tests and chi-square tests, were used to evaluate significant differences between ERACS and conventional method groups. The results of this study are expected to provide a better understanding of the effectiveness of the ERACS method in improving labor outcomes, especially related to recovery time, pain levels, and incidence of complications. These findings may support clinical decision-making regarding the selection of optimal cesarean section methods at Hanau Regional Hospital and may provide guidance for similar health institutions.

1. INTRODUCTION

The concept of enhanced recovery after surgery (ERAS) was first introduced by Henrik Kehlet from Denmark in the British Journal of Anaesthesia magazine in 1997. The paper discusses evidence-based interventions at the surgical, intraoperative, and postoperative preparation stages to improve patient outcomes. ERAS is described as multimodal-based perioperative management to obtain immediate recovery of the patient's condition after surgery by maintaining preoperative organ function and reducing stress response during surgery. In the same year, the ERAS community and research group were established and to date the ERAS community has published several guidelines for various surgical specialties including thoracic, cardiovascular, digestive, gynecological, and urological (Ratnasari and Warmiyanti, 2022).

Enhanced recovery after cesarean section (ERACS) or ERAS in cesarean delivery consists of optimizing antepartum services, intrapartum services including anesthesia management and inpatient and outpatient postpartum services so as to create standardized guidelines. There are several variations of ERAS terminology in cesarean section surgery that we can find, namely enhanced recovery after surgery in caesarean delivery (ERASCD), enhanced recovery after caesarean (ERAC), and enhanced recovery after caesarean section (ERACS) (Corso et al., 2017).

Cesarean section is the most widely performed operative procedure in the field of obstetrics and gynecology. In recent years, the number of cesarean sections has increased rapidly. The rate of cesarean section surgery globally reached 21% in 2015. In the United States, the cesarean section rate increased to 32% in 2017, with more than 1.27 million procedures performed each year. In Indonesia, based on Riskesdas data in 2018, the birth rate with cesarean section surgery was 17.6% with the highest cesarean section rate in Jakarta at 31.1% and the lowest in Papua, which was 6.7% of the number of deliveries (Ministry of Health, 2018).

Some of the most common complaints found in post-cesarean section patients are nausea, vomiting and itching where this condition can be aggravated by the use of certain analgesia such as neuraxial opioids. Other complications such as chills are also common in patients undergoing cesarean delivery, especially those receiving spinal anesthesia. These complaints can increase hospitalization costs, decrease maternal satisfaction during the treatment process, and can be traumatic for patients. Therefore, ERACS was developed to deal with perioperative complaints that have multifactorial causes. The ERACS protocol itself has been shown to be able to reduce the incidence of nausea, vomiting and pruritus and support to maintain normothermia such as by administering some additional drugs (Tika et al., 2022).

Postoperative care of cesarean section in developed countries is a very important problem. Efforts to shorten the length of treatment and healing of postoperative patients are carried out so that the length of hospital stay is no more than 24 hours. Currently, in Indonesia ERACS techniques have begun to be applied by emphasizing strong interdisciplinary cooperation in medical sciences. The ERACS technique allows patients to sit while breastfeeding after two hours postoperatively, early mobilization, eating and drinking as usual and it is expected that in less than 24 hours the patient can return to activity. With ERACS, patients will feel comfortable and get a pleasant excellent service experience (Tamang et al., 2021).

In qualitative studies that assess maternal perceptions of cesarean section without the ERACS protocol, pregnant women feel excluded from decision-making because they are not educated about the risks of certain procedures (Meng et al., 2021). In addition, almost all patients do not have an immediate catheter removal which can hinder patient mobilization. Therefore, ERACS seeks to overcome this problem by providing information before undergoing the procedure and removing the urinary catheter after cesarean section as soon as possible to increase early mobilization thereby shortening the length of hospitalization (He et al., 2021).

In one study in China that examined the difference in costs between patients undergoing the ERACS protocol compared to controls, it was found that there was a significant difference in hospitalization costs, namely patients undergoing the ERACS protocol had lower hospitalization costs than the control group (He et al., 2021). However, in Indonesia, the financing or SC tariff of the ERACS method is more expensive than the conventional method. Another study that assessed the length of postoperative stay found that the average length of postoperative stay was shorter in patients undergoing the ERACS protocol than controls (Hidayati et al., 2022).

2. METHOD

This research was conducted at Hanau Hospital, Central Kalimantan Province. This type of research is a comparative quantitative study with a cohort ambitive method, which aims to compare outcomes in patients undergoing cesarean section both with the ERACS method and conventional methods. The study time starts from August 2022 to July 2023, so the overall research time is 12 months.

The study population was all mothers at Hanau Hospital, Central Kalimantan, who underwent SC delivery. The population in the January-June 2023 period is 220 mothers undergoing SC delivery, as many as 113 mothers undergoing SC delivery ERAS method and 107 mothers undergoing conventional methods. In the period January - December 2022, there were 417 mothers undergoing SC delivery, 97 mothers undergoing the ERAS method and 320 mothers undergoing conventional methods. The samples in this study are samples that meet the inclusion criteria, namely mothers who undergo SC delivery. Exclusion criteria are mothers undergoing SC delivery who have comorbidities, namely PEB, lung or heart disorders, or other diseases that require long treatment. Incomplete secondary data will also be excluded. The minimum number of subjects is 109.55 or 110 subjects. Samples taken by 110 patients are consequential in the latest.

Table 1. Identify Research Variables

Variable	Operational definition	Measuring Instruments	Measurement	
			Scale	Measurement Results
Delivery method	How to have a cesarean section to deliver a baby	Questionnaire	Nominal	1. ERACS 1. Conventional SC
Duration of treatment	Length of treatment time after surgery	Questionnaire	Nominal	1. <48 hours 2. ≥48 hours
Nyeri	Both mild and severe discomfort is assessed with the Visual Analogue Scale (VAS)	Questionnaire	Ratio	0 – 10
Treat Repeat	The incident of a patient being treated again who had previously been hospitalized in the hospital	Questionnaire	Nominal	1. Yes 2. No
Infeksi	Infection in the area of surgery is characterized by the presence of an open wound or seeping fluid	Questionnaire	Nominal	1. Yes 2. No
Maintenance Cost	Costs incurred by patients/hospitals/insurance during patient care	Questionnaire	Ordinal	1. < 4.999.999 2. 5.000.000 – 9.999.999 3. 10.000.000 – 14.999.999 4. 15.000.000 – 19.999.999 5. >20.000.000
Anxiety	Rasa khawatir yang dialami pasien sebelum operasi diukur dengan Amsterdam Pre Operative Anxiety and Information Scale (APAIS)	Questionnaire	Ordinal	1. <7 : not anxious 2. 7-12 : mild anxiety 3. 13-18 : anxious is 4. 19-24 : severe anxiety 5. 25-30 : panic
Age	The age of the patient is calculated from the date of birth (in years)	Questionnaire	Nominal	1.> 35 years old 2. ≤ 35 years old
IMT	Calculated from mass (kg)/height^2 (m) Obese ≥25 Not obese <25	Questionnaire	Nominal	1. Obese 2. Not Obese
Pregnant	Number of pregnancies ever experienced by the patient	Questionnaire	Nominal	1. 1 child 2. 2 or more children
Work	Activities carried out to meet the needs of life both by patients and husbands	Questionnaire	Nominal	1.Permanent employees 2. Past labor
Treatment Class	The inpatient room is selected according to the patient's ability	Questionnaire	Ordinal	1.VIP 2.Class I 3. Class II 4. Class III
Sources of Financing	The party responsible for paying any costs needed during the patient's treatment	Questionnaire	Nominal	1. Mandiri 2.Insurance

Primary data were collected through direct interviews with respondents using questionnaire guidelines that refer to research variables, namely treatment method, length of treatment, pain, presence or absence of repeat hospitalization, surgical wound infection, patient age, obesity, gestational age, gravida, employment, insurance use, anxiety level, treatment class and smoking habits.

The hypothesis of this study accepts the alternative hypothesis (Ha) as follows:

1) H0 : There is no difference in the length of postoperative care in the Cesarean Section delivery method of the ERACS method with conventional at Hanau Hospital
2) Ha : There is a difference in the length of postoperative care in the Cesarean Section delivery method of the ERACS method with conventional at Hanau Hospital

3) H0 : There is no difference in pain score in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital
4) Ha : There is a difference in pain scores in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital
5) H0 : There is no difference in postoperative repeat care in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital
6) Ha : There is a difference in postoperative re-treatment of the Cesarean Section delivery method of the ERACS method with conventional at Hanau Hospital
7) H0 : There is no difference in postoperative infection in the ERACS method of cesarean section delivery method with conventional at Hanau Hospital
8) Ha : There is a difference between postoperative infection in the ERACS method of Cesarean Section delivery method and conventional at Hanau Hospital
9) H0 : There is no difference in the cost of treatment in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital
10) Ha : There is a difference in the cost of treatment in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital
11) H0 : There is no difference in anxiety before surgery in the Cesarean Section delivery method ERACS method with conventional at Hanau Hospital
12) Ha : There is a difference in anxiety before surgery in the Cesarean Section Delivery method ERACS method with conventional at Hanau Hospital

3. RESULTS AND DISCUSSION

After collecting data through patient medical record data, the data is processed and analyzed. The sample of this study was all mothers who gave birth by cesarean section at Hanau Hospital

Characteristics of Respondents

The characteristics of respondents in this study were age, body mass index (BMI), gravida, occupation, class of care, and financing.

Table 1. Frequency Distribution of Respondent Characteristics at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

No	Characteristics	Frequency (f)	Percentage (%)
1	**Age**		
	.> 35 years old	22	20
	≤ 35 years old	88	80
2	**Body Mass Index**		
	Obese	4	3,6
	Not obese	106	96,4
3	**Pregnant**		
	1 child	20	18,2
	2 or more children	90	81,8
4	**Work**		
	Permanent employees	68	61,8
	Past labor	42	38,2
5	**Treatment Class**		
	VIP	1	0,9
	Class I	3	2,7
	Class II	56	50,9
	Class III	50	45,5
6	**Financing**		
	Mandiri	8	7,3
	Insurance	102	92,7

Based on Table 1, it can be seen that of the 110 respondents studied by age, the majority were aged ≤ 35 years as many as 88 people (80%). Based on BMI, the majority of respondents were not obese as many as 106 people (96.4%). Based on gravida, the majority of respondents have 2 or more children as many as 90 people (81.8%). Based on employment, the majority of respondents are permanent employees as many as 68 people (61.8%). Based on the treatment class, the majority of class II respondents were 56 people (50.9%). Meanwhile, based on health financing, the majority of respondents use health insurance as many as 100 (92.6 patients).

Univariate Analysis

Length Of Stay

The length of stay is the time needed for patients in the recovery process in the postoperative hospital until they can return home. The categories of length of care in this study can be seen in the following table:

Table 2. Frequency Distribution of Long Duration of Treatment at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

The length of stay	Frequency (f)	Percentage (%)
< 48h	52	47,3
≥ 48h	58	52,7
Total	**110**	**100**

Based on Table 2, it can be seen that of the 110 respondents, 52 people were hospitalized <48 hours (47.3%), while those who were hospitalized ≥ 48 hours were 58 people (52.7%).

Pain Pain is a state of discomfort both mild and severe assessed with the Visual Analogue Scale (VAS). The assessment of pain in this study was carried out 24 hours after surgery and can be seen in the following table:

Table 3. Distribution of Pain Frequency 24 hours after surgery at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Pain	Frequency (f)	Percentage (%)
0	18	16,4
1	29	26,4
2	28	25,5
3	18	16,4
4	9	8,2
5	2	1,8
6	5	4,5
7	1	0,9
Total	**108**	**100**

Based on Table 3, it can be seen that of 110 respondents, who did not experience pain after 24 hours postoperatively as many as 18 people (16.4%), who experienced pain with VAS value 1 after 24 hours postoperative as many as 29 people (26.4%), who experienced pain with VAS value 2 after 24 hours postoperative as many as 28 people (25.5%), who experienced pain with VAS value 3 after 24 hours postoperative as many as 18 people (16.4%), who experienced pain with VAS value 4 after 24 hours postoperatively as many as 9 people (8.2%), who experienced pain with VAS value 5 after 24 hours postoperative as many as 2 people (1.8%), who experienced pain with VAS value 6 after 24 hours postoperative as many as 5 people (4.5%), and who experienced pain with VAS value 7 after 24 hours postoperative as many as 1 person (0.9%). None of the patients had pain scores greater than 7 after 24 hours postoperatively.

Treat Repeat

Retreatment is the occurrence of a patient being treated again after previously being declared healthy and able to return home after undergoing surgery at the hospital. The categories of repeat care in this study can be seen in the following table:

Table 4. Frequency Distribution of SC Postoperative Readmission at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Treat Repeat	Frequency (f)	Percentage (%)
Yes	2	1,8
No	108	98,2
Total	**110**	**100**

Based on Table 4, it can be seen that of the 110 respondents, 2 people underwent repeat treatment (1.8%), while those who did not undergo repeat treatment were 108 people (98.2%).

Infection

Infection is the occurrence of a wound re-open or there is fluid seeping from the wound that has been sutured after undergoing surgery in the hospital. The categories of infection in this study can be seen in the following table:

Table 5. Frequency Distribution of SC Postoperative Infection at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Infection	Frequency (f)	Percentage (%)
Yes	1	0,9
No	109	99,1
Total	**110**	**100**

Based on Table 5, it can be seen that of 110 respondents, 1 person had an infection (0.9%), while 109 people had no infection (99.1%).

Maintenance Cost

Treatment costs are all expenses that are valued in nominal rupiah incurred by patients / hospitals / insurance during patients undergoing surgery at the hospital. The categories of treatment costs in this study can be seen in the following table:

Table 6. Frequency Distribution of SC Surgery Treatment Costs at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Maintenance Cost	Frequency (f)	Percentage (%)
< 6.999.999	0	0
7.000.000 – 8.999.999	41	37,3
9.000.000 – 10.999.999	63	57,3
11.000.000 – 12.999.999	4	3,6
>13.000.000	2	1,8
Total	**110**	**100**

Based on Table 6, it can be seen that of the 110 respondents, who incurred treatment costs of Rp 7,000,000 – 8,999,999 as many as 41 people (37.3%). Respondents who spent treatment costs of Rp 9,000,000 – 10,999,999 were 63 people (57.3%). Respondents who spent treatment costs of Rp 11,000,000 – 12,999,999 were 4 people (3.6%). while those who spend treatment costs of >Rp.13,000,000 as many as 2 people (1.8%).

Anxiety

Anxiety is the worry experienced by patients before surgery measured with the Amsterdam Pre Operative Anxiety and Information Scale (APAIS). The categories of patient anxiety in this study can be seen in the following table:

Table 7. Distribution of Anxiety Frequency of patients before undergoing SC Surgery at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Anxiety Level	Frequency (f)	Percentage (%)
<7 : not anxious	5	4,5
7-12 : mild anxiety	20	18,2
13-18 : anxious is	44	40,0
19-24 : severe anxiety	34	30,9
25-30 : panic	7	6,4
Total	**110**	**100**

Based on Table 7, it can be seen that out of 110 respondents, 5 were not anxious (APAIS <7). Respondents who were mildly anxious (APAIS 7-12) were 20 people (18.2%). Moderate anxiety respondents (APAIS 13-18) were 44 people (40.0%). Respondents who were seriously anxious (APAIS 19-24) were 34 people (30.9%), while those who panicked (APAIS 25-30) were 7 people (6.4%).

Bivariate Analysis

To show whether there is a significant difference between the independent and dependent variables, chi-square analysis is used which can be seen in the following table:

Differences in Length of Care in SC delivery ERACS and Conventional methods

The difference in the length of treatment in sc labor and conventional methods in this study can be seen in the following table:

Table 8. Differences in Length of Care in SC childbirth ERACS and Conventional methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

SC Method	Length of Care				Total	%	*p-value*
	< 48h		≥ 48h				
	F	%	F	%			
ERACS	29	53,70	25	46,30	54	100,0	0,185
Conventional SC	23	41,07	33	58,93	56	100,0	

Based on Table 8, it can be seen that of 54 people (49.09%) respondents who underwent SC delivery in the ERACS method, there were 29 people (53.70%) who had a long stay of < 48 hours and 25 people (46.30%) who had a long stay of ≥ 48 hours. Meanwhile, of the 56 respondents who underwent conventional SC delivery, there were 23 people (41.07%) who had a long stay of < 48 hours and 33 people (58.93%) who had a long stay of ≥ 48 hours. The results of statistical tests using chi-square test (continuity correction) obtained p-value results of 0.185 > 0.05. So it can be concluded that there is no difference in the length of patient care between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province.

Differences in Pain in SC labor ERACS and Conventional methods

In univariate analysis, pain scores were assessed based on pain scores from 0-10. To facilitate bivariate analysis, pain scores were grouped into mild pain (VAS <4) and moderate-severe pain (VAS ≥4). The difference in pain in SC labor ERACS and conventional methods in this study can be seen in the following table:

Table 9. Differences in Pain in SC Childbirth ERACS and Conventional methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

SC Method	Pain				Total	%	*p-value*
	< 4		≥ 4				
	F	%	F	%			
ERACS	52	96,27	2	3,70	54	100,0	0,001 *f*
Conventional	41	73,21	15	26,79	56	100,0	

Based on Table 9, it can be seen that out of 54 people (49.09%) respondents who underwent SC delivery in the ERACS method, 52 patients (96.27) had a VAS score of <4 (96.27%) and 2 people (3.7%) had a VAS score of ≥ 4. Meanwhile, of the 56 (50.91%) respondents who underwent conventional SC delivery, there were 41 people (73.21%) who had a VAS score of <4 and 15 people (26.79%) who had a VAS score of ≥ 4. The results of statistical tests using fisher's Exact test because there are <5 values obtained p-value results of 0.001 < 0.05. So it can be concluded that there are differences in pain in postpartum SC patients with ERACS and conventional methods at Hanau Hospital, Central Kalimantan Province.

Differences in Repeat Care in SC Delivery ERACS and Conventional methods

The differences in repeat care in sc labor eracs and conventional methods in this study can be seen in the following table:

Table 10. Differences in Replay in SC childbirth ERACS and Conventional methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

SC Method	Treat Repeat				Total	%	*p-value*
	Yes		No				
	F	%	F	%			
ERACS	0	0	54	100	54	100,0	0,248 *f*
Conventional	2	3,57	54	96,43	56	100,0	

Based on Table 10, it can be seen that of the 54 people (49.09%) respondents who underwent SC delivery in the ERACS method, all respondents did not repeat treatment (100%). Meanwhile, of the 56 (50.91%) respondents who underwent conventional SC delivery, there were 2 people (3.57%) who were treated for repeat and 54 people (96.43%) who were not treated repeatedly. The results of statistical tests using fisher's Exact test because there are <5 values obtained p-values of 0.496 > 0.05. So it can be concluded that there is no difference in repeat hospitalization in SC ERACS and conventional delivery method patients at Hanau Hospital, Central Kalimantan Province.

Differences in the Incidence of Infection in SC delivery ERACS and Conventional methods

The difference in the incidence of infection in the delivery of sc eracs and conventional methods in this study can be seen in the following table:

Table 11. Differences in the Incidence of Infection in SC childbirth ERACS and Conventional methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

SC Method	Infection				Total	%	*p-value*
	Yes		no				
	F	%	F	%			
ERACS	0	0	54	100	54	100,0	0,509 *f*
Conventional	1	1,78	55	98,21	56	100,0	

f: fisher's exact

Based on Table 11, it can be seen that out of 54 people (49.09%) respondents who underwent SC delivery in the ERACS method, all respondents were not infected (100%). While of the 56 (50.91%) respondents who underwent conventional SC delivery, there was 1 person (1.78%) who was infected and 55 people (98.21%) who were not infected. The results of statistical tests using fisher's Exact test because there are <5 values obtained p-value results of 0.509 > 0.05. So it can be concluded that there is no difference in the incidence of infection in SC ERACS and conventional delivery method patients at Hanau Hospital, Central Kalimantan Province.

Difference in Treatment Costs in SC delivery ERACS and Conventional methods

In the univariate analysis, treatment costs were assessed based on 5 groups, namely: 1. < IDR 6,999,999, 2. IDR 7,000,000 – 8,999,999, 3. IDR 9,000,000 – 10,999,999, 4. IDR 11,000,000 – 12,999,999 and 5. >Rp.13,000,000. To facilitate bivariate analysis, treatment costs are grouped into < Rp.9,000,000 and ≥ Rp.9,000,000. The difference in treatment costs in SC delivery ERACS and conventional methods in this study can be seen in the following table:

Table 12. Differences in Treatment Costs in SC childbirth ERACS and Conventional methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Metode SC	Maintenance Cost				Total	%	*p-value*
	<Rp9.000.000		≥Rp9.000.000				
	F	%	F	%			
ERACS	21	38,89	33	61,11	54	100,0	0,731
Conventional	20	35,71	36	64,29	56	100,0	

Based on Table 12, it can be seen that of 54 people (49.09%) respondents who underwent SC delivery in the ERACS method, 21 people (38.89%) needed < costs Rp.9,000,000 and 33 people (61.11%) needed treatment costs ≥ Rp.9,000,000. While of the 56 (50.91%) respondents who underwent conventional SC delivery, there were 20 people (35.71%) requiring < costs Rp.9,000,000 and 36 people (64.29%) requiring treatment costs ≥ Rp.9,000,000. The results of statistical tests using chi-square test (continuity correction) obtained p-value results of 0.731 > 0.05. So it can be concluded

that there is no difference in treatment costs between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province.

Differences in Anxiety Levels in SC Labor ERACS and Conventional methods

In univariate analysis, anxiety was assessed by grouping into 5 groups, namely: 1. APAIS value <7: not anxious, 2. APAIS value 7-12: mild anxiety, 3. APAIS value 13-18: moderate anxiety, 4. APAIS value 19-24: severe anxiety and 5. And the value of APAIS 25-30 : panic. To facilitate bivariate analysis, anxiety levels were grouped into < APAIS values <18 and ≥ 18. The difference in anxiety levels in the SC ERACS method and conventional in this study can be seen in the following table:

Table 13. Differences in Anxiety Levels in SC ERACS and Conventional Methods at Hanau Hospital, Seruyan Regency, Central Kalimantan Province for the 2023 Period

Metode SC	Anxiety				Total	%	*p-value*
	<18		≥18				
	F	%	F	%			
ERACS	40	74,07	14	25,93	54	100,0	0,016
Conventional	29	51,78	27	48,21	56	100,0	

Based on Table 13, it can be seen that out of 54 people (49.09%) respondents who underwent SC delivery ERACS method, 40 people (74.07%) experienced mild-moderate anxiety and 14 people (25.93%) experienced severe anxiety/panic. While of the 56 (50.91%) respondents who underwent conventional SC delivery, there were 29 people (51.78%) experiencing mild-moderate anxiety and 27 people (48.21%) experiencing severe anxiety / panic. The results of statistical tests using chi-square test (continuity correction) obtained p-value results of 0.016 < 0.05. So it can be concluded that there is a difference in anxiety levels between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province.

Multivariate Analysis

The multivariate analysis used in this study used multiple logistic regression tests. This was done to determine the output of the ERACS method of SC delivery compared to conventional methods at Hanau Hospital, Central Kalimantan Province. The results of the Multivariate Analysis of Multiple Logistic Regression can be seen in 5 stages in determining what outcomes have the most differences related to the SC delivery method at Hanau Hospital, Central Kalimantan Province. Selection in each stage is done by eliminating or removing the variable with the largest P-value so that one variable will be selected in the next stage. As can be seen in table 4.13, that in step 1, the variable that has the largest p-value and low coefficient (B) value is infection, then the variable is excluded / eliminated so that in stage / step 2 only five more variables remain. Furthermore, in the second stage, the eliminated variable is the length of treatment with a p-value of 0.641. Then in the third stage, the maintenance cost variable is eliminated because it has the largest P-value among all the remaining variables, which is 0.432. Furthermore, in the fourth stage only three variables remain to be tested, namely pain, repetition and anxiety variables. From the fourth stage, it can be seen that the pain variable is the most different variable because it has the smallest P-value, which is 0.004 with a beta exponent value of 2.258.

Discussion

Differences in Length of Care in SC delivery ERACS and Conventional methods at Hanau Hospital, Central Kalimantan Province

From the results of this study, it can be seen that there were 54 people (50%) respondents who underwent SC delivery ERACS method, there were 29 people (53.70%) who were treated for < 48 hours and 25 people (46.30%) who were treated for ≥ 48 hours. Meanwhile, of the 54 respondents who underwent conventional SC delivery, there were 23 people (42.59%) who had a long stay of < 48 hours and 31 people (57.41%) who had a long stay of ≥ 48 hours. The results of statistical tests using chi-square test (continuity correction) obtained p-value results of 0.185 > 0.05. So it can be concluded that there is no difference in the length of patient care between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province.

Enhanced recovery after surgery (ERACS) delivery methods in hospital delivery services provide effective interventions both before, during and after the surgical process. The interventions provided are patient education, explanation of the risks of action, administration of high-carbohydrate fluids, prevention of nausea and vomiting, minimal manipulation of surgical techniques, application of various pain management, faster postoperative feeding, faster catheter removal time and early mobilization. Continuous application of ERACS produces better results, one of which is in a shorter treatment time, 24 – 48 hours after delivery. (Kohlhase and Tussey, 2019). In many other studies the application of ERACS can reduce the length of patient stay, but in this study, there was no significant difference. This happened not because the ERACS delivery method failed, but the conventional method at Hanau Hospital used had also provided a short length of treatment (Pujić et al., 2022; Tamang et al., 2021).

This is different from the results of previous studies. Decreasing the length of days of care is a parameter that is widely studied in ERP implementation. The ERAS method reduces the length of treatment days and cost savings without increasing risks such as a 30-day readmission rate. Even the ERAS method reduces the incidence of complications and the value of the postoperative pain scale. Early discharge of patients from illness can increase bonding between mother and baby. Considerations in discharging the patient based on the health condition of the baby, which is an important outcome for the patient. The acceleration of patient recovery results from good pain management, intraoperative treatment and early administration of solid food, thus maintaining body homeostasis, so that patients can immediately go home from the hospital and postoperative complications decrease (Darwish et al., 2022).

Miller et al (2014) also found that the Average length of stay (LOS) was 5 days in the ERAS group compared to 7 days in the traditional group (P <0.001). The decrease in LOS was significant for both open procedures (median 6 vs 7 days, P = 0.01), and laparoscopic procedures (4 vs 6 days, P <0.0001). ERAS patients had fewer urinary tract infections (13% vs. 24%, P=0.03). Based on a journal review by j.jikrun (2021), in the postoperative phase there were 2 studies which after being given intervention also reduced the length of treatment days and the remaining 2 studies there was no difference in the length of treatment days (Jaata, 2021). Sunanda G, et al, 2022 in their study also found significant differences in patient mobilization (7.73 + 1.80 vs 63.63 + 6.76, p<0.0001), length of patient care (2.85 + 0.50 vs 5.25 + 0.61, p < 0.0001). Meng et al (2021) found that with the ERACS method, the length of treatment can be reduced to <24 hours and speed up the recovery process. This faster recovery can improve the mother-baby relationship (Corso et al., 2017; Darwish et al., 2022).

Differences in Pain in SC labor ERACS and Conventional methods

The results of this study showed that 54 people (50%) respondents who underwent SC delivery ERACS method, 52 patients (96.27) had a VAS score of <4 (96.27%) and 2 people (3.7%) had a VAS score of ≥ 4. Meanwhile, of the 54 (50%) respondents who underwent conventional SC delivery, there were 40 people (74.07%) who had a VAS score of <4 and 14 people (25.93%) who had a VAS score of ≥ 4. The results of statistical tests using fisher's Exact test because there are <5 values obtained p-value results of 0.001 < 0.05. So it can be concluded that there are differences in pain in postpartum SC patients with ERACS and conventional methods at Hanau Hospital, Central Kalimantan Province.

This is in accordance with research conducted at Sulaimani Maternity Teaching Hospital which included pregnant women without complications of hypertension and diabetes mellitus in the study. In the ERACS intervention group, intraoperative treatment in the form of Marcaine infiltation for field block was given, and postoperative treatment in the form of painkillers according to VAS (Visual Analogue Scale) assessment; drink water after 2 hours after surgery and be given solid food after seven to 8 hours after surgery; early mobilization after 4 to 5 hours of completion of surgery; initiation of breastfeeding and release of the urinary catheter tube after 6 hours of completion of surgery. From the results of the study, it was found that the group that received 100% ERAS intervention could mobilize after 4-5 hours after surgery. Patients also have lower VAS scores, and are 100% discharged from the hospital in less than 24 hours (Hedderson et al., 2019; Jaata, 2021; Lama et al., 2022).

Differences in Repeat Care in SC Delivery ERACS and Conventional methods

The results of this study showed that 54 people (50%) respondents who underwent SC delivery ERACS method, all respondents did not repeat treatment (100%). Meanwhile, of the 54 (50%) respondents who underwent conventional SC delivery, there were 2 people (3.70%) who were treated for repeat and 52 people (96.30%) who were not treated for retreatment. The results of statistical tests using fisher's Exact test because there are <5 values obtained p-values of 0.257 > 0.05. So it can be concluded that there is no difference in repeat hospitalization in SC ERACS and conventional delivery method patients at Hanau Hospital, Central Kalimantan Province.

Miller et al (2014) also found that the rate of remission was lower in ERAS patients (9.8% vs 20.2%, P = 0.02) in ERACS postoperative patients compared to conventional. The ERAS method reduces the length of hospitalization days and cost savings without increasing risks such as repeat hospitalization rates within 30 days. Even the ERAS method reduces the incidence of complications and the value of the postoperative pain scale. Early discharge of patients from illness can increase bonding between mother and baby. Considerations in discharging the patient based on the health condition of the baby, which is an important outcome for the patient. The acceleration of patient recovery results from good pain management, intraoperative treatment and early administration of solid food, thus maintaining body homeostasis, so that patients can immediately go home from the hospital and postoperative complications decrease (Lama et al., 2022).

In a study conducted by Meng et al, 2021, it was also found that the results of the ERACS method of SC delivery did not increase the incidence of repeat hospitalization, even at the frequency of the number of repeat hospitalizations, it was seen that the ERACS method of SC delivery could reduce the incidence of repeat hospitalization compared to conventional methods, although in further analysis it was not significant, just like the results in this study (Meng et al., 2021).

Difference in Treatment Costs in SC delivery ERACS and Conventional methods

The results of this study showed that of 54 people (50%) respondents who underwent SC delivery in the ERACS method, 21 people (38.89%) needed < Rp.9,000,000 and 33 people (61.11%) needed ≥ Rp.9,000,000 treatment. While of the 54 (50%) respondents who underwent conventional SC delivery, there were 20 people (37.04%) requiring < costs Rp.9,000,000 and 34 people (62.96%) requiring treatment costs ≥ Rp.9,000,000. Statistical test results using chi-square test (continuity correction) obtained p-value results of 0.731 > 0.05. So it can be concluded that there is no difference in treatment costs between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province. The results of this study are different from the research of Luciana M, et al (2020) which found a decrease in length of care (3.2 vs 2.7 days), lower rates ($3,970 vs $3,621). The ERAS program in each hospital is different and has its own protocols, but has in common faster feeding after surgery, early mobilization and accelerated time to remove urinary catheters. The decrease in the length of days of stay in the ERAS program also has implications for considerable cost savings both during treatment and after hospital treatment (McCoy et al., 2021). The ERACS method can speed up the recovery process. This faster recovery can improve the relationship between mother and baby. This can reduce maternal expenses and hospital financing (Meng et al., 2021).

Differences in Anxiety Levels in SC Labor ERACS and Conventional methods

The results of this study showed that out of 54 people (50%) respondents who underwent SC delivery of the ERACS method, 40 people (74.07%) experienced mild-moderate anxiety and 14 people (25.93%) experienced severe anxiety/panic. While of the 54 (50%) respondents who underwent conventional SC delivery, there were 29 people (53.70%) experiencing mild-moderate anxiety and 25 people (46.27%) experiencing severe anxiety / panic. The results of statistical tests using chi-square test (continuity correction) obtained p-value results of 0.013 < 0.05. So it can be concluded that there is a difference in anxiety levels between SC ERACS and conventional delivery methods at Hanau Hospital, Central Kalimantan Province.

Prokopowicz A et al (2020) examined that postoperative patients felt more anxious (p<0.005, Median=4, IQR=5), compared to patients 6 hours postoperatively (Median=3, IQR=4). A weak relationship between anxiety and pain was found (r=0.264; p<0.01) (Prokopowicz et al., 2021). In this study it was stated that negative thoughts and persistent pain cause excessive levels of anxiety. The

ERACS method can improve the relationship between mother and baby. This good relationship between mother and baby can also reduce postpartum anxiety (Meng et al., 2021; Ratnasari and Warmiyanti, 2022).

4. CONCLUSION

There is no difference in the length of postoperative treatment in the ERACS method of cesarean section delivery method with conventional at Hanau Hospital. There are differences in pain scores in the ERACS method of Cesarean Section Delivery with conventional methods at Hanau Hospital. There is no difference in postoperative re-treatment in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital. There is no difference in postoperative infection in the ERACS method of Cesarean Section Delivery method with conventional at Hanau Hospital. There is no difference in the cost of treatment in the ERACS method of Cesarean Section Delivery with conventional at Hanau Hospital.There is a difference in anxiety before surgery in the ERACS method of Cesarean Section Delivery with conventional at Hanau Hospital.

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