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Effectiveness of ERAS Nursing Programe to Pain Level, Early Mobilization and Length of Stay for Patients Post Cholecystectomy Laparoscopy in Pluit Hospital, Jakarta

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KEYWORDS
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ABSTRACT
Laparoscopic Cholecystectomy is method surgery to choice. With the ERAS, role of nurses is high to care the patient recovery after surgery can reducing length of stay in hospital, post operative hospitalization early mobilization and level pain have been proven. However, most studies have been carried out in medical research. In this study, we evaluated the efficacy of ERAS compared with control perioperative period care for Laparoscopic Cholecystectomy. The research has been designed as a quasi-experiment one group control and group intervention. The study was conducted at Pluit Hospital, Jakarta from July-August 2023 on a total of 65 patients with 40 patients each in the ERAS group and 25 patients control group. The main outcome was the length of hospital stay after surgery. The secondary outcomes Numeric Rating Scale (NRS) scores for post operative pain and early mobilization after surgery. The ERAS group was provided with perioperative education, pre operation 2 hours oral carbohydrates, intra operative insulation, early mobilization post operative, multimodal analgesia (colaborative intervention) and early activity. In the ERAS group Numeric Rating Scale after surgery was lower (1,87 vs 5,72, p value < 0,001), more earlier mobilization (3,45 hours vs 9,12 hours, p value < 0,001) and the length of hospital stay after surgery was shorter (27,13 hours vs 74,84 hours, p value < 0,001). Conclusion: Even the research in X hospital Jakarta, the use of the ERAS Nursing Programme concept for Laparoscopic Cholecystectomy surgery can reduce the length of hospital stay and lessen the pain of patients after surgery, early mobilization and accelerate post operative recovery.

Introduction

Surgery is one of the medical procedures that is carried out invasively to diagnose or treat a disease, disability or injury, as well as treat conditions that are impossible to cure with simple actions or medicines (Potter et al., 2016). The World Health Organization (World Health Organization, 2020) stated that the number of patients undergoing surgical procedures has increased from year to year. WHO noted that in 2020 there were 234 million patients in all hospitals in the world. The Ministry of Health of the Republic of Indonesia (Kemenkes) in 2020 stated that in 2019 there were 148 million patients in all hospitals in the world with surgery, while in Indonesia surgery ranked 11th out of the first 50 disease treatments in hospitals throughout Indonesia with 1.2 million surgical patients (Prima et al., 2023)

Some of the complications that can arise from surgery include fever, discomfort in the mouth and throat, wounds after surgery, longer recovery time, discomfort during bowel movements and bowel movements, depression, bleeding, infection, and even death. (Anasthesiology, 2021).

For health workers who handle the surgical process to carry out their duties in accordance with the SOP, because the surgical process with different types of surgery can affect the length of treatment so that respondents can be treated according to the right time. (Achrekar, 2022).

The Third National Health and Nutrition Examination Survey (NHANES III, 2019) states that the prevalence of cholelitiasis in the United States is 7.9% in men and 16.6% in women. The incidence rate in Asia, the prevalence of collegiate disease ranges from 3 to 30%. In one study, it was found that the prevalence of cholelithiasis was 3.2% in Japan, 10.7% in China, 7.1% in North India, and 5% in Taiwan (Budianto et al., 2018).

The novelty of this research lies in the focus on integrating the role of nurses in the ERAS protocol which aims to reduce postoperative complications and speed up patient recovery. This research will also explore the implementation of evidence-based practices in perioperative management in Indonesia, which has not been widely studied before. Additionally, this study will assess the effectiveness of the ERAS protocol in the context of Indonesian culture and health systems, making an important contribution to improving the quality of surgical care in the country.

In the ERAS program, the role of nurses is very important to improve the implementation of perioperative management, reduce patient stress response in facing surgery and accelerate patient recovery (Breivik et al., 2008). This line of care is integrated through the pre-operative, intra-operative, and post-operative phases and return home after surgery. The role of nurses in these phases is critical and represents a model of perioperative care by re-examining traditional practices and replacing them with evidence-based good practices when needed (Chang et al., 2013). It also includes every phase of the patient's journey through the surgical process. The main principles of the ERAS protocol include pre-operative counseling, preoperative nutrition, avoiding long perioperative fasting, and fulfillment of needs during fasting with carbohydrates for up to 2 hours pre-operatively, standard anesthesia and analgesic regimens (epidural and nonopioid analgesia) and early mobilization. (Achrekar, 2022).

Research Methods

This study used quasy experiments and post tests only in the control group by assessing the differences in patients in the control group who were only given the intervention in the post op phase and the intervention group that would be given the

intervention as a whole. The research was conducted in the surgical nursing ward of the hospital. X, Jakarta. The research was conducted in July-August 2023. The sample of this study is patients who underwent laparoscopic cholesistektomy. The study took all populations (total sampling) of patients who were laparoscopic cholecystectomy with 65 patients (25 for the control group and 40 patients for the intervention group). Ancova test was used to analyze Effectiveness of ERAS Nursing Programe to Pain Level, Early Mobilization and Length of Stay for Patients Post Cholecystectomy Laparoscopy.

The data collection technique was carried out using question sheets and observation sheets that will be asked and direct observation of patients in the pre-operative phase, intra-operative phase, post-operative phase and post-Cholecystectomy Laparoscopy discharge phase. The first part of the instrument is used for the patient's identity which includes name, age, gender, education, surgical history, comorbidities. The next instrument is in the form of questions and recording of the observation results of post-Cholecystectomy Laparoscopy patients. including pain level, postoperative mobilization and discharge criteria to determine patient discharge.

Results and Discussions

Univariate Analysis

Sample Characteristics

Table 1 Distribution of Subjects by Characteristics and Research Groups

It	Variable	Subject Proportion (%)	
		Group Intervention (N=40)	Group Control (N=25)
1	**Age**		
	16-25 years	3 (7,5%)	1 (4%)
	26-35 years old	4 (10%)	1 (4%)
	36-45 years old	7 (17,5%)	4 (16%)
	46-55 years old	8 (20%)	5 (20%)
	56-65 years old	6 (15%)	4 (16%)
	>65 years	12 (30%)	10 (40%)
	Gender		
	Man	19 (47,5%)	13 (52%)
	Woman	21 (52,5%)	12 (48%)
	Comorbidities		
2	Heart	3 (7,5%)	2 (8%)
	Diabetes	5 (15%)	1 (4%)
	Hypertension	17 (42,5%)	7 (28%)
	Asthma	0 (0%)	0 (0%)
3	CHF	0 (0%)	0 (0%)
	Anemia	0 (0%)	0 (0%)
	None	14 (32%)	15 (60%)

Table 1 shows that in the intervention group and control group many patients were >65 years of age (30% in the intervention group and 40% in the control group). Meanwhile, the average age in the intervention group was 52 years while the average age in the control group was 58 years. In the intervention group, the minimum age was 16 years and the maximum age was 86 years, while in the control group, the minimum age was 23 years and the maximum age was 89 years. Respondents at risk age (≥40 years)

would have a 0.22 times greater risk of developing choleliosis. This study supports the theory (Gyedu et al., 2015) that cholelitiasis often occurs in people aged 50-70 years, and is rarely found in adolescents. The older you get, the greater the risk of cholelithiasis. Age can be a risk factor for cholelythiasis, caused by an increase in bile saturation due to a decrease in the activity of 7α hydroxylase which is an enzyme limiting rate for cholesterol biosynthesis. (N, 2013).

Table 2 Distribution of Pain Level Scores in Control Group and Intervention Group

It	Variable	Subject Proportion (%)	
	Pain Level	Group Intervention (N=40)	Group Control (N=25)
	0 (No Pain)	0 (0%)	0 (0%)
	1-3 (Mild Pain)	38 (95%)	2 (8%)
	4-6 (Moderate Pain)	2 (5%)	16 (64%)
	7-10 (severe pain)	0 (0%)	7 (28%)

Table 2 obtained data in the intervention group in the category of mild pain as much as 95%, moderate pain 5%. Meanwhile, in the control group, mild pain was 8%, moderate pain was 64%, and severe pain was 28%. In the intervention group, the mild pain category was the most, while the control group had the most moderate pain (Delgado et al., 2018).

Table 3 Frequency Distribution of Mobilization of Intervention Group and Control Group

It	Variable	Subject Proportion (%)	
	Early Mobilization	Group Intervention (N=40)	Group Control (N=25)
	Good	40 (100%)	6 (24%)
	Not Good	0 (0%	19 (76%)

Table 3 shows that data were obtained in the intervention group for early mobilization, all respondents were 100% categorized as early mobilization in the good category. Meanwhile, in the control group, early mobilization data was obtained in the good category of 24% and poor as much as 76% (J. Li et al., 2019).

Table 4 Distribution of Respondents by Early Mobilization Score in the Intervention Group and Control Group

Variable	*Mean*	Standard Deviation	Min	Max
Intervention Groups				
Early Mobilization	**3,45**	0,846	2	6
Control Group				
Early Mobilization	**9,12**	1,054	8	12

Table 4 shows that the 40 respondents in the intervention group had an average score for early mobilization of 3.45 hours after surgery and a standard deviation of 0.486 with a minimum of 4 hours and a maximum of 6 hours, while for 25 respondents in the control group had an average score of 9.12 hours after surgery with a standard deviation

of 1.054 with a minimum of 8 and a maximum of 12 (Tall & Nygren, 2020). Thus, the intervention group carried out stages for mobilization according to the time criteria, while in the control group did not carry out the stages for mobilization due to pain complaints (Macones et al., 2019).

Table 5 Distribution of Respondents by Length of Care Score in the Intervention Group and Control Group

Variable	*Mean*	Standard Deviation	Min	Max
Intervention Groups				
Long Treatment	27,13	13,242	18	96
Control Group				
Long Treatment	74,84	27,052	24	144

(Source: Primary Data, 2023)

Table 5 shows that the 40 respondents in the intervention group have an average score for the length of care of 27.13 hours and a standard deviation of 13.242 with a minimum length of care of 18 hours and a maximum of 96 hours, while for 25 respondents in the control group have an average score of 74.84 hours of treatment with a standard deviation of 27.052 with a minimum length of care of 24 hours and a maximum of 144 (M. Li et al., 2022).

Table 6 Distribution of Respondents by Pain Level Score in the Intervention Group and Control Group

Variable	*Mean*	Standard Deviation	Min	Max
Intervention Groups				
Pain Level	1,9	0,900	1	4
Control Group				
Pain Level	5,7	1,487	3	9

Table 6 shows that the 40 respondents in the intervention group have an average score for pain level of 1.9 and a standard deviation of 0.900 with a minimum of 1 and a maximum of 4, while for 25 respondents in the control group have an average pain level score of 5.7 with a standard deviation of 1.487 with a minimum of 3 and a maximum of 9. For the intervention group, it was categorized as mild pain while in the control group, it was categorized as moderate pain.

Bivariate Analysis

Normality Test

Table 7 Results of Normality Test of Pain Levels of the Intervention Group and Control Group

It	Variable	*Skewness*	Std. Error	Result	Information
1	Pain Intervention	-0,124	0,374	-0,33	Normally distributed data
2	Pain Control	0,116	0,464	0,25	Normally distributed data

(Source: Primary Data, 2023)

Table 7 shows that the pain variables (intervention group and control group) have a normal distribution of outcomes between -1.96 (value -2) to +1.96 (value +2).

Table 8 Results of Early Mobilization Normality Test for Intervention Groups and Control Groups

It	Variable	*Skewness*	Std. Error	Result	Information
1	Mobilization Intervention	-1,940	1,374	-1,41	Normally distributed data
2	Mobilization Control	-0,483	0,464	-1,04	Normally distributed data

Table 8 shows that the early mobilization variables (intervention group and control group) have a normal distribution of outcomes ranging from -1.96 (value -2) to +1.96 (value +2).

Table 9 Results of the Normality Test of the Duration of Treatment in the Intervention Group and Control Group

It	Variable	*Skewness*	Std. Error	Result	Information
1	LongCare Intervention	-0,427	0,374	-1,41	Normally distributed data
2	LongCare Control	-0,398	0,464	-0,85	Normally distributed data

Table 9 shows that the variables of length of treatment (intervention group and control group) have a normal distribution of outcomes between -1.96 (value -2) to +1.96 (value +2).

Multivariate Analysis

Table 10 Multivariate Analysis of the Effect of ERAS *Nursing* Program on Pain Level by Controlling *for Confounding* Variables of Age, Gender and Comorbidities

Variable	B	P value
Intercept	6,868	0,001
Intervention Methods	3,867	0,001
Age	-0,045	0,693
Gender	0,363	0,222
DiseasesCompanion	-0,233	0,541

Based on table 10, it can be seen that the results of the ancova multivariate analysis show that there is a significant influence of the intervention method (ERAS *Nursing* Program) on the level of pain (*p-value 0.001)* after being controlled by age, sex and comorbidities. The results of the analysis showed that the variables of age (*p-value* = -0.045), sex (*p-value* = 0.363) and comorbidities (*p-value* = -0.233) were not significantly related to the level of pain of patients. This means that the variables of age, gender and comorbidities do not affect the patient's pain level. In this study, the decrease in pain level means purely due to the intervention factor of the ERAS *Nursing* Program.

Table 11 Multivariate Analysis of the Effect of ERAS *Nursing* Program on Early Mobilization with the control of *Confounding* Variables Age, Gender and Comorbidities

Variable	B	P value
Intercept	1,790	0,001
Intervention Methods	0,735	0,001
Age	-0,025	0,463
Gender	0,134	0,130
DiseasesCompanion	-0,019	0,868

Based on table 11, it can be seen that the results of the ancova multivariate analysis show that there is a significant influence of the intervention method (ERAS *Nursing* Program) on early mobilization (*p-value = 0.001)* after being controlled by age, gender and comorbidities. The results of the analysis showed that the variables of age (*p-value* = - 0.025), sex (*p-value* = 0.134) and comorbidities (*p-value* = 0.019) were not significantly related to the early mobilization of patients. This means that the variables of age, sex and comorbidities do not affect the early mobilization of patients. In this study, there was an increase in early mobilization of patients after laparoscopic cholecystectomy. The increase in postoperative mobilization can be attributed to the decrease in postoperative pain levels purely due to the ERAS *Nursing* Program intervention factors.

Table 12 Multivariate Analysis of the Effect of ERAS *Nursing* Program on Length of Care Controlled by *Confounding* Variables Age, Gender and Comorbidities

Variable	B	P value
Intercept	1,131	0,001
Intervention Methods	0,722	0,001
Age	0,056	0,058
Gender	0,154	0,420
DiseasesCompanion	-0,107	0,268

Based on table 12, it can be seen that the results of the ancova multivariate analysis show that there is a significant influence of the intervention method (ERAS *Nursing* Program) on the length of treatment (*p-value 0.001)* after being controlled by age, gender and comorbidities. The results of the analysis showed that the variables of age (*p-value* = 0.056), sex (*p-value* = 0.154) and comorbidities (*p-value* = -0.107) were not significantly related to the length of patient treatment. This means that the variables of age, gender and comorbidities do not affect the length of patient treatment. In this study, there was a decrease in the length of treatment, which means that it is purely due to the intervention factor of the ERAS *Nursing* Program.

Conclusion

The study showed that the implementation of the ERAS Nursing Program could significantly reduce pain levels (1.9 vs 5.7), early mobilization (3.45 vs 9.12) and length of hospital stay (27.13 hours vs 74.84 hours). The division of duties between surgeons, anesthesiologists and nurses in charge, patients and families who are given intervention from before admission to the hospital to perform laparoscopic cholecystectomy until returning to undergo further recovery at home. They were given detailed interventions and laparoscopic cholestomy techniques to achieve the patient's goal, which is to accelerate postoperative recovery by accelerating mobilization and helping patients to shorten the length of treatment and reduce pain levels so that patients can move more quickly as before.

References

Achrekar, M. S. (2022). Enhanced recovery after surgery (ERAS) nursing programme. *Asia-Pacific journal of oncology nursing*, *9*(7).

Anasthesiology, A. A. of N. (2021). *Enhanced recovery after surgery*. https://www.aana.com/practice/clinical-practice-resources/enhanced-recovery-after-surgery

Breivik, H., Borchgrevink, P.-C., Allen, S.-M., Rosseland, L.-A., Romundstad, L., Breivik Hals, E. K., Kvarstein, G., & Stubhaug, A. (2008). Assessment of pain. *British journal of anaesthesia*, *101*(1), 17–24.

Budianto, B., Agustanti, D., & Astini, Y. (2018). Pengaruh Edukasi Batuk Efektif terhadap Perilaku Batuk Efektif Pasien Post Operasi dengan Anestesi Umum. *Jurnal Ilmiah Keperawatan Sai Betik*, *13*(2), 180.

Chang, Y. R., Jang, J.-Y., Kwon, W., Park, J. W., Kang, M. J., Ryu, J. K., Kim, Y. T., Yun, Y.-B., & Kim, S.-W. (2013). Changes in demographic features of gallstone disease: 30 years of surgically treated patients. *Gut and liver*, *7*(6), 719.

Delgado, D. A., Lambert, B. S., Boutris, N., McCulloch, P. C., Robbins, A. B., Moreno, M. R., & Harris, J. D. (2018). Validation of digital visual analog scale pain scoring with a traditional paper-based visual analog scale in adults. *JAAOS Global Research & Reviews*, *2*(3), e088.

Gyedu, A., Adae-Aboagye, K., & Badu-Peprah, A. (2015). Prevalence of cholelithiasis among persons undergoing abdominal ultrasound at the Komfo Anokye Teaching Hospital, Kumasi, Ghana. *African health sciences*, *15*(1), 246–252.

Li, J., Zhu, H., & Liao, R. (2019). Enhanced recovery after surgery (ERAS) pathway for primary hip and knee arthroplasty: study protocol for a randomized controlled trial. *Trials*, *20*, 1–8.

Li, M., Chen, X., Wang, C., Li, S., Xia, B., Wu, W., Zhang, C., & He, Y. (2022). *Safety and Efficacy of Enhanced recovery after laparoscopic cholecystectomy surgery: a single-center randomized controlled study*.

Macones, G. A., Caughey, A. B., Wood, S. L., Wrench, I. J., Huang, J., Norman, M., Pettersson, K., Fawcett, W. J., Shalabi, M. M., & Metcalfe, A. (2019). Guidelines for postoperative care in cesarean delivery: Enhanced Recovery After Surgery (ERAS) Society recommendations (part 3). *American journal of obstetrics and gynecology*, *221*(3), 247-e1.

N, G. E. (2013). *Gallstones. PubMed. 19*(2), 49–55.

Potter, P. A., Perry, A. G., Stockert, P. A., Hall, A., & Peterson, V. (2016). *Clinical Companion for Fundamentals of Nursing-E-Book: Just the Facts*. Elsevier Health Sciences.

Prima, A., Hamdi, T., Sitepu, J. F., Ghozali, I., & Lubis, A. (2023). Thoracic spinal anaesthesia for paediatric upper extremity surgery in limited-resource hospital: a case report. *Ain-Shams Journal of Anesthesiology*, *15*(1), 72.

Tall, J., & Nygren, J. (2020). Preoperative fasting and carbohydrate treatment. *Enhanced Recovery After Surgery: A Complete Guide to Optimizing Outcomes*, 31–36.

World Health Organization. (2020). Raising tobacco taxes and prices for a healthy and prosperous indonesia. *World Health Organization*, 30.