PENELITIAN

Preliminary Survey in Preparation for The Implementation of ERAS at Dr Soetomo Hospital

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ABSTRACT

Background: Medical science has developed rapidly. One of them is ERAS (Enhanced Recovery After Surgery) which is a multidisciplinary team development pathway for perioperative methods that offer a variety of benefits. Some of the advantages of the ERAS method are speeding up the post-operative recovery period, economic benefits, and shortening the Length of Stay (LOS) by minimizing surgical stress so that the patient quickly returns to a normal physiological state. Objective: This study aims to analyze the readiness of the team that will support the ERAS application at General Academic Hospital (RSUD) Dr Soetomo. **Methods:** This is an observational analytic study with a cross-sectional design using a questionnaire. Patient baseline data were taken from the examination at the anesthesiology outpatient clinic. Assessment for patient understanding was carried out directly after a brief explanation of ERAS method by the researcher. The patient's level of understanding was assessed by two investigators and rated on a scale of 1 to 5. Primary data and assessment of understanding of doctors and medical personnel were filled in independently by research subjects on online forms and rated on a scale of 1 to 5. Data was collected from March 23 to April 14 2022, at RSUD Dr. Soetomo Surabaya. The analysis results are considered significant if the p-value is less than 0.05. The analysis was carried out using SPSS 19 software. **Results:** Most patients planned to undergo surgery in the field of urology (82.9%), followed by caesarean section (14.6), and almost all patients or their families agreed to surgery using the ERAS method (95.1%). The medical team consists of 110 doctors from 4 areas of expertise, namely specialist doctors and residents in anesthesiology, urology surgery, obstetrics and gynecology, as well as orthopedics and traumatology. The health team consists of 56 personnel, namely anesthesiologists, surgeons, recovery room nurses, nutritionists and pharmacists. The majority (61%) of health workers had heard about ERAS and stated that ERAS was ready to be implemented at RSUD Dr. Soetomo (89%). Most doctors stated that ERAS was ready to be implemented at Dr. Soetomo and its human resources and facilities are considered qualified. **Conclusion:** The ERAS method at RSUD Dr. Soetomo is considered quite ready to start, especially the Obsgyn study program, which is supposed to have an excellent level of understanding of ERAS and is enthusiastic to begin immediately. The patient group can be said to understand and accept the ERAS method well as a perioperative method for handling their cases..

Keyword: ERAS, patient, doctor, health worker

Introduction

The Enhanced Recovery After Surgery (ERAS) program has grown rapidly worldwide and has attracted the attention of all disciplines, especially those related to surgery and anaesthesia. The ERAS program has been proven to provide various benefits, especially for the patient, such as better outcomes, fewer complications, accelerated recovery and faster returns to normal organ function so that returning to daily activities can be quicker and better. [1,2] Medical staff and health care providers also benefit because a good treatment process can increase patient satisfaction. Hospital managers also benefit because apart from being able to provide better care, the costs required are much lower, and the general public also experiences better care at a lower cost.

The involvement and collaboration of various professions and disciplines are very much needed in treating patients who will undergo surgery because the ERAS program must be carried out from the start, even before the patient enters the hospital. Thus, each component and stakeholder have a vital role in producing the expected output.[1,3] For this reason, the ERAS® Society has built a training program for implementing ERAS in which a team representing all healthcare providers should be involved.

The pre-operative period elements of the ERAS protocol are the easiest and most impactful when done well. The pre-operative period of the ERAS protocol element is the earliest treatment action and determines the effect of subsequent perioperative care. The ERAS pre-operative protocol can be performed in any hospital without sophisticated equipment.[3,4] However, the implementation of the ERAS protocol still faces various obstacles. This is because the ERAS protocol changes the existing surgical treatment doctrine.[3,5]

According to a Canadian study, out of the 18 elements of the ERAS protocol, only two had a compliance rate of more than 75%.[6] This shows that even developed countries still have obstacles in implementing the ERAS protocol correctly. In developing countries, surgical management has two additional challenges: facilities' availability and medical personnel's readiness.[7,8,9]

ERAS-based anaesthesia services are an essential element of the overall implementation of the ERAS program. The ERAS protocol can be a solution to make hospital services more effective. This method can even be applied effectively to social-based health services such as the Airlangga Ksatria Floating Hospital.[4,10] Therefore, Regional General Hospital Dr. Soetomo, the largest referral hospital in East Java, is considered capable of providing many ERAS-based medical services, including surgery. On this basis, we plan a study evaluating pre-operative ERAS application in perioperative services at Regional General Hospital Dr. Soetomo.

Method

This study is an observational analytic study with a cross-sectional study design. The research subjects consisted of 3 groups, the first group consisted of 41 patients, the second group consisted of 110 doctors consisting of specialist and resident anesthesiology, orthopaedic surgery and traumatology, obstetrics and gynaecology, urology, and the third group consisted of 56 healthcare workers consisting of nutritionists, pharmacists, surgical nurses, anesthesiologists, and recovery room nurses. The patient's baseline data was taken from the examination at the anesthesiology outpatient clinic. The patient's level of understanding assessment was carried out directly after a brief explanation of the ERAS method by the researcher. The patient's

level of understanding was assessed by two investigators and rated on a scale of 1 to 5. Primary data and assessment of understanding of doctors and medical personnel were filled in independently by research subjects on online forms and rated on a scale of 1 to 5. Data collection was carried out from March 23 to April 14 2022, at Regional General Hospital Dr. Soetomo Surabaya.

Statistical method

All data in this study are presented in tables and graphs. The normality test of data on the level of understanding of patients, doctors, and other health workers was tested using the Kolmogorov-Smirnov. The three groups of data showed a non-normal distribution, so differences in the level of understanding of the three groups were tested using Kruskal-Wallis, and differences in every two groups were tested using Mann-Whitney. The results of the analysis are considered significant if the p-value is less than 0.05. The analysis was carried out using SPSS 19 software.

Result

Baseline characteristics of the research subject

The subjects of this study consisted of 3 groups. The first group consisted of 41 patients. The number of male and female patients is almost the same. Data for patient's level of understanding was taken from the patient (85.4%) or family (14.6%) if the patient felt they could not understand the explanation given. The education level of patients or families receiving explanations varied. However, the majority of the research subjects' education level was high school graduates (31.7%), followed by junior high school graduates (22.0%). Most patients plan to have surgery in the field of urology (82.9%), followed

by cesarean section (14.6), and almost all patients or their families agree if the operation will use the ERAS method (95.1%).

The second group consisted of 110 doctors from 4 areas of expertise: specialist and resident doctors in anesthesiology, urological surgery, obstetric-gynaecology, and orthopaedics and traumatology. Most of the respondents were from the field of obstetrics and gynaecology. The majority, but not all, doctors have heard of ERAS. Most doctors stated that ERAS was ready to be implemented in Regional General Academic Hospital Dr. Soetomo, and most of them reasoned that the human resources and facilities were deemed qualified. The following most common reason is that ERAS will greatly help improve the quality of services, so Regional General Hospital Dr. Soetomo had to be ready to implement the ERAS method. Some doctors feel that ERAS is not ready to be implemented. Most of them reasoned that the patients at Regional General Hospital Dr. Soetomo mostly have complicated cases and many complications. The following most common reason is the unpreparedness of human resources, unfit coordination, and the need for multi-departmental socialization. This opinion regarding readiness cannot be assessed on eight respondents because both the opinion column is written (yes and no) or if the reasons listed do not match the choice of opinion. The third group consisted of 56 healthcare workers, namely anesthesiologists, surgeons, recovery room nurses, nutritionists, and pharmacists. Most of the respondents were anaesthetist nurses. The majority (61%) of healthcare workers had heard of ERAS before, and also stated that ERAS was ready to be implemented in Regional General Hospital Dr. Soetomo (89%), with the main reason being to improve service to patients, followed by human resources and facilities that are considered

qualified to carry out the ERAS method. Meanwhile, healthcare workers who disagree with the implementation of the ERAS method at Regional General Hospital Dr. Soetomo are due to the lack of readiness of human resources, and further socialization still needs to be done.

Table 1. Patient's baseline characteristics

	Patient	
	n	%
Gender		
Male	22	53,7
Female	19	46,3
Total	41	100
Received explanation about ERAS		
Patient	35	85,4
Guardian	6	14,6
Total	41	100
Education level of explanation recipients		
Did not attend formal education	1	2,4
Did not finish primary school	2	4,9
Primary school	7	17,1
Junior high school	9	22,0
High school	13	31,7
Associate degree	2	4,9
Bachelor degree	4	9,8
Master degree	2	4,9
Total	41	100
Operation plan field		
Urology	34	82,9
Obstetrics-gynecology	6	14,6
Orthopedics	1	2,4
Total	41	100
Willingness to do ERAS		
No	2	4,9
Yes	39	95,1
Total	41	100

Table 2. Doctor's baseline characteristics

	Doctor	
	n	%
Field of work		
Anesthesiologist	6	5,5

	n	%
Obstetrician	4	3,6
Orthopedic	2	1,8
Urology	4	3,6
Anesthesia Resident	23	20,9
Obgyn Resident	41	37,3
Orthopedic Resident	27	24,5
Urology Resident	3	2,7
Total	110	100
ave heard of ERAS		
Yes	85	77,3
No	25	22,7
Total	110	100
eadiness of ERAS at Regional General Hospital Dr. oetomo		
Yes, reason:	73	66,4
Qualified human resources and facilities	32	29,1
To improve service	10	9,1
Must be ready	6	5,5
a Tertiary Hospital and Education ospital	5	4,5
Ready for certain cases	4	3,6
Easy to apply	2	1,8
Good cooperation	1	0,9
No reason	14	12,7
No, reason:	29	26,4
evere cases & many complications	9	8,2
Human resoursces is not ready	6	5,5
ood coordination has not yet been stablished	5	4,5
Need further socialization	3	2,7
Service regulations do not yet exist	2	1,8
No reason	4	3,6
Cannot be included	8	7,3
Total	110	100

Table 3. Healthcare worker's baseline characteristics

	ealthcare worker	
	n	%
ield of work		
Anesthesia nurse	18	32,1
Surgical nurse	16	28,6
Recovery room nurse	8	14,3
Nutritionists	13	23,2

Pharmacist	1	1,8
Total	56	100
ave heard of ERAS		
Yes	34	60,7
No	22	39,3
Total	56	100
eadiness of ERAS at Regional General Hospital Dr. oetomo		
Yes, reason:	48	85,7
To improve service	22	39,3
ualified human resources and facilities	11	19,6
Must be ready	2	3,6
a Tertiary Hospital and Education ospital	4	7,1
Ready for certain cases	1	1,8
No reason	8	14,3
No, reason:	8	14,3
Severe cases & many complications	1	1,8
Human resousces is not ready	4	7,1
Need further socialization	2	3,6
Higher cost	1	1,8
Total	56	100

Assessment of research subject's understanding about the ERAS method

In this study, the level of understanding of the ERAS method was measured in 2 ways, an assessment by researchers of the subject after conducting education, namely in the patient group, and a self-assessment by the research subject, namely in the group of doctors and healthcare workers after being given a leaflet about the ERAS method. The level of understanding in this study was assessed using a scale of 1 to 5, where a value of 1 indicates a complete lack of understanding, and a value of 5 indicates a thorough understanding. The median in the patient group showed a higher value, namely 4, when compared to the doctors and health workers group, which was 3. The Kolmogorov-Smirnov normality test in the three groups showed an abnormal distribution. This indicates that in each group, there are variations in understanding, so the knowledge of patients, health workers, and doctors cannot be generalized. Kruskal-Wallis test was used to determine the difference in the three groups, which showed a significant difference ($p < 0.01$).

Table 4. The level of understanding in patients, healthcare workers, and doctors

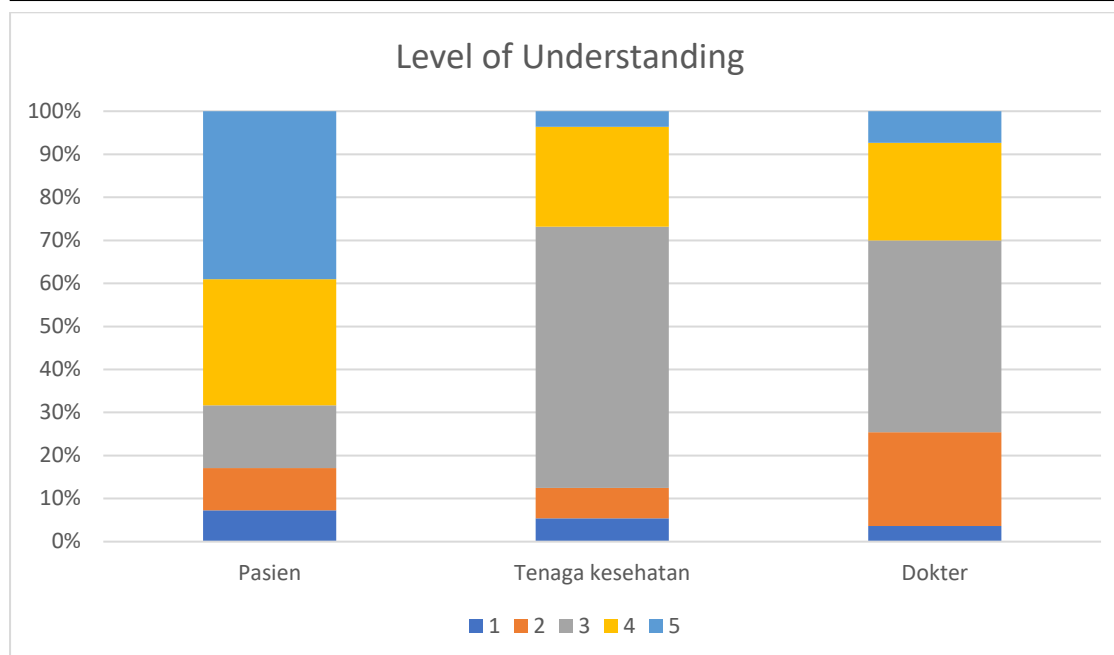| Group	Level of Understanding				
	Min.	Maks.	Median	IQR	p
Patient	1	5	4	3-5	<0.01
Healthcare worker	1	5	3	3-4	
Doctor	1	5	3	2-4	

Figure 1. The level of understanding in patients, healthcare workers, and doctors

Discussion

The ERAS protocol is a program that provides many benefits for patients and health service providers. However, the protocol will not be able to run optimally if each supporting component has a different perception and understanding of ERAS. This study assesses the awareness and readiness of each supporting element, including patients, doctors or residents, and other healthcare workers at Regional General Hospital Dr. Soetomo Surabaya. As stated by Gramlich et al., there are many components in the ERAS method that need to be harmonized to create good cooperation between various parties, for example, anaesthesia and surgeons.[11]

Each patient as the subject of this study, was explained the ERAS protocol before evaluating their level of understanding and willingness to follow the ERAS protocol during the perioperative period. Out of the 41 patients who were research subjects, 100% of the patients were able to understand the ERAS protocol well enough after receiving an explanation. This is illustrated by the results of the evaluation of the level of the understanding

index (1 = not very understanding, up to 5 = very understanding). The patient produces a median value of 4 (IQR 3-5, p<0.01). Thirty-nine patients (95.1%) agreed to follow the ERAS protocol after receiving an explanation, and only 2 (4.9%) refused because of fear of going home 'early' and experiencing complications at home. A study by Zychowicz in 2019 obtained similar results. With 120 participating subjects, 4.76% of patients refused to follow the ERAS protocol for similar reasons. They voiced concerns about complications at home if they went home early even though the operation was successful and there were no complications.[12] This is a challenge for healthcare workers and health providers to provide thorough explanations that can ease the patient's anxiety.

ERAS can not only be done in hospitals with complete facilities. ERAS has been proven to be well implemented in social-based health services such as the Airlangga Ksatria Floating Hospital.[10] When properly prepared, ERAS is not only able to shorten the length of stay in the hospital but also minimize the incidence of postoperative complications.[3,13] Furthermore,

several other studies have found that adherence to the ERAS protocol is associated with lower postoperative complications in liver cancer patients undergoing liver resection surgery.[14,15] Efforts to assess the level of patient knowledge in this study can be an attempt to find the best approach to provide an understanding of ERAS when ERAS is implemented in Regional General Hospital Dr. Soetomo.[16]

Doctors as subjects in this study came from four disciplines, namely anaesthesia, urology, obstetric and gynaecology, and orthopaedic and traumatology. The level of understanding of doctors regarding the ERAS protocol varies greatly. After an independent assessment by each research subject, the results of an understanding level index with a median of 4 were obtained (IQR 2-4, $p < 0.01$). Reasons that cause variations in the understanding of ERAS implementation in patient management at Regional General Hospital Dr. Soetomo include the level of case difficulty, lack of human resources, lack of coordination and uneven socialization. These obstacles are also often faced by hospitals as revealed in previous research.[7,8,9] However, 66.4% of the study's subject doctors agreed to start implementing the ERAS protocol considering its great benefits and continuing to improve socialization efforts and coordination with the relevant team. Case difficulty is not always the cause of not being able to apply ERAS, even ERAS has started to be applied to liver transplant cases.[15] One of the things that can be done to improve understanding of the implementation of ERAS is to provide training for healthcare professionals directly supported by the hospital. Improved understanding will also facilitate the significant adoption of ERAS within the hospital.

Author Contributions

Anna Surgean Veterini: Conceptualization, methodology, and planned the experiment. **Khildan Miftahul Firdaus**: Data curation, collecting data. **Bambang Pujo Semedi**: Project administration and validation**. Herdiani Sulistyo Putri and Anna Surgean Veterini**: Writing-Original draft prepataration. **Khildan Miftahul Firdaus**: Visualization, investigation. **Airi Mutiar**: Software, validation and prepared material. **Mariza Fitritati**: Software and contributed to statistical analysis consultan. **Herdiani Sulistyo Putri**: Writing-riviewing and editing. All authors made a substantial contribution to the research. All authors have read and agree to the publish version this manuscript.

Conflicts of Interest

The authors declare that have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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