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The Implementation of Regulation About Enhanced Recovery After Caesarean Surgery in Indonesia: A Literature Review

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Abstract: Enhanced Recovery After Cesarean Surgery (ERACS) has been popular since the COVID-19 pandemic to reduce the length of stay in the hospital which is risky for spreading the virus. Apart from that, ERACS is also aimed at reducing the level of pain and accelerating the ability to mobilize. This study aimed to review journal articles related to the implementation of ERACS in Indonesia based on the Decree of The Minister of Health of The Republic of Indonesia Number Hk.01.07/Menkes/1541/2022 Concerning National Guidelines for Medical Services for Anesthesiology and Intensive Therapy related to medical, ethical, and legal trends and initiative ERACS to the concept of pain management as a human right. This study used Scholar Google as a search database using keywords: ("Enhanced Recovery After Caesarean Section" OR "ERACS") AND "Indonesia". The findings according to 8 journal articles were ERACS is effective in reducing the level of pain, length of stay, infection, and complication. However, ERACS has no impact on colostrum production. There are some side effects that happened to less than half of the sample, which are nausea, vomiting, and chills. However, the hospitals need to arrange the specific protocol of ERACS during pre-operative, intra-operative, and post-operative.

Keywords: Effectiveness; ERACS; Human rights; Indonesia; Level of pain

Introduction

Enhanced Recovery after Cesarean Surgery (ERACS) is an evidence-based care improvement process that aims to enhance recovery, reduce postoperative complications, and improve patient experience. ERACS provides a system to improve maternal outcomes, functional recovery, maternal-infant bonding, and patient satisfaction (Ituk & Habib, 2018; Patel & Zakowski, 2021). The ERACS protocol includes preoperative components such as patient education, pre-anesthetic medications, and oral carbohydrate supplementation (Narkhede et al., 2023). It also encompasses intraoperative and postoperative elements, creating a maternal-focused pathway from 30-60 minutes before skin incision to maternal discharge (Caughey et al., 2019). Implementing an ERACS program has been associated with reduced length of stay, cost of care, and opioid analgesia use (Mullman et al., 2020).

The ERACS protocol has been shown to reduce inpatient opioid consumption after cesarean delivery (Tepper et al., 2021). Studies have also indicated that the implementation of an ERACS protocol is associated with lower maternal opioid use after cesarean delivery (MacGregor et al., 2020). Furthermore, the ERACS method has been found to be effective in improving patient satisfaction levels and reducing hospital stays (Mauliza et al., 2022). Additionally, the ERACS protocol emphasizes the importance of postoperative care, including the timely removal of urinary catheters to facilitate recovery (Peahl et al., 2020).

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The success of an enhanced recovery program, including ERACS, is influenced by critical factors such as patient education, optimized pain management, and the implementation of multimodal care pathways (Poland et al., 2017). Evidence from colorectal surgery suggests that enhanced recovery programs, including ERACS, may reduce hospital stays compared with conventional care (Paton et al., 2014). The ERACS protocol has been associated with reduced opioid analgesia use, indicating its effectiveness in managing postoperative pain (Mullman et al., 2020). Additionally, optimal pain management is highlighted as an essential component of enhanced recovery after surgery protocols, as it has been shown to reduce postoperative complications and expedite recovery (Barker et al., 2020; Fay et al., 2019). Furthermore, studies have emphasized the importance of a multimodal approach to pain management within ERACS protocols, indicating that minimizing pain after cesarean delivery can be best achieved using a multimodal approach (Saboo et al., 2022).

Moreover, the implementation of ERACS has been associated with improved patient satisfaction levels, which may be attributed to effective pain management strategies (Mauliza et al., 2022). The ERACS method has also been recognized as a solution that minimizes pain, further supporting its role in postoperative pain management (Purnaningrum, 2023). Additionally, the ERACS protocol has been highlighted as a means to improve postoperative recovery and reduce postoperative pain burden, indicating its effectiveness in addressing pain management for cesarean delivery (Komatsu et al., 2017). Furthermore, effective pain management is fundamental to enhanced recovery after surgery, emphasizing the importance of pain management within the ERACS protocol (Kleiman et al., 2020; Nimmo et al., 2017).

In the Indonesian context, the implementation of ERACS is regulated by the Ministry of Health. Those regulations are Decree of The Minister of Health of The Republic Indonesia Number HK.01.07/Menkes/91/2017 Concerning National Guidelines for Medical Services Management of Pregnancy Complications (Ministry of Health Indonesia, 2017), Decree of The Minister of Health of The Republic of Indonesia Number HK.01.07/Menkes/1541/2022 Concerning National Guidelines For Medical Services For Anesthesiology and Intensive Therapy (Ministry of Health Indonesia, 2022), and Regulation of The Minister of Health of The Republic of Indonesia Number 10 of 2015 Concerning Nursing Service Standards In Special Hospitals (Ministry of Health Indonesia, 2015).

There are rights and obligations of patients that need to be met for ERACS implementation. In Indonesia, patient rights start with receiving informed consent and education before any medical treatment, including ERACS. During pre-operative, the patient and family have to be explained about the ERACS and sign for acceptance. All those processes of patient's rights are under Law No.44 of 2009 concerning Hospitals Article 32 which states 18 rights of patients and families (President of Republic Indonesia, 2009). According to the patient's right which in general can be included as human rights, it was explained in the Constitution of the Republic of Indonesia 1945 Article 28J and Law Number 39 of 1999 concerning Human Rights (Constitution of Indonesia, 1945; President of Republic Indonesia, 1999). This study aimed to review existing journal articles related to the implementation of ERACS in Indonesia related to medical, ethical, and legal trends and initiatives regarding ERACS to the concept of pain management as a human right.

Method

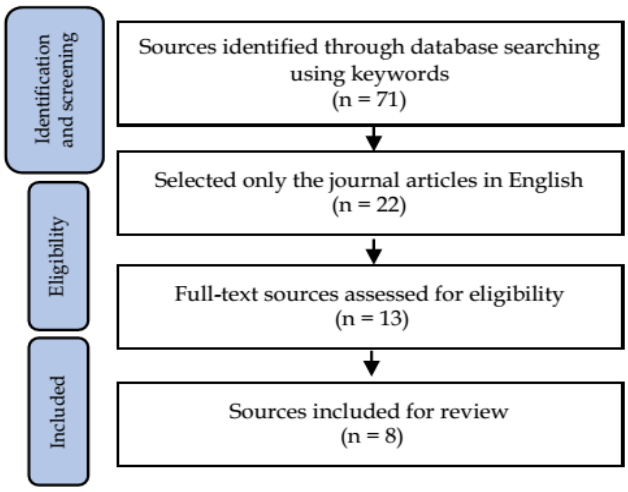

Figure 1. Modified PRISMA flow diagram of article review

This study conducted a systematic literature review (SLR) retrieved from Scholar Google. The first step is using the keywords: ("Enhanced Recovery after Caesarean Section" OR "ERACS") AND "Indonesia" with a limit of the year since 2022. The year 2022 was chosen because the Ministry of Health Indonesia established the National Guidelines for Medical Services for Anesthesiology and Intensive Therapy based on the Decree of the Minister of Health of the Republic of Indonesia number HK.01.07/Menkes/1541/2022. The process of journal article selection is shown in Figure 1 below. There are 71 journal articles selected based on the first step of screening. The second step is the authors only selected the journal articles in English, then it was limited the results to 22 journal articles. The third is we selected the journal articles with full-texted provided and it reduced to 13 journal articles. The last step is reading the abstract of each journal article and selecting

8 that fit the topic of interest. The topic of this study is the effectiveness of ERACS in reducing the level of pain in Indonesia. We selected the journal article from Indonesia only to be more focused on the implementation of the Decree of the Minister of Health. The journal articles from other countries will be included in the discussion part as the comparison.

Result and Discussion

Table 1 below describes the findings of eight selected journal articles related to ERACS implementation in the Indonesian context. All of the journal articles below have been done in the Indonesian context and conducted after the regulation of anesthesia was established in 2022. Almost all of the studies mentioned the high patient satisfaction by using ERACS. In detail, it reports the decreasing level of pain (Mauliza et al., 2022; Millizia et al., 2023; Rahayu et al., 2023; Ruspita et al., 2023), accelerating early mobilization (Adha & Anita, 2023; Mauliza et al., 2022; Millizia et al., 2023), reducing infection and complications (Raharja & Aini, 2023; Ruspita et al., 2023; Sardimon et al., 2022; Uhud et al., 2023), and reducing postoperative length of stay (LoS) (Raharja & Aini, 2023; Sardimon et al., 2022). However, some studies also revealed the weakness and side effects of ERACS including ineffective for accelerating colostrum exertion (Rahayu et al., 2023) and less than half of respondents felt nausea, vomiting, and chills (Mauliza et al., 2022).

Table 1. Review of Journal Articles Related to ERACS in Indonesia

Authors	Title	Findings
Sardimon et al. (2022)	Implementation of Enhanced Recovery After Caesarean Section (ERACS) in Elective Procedure: A Case Report	The implementation of the ERACS protocol in this case has been shown to reduce the rate of infection and post-operative complications as well as reducing length of stay for the mother.
Anna M et al. (2023)	Comparison Between Eracs and Non Eracs Methods on The Level of Pain and Mobilization in Post-Caesarean Section Patients	In Abby Mother and Child Hospital, Aceh, this study revealed delivery with the ERACS method is better in reducing the degree of pain and accelerating early mobilization compared to non-ERACS methods.
Esty P R et al. (2023)	The effectiveness of the ERACS (Enhanced Recovery After Caesarean Surgery) method on postoperative pain and the onset of colostrum excretion	ERACS was effective in reducing post-operative pain ($p<0.001$), and the coefficient of determination is 0.645, which means that the ERACS can influence 64.5% of the variation in the postoperative pain score variable. ERACS method is ineffective for accelerating the onset of colostrum excretion $p=0.267$ ($p>0.05$).
Ida R et al. (2023)	Pain score and quality of post cesarean section recovery with ERACS method	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.
Supanji R et al. (2023)	Comparison of Satisfaction Levels Between Post-Operative Sectio Caesaria Patients Followed by The Eracs Protocol Tap Block Analgesia Method and Iv Patient Controlled Analgesia: A Literature Review	The results of 20 previous research articles showed that Enhanced recovery after surgery (ERAS) in cesarean section showed the results that standardizes postoperative patient care, improving patient outcomes, reducing the postoperative length of stay, and optimizing patient satisfaction.
Elsa N A et al. (2023)	The Influence of Eracs and Non Eracs Sectio-Caesarea Delivery Methods On Early Mobilization Time of Post-Partum Mothers	The results of linear regression analysis obtained p values of 0.003 < 0.05 which means that the ERACS cesarean method can accelerate mobilization time in patients and is statistically significant.
Akhyar N U et al. (2022)	Implementation of Early Recovery After Caesarean Surgery Protocol in Floating Hospital (Case Series)	The study at Floating Hospital Ksatria Airlangga found the ERACS protocol can be carried out even under limited conditions but several adjustments are required according to the available resources. The most important thing is that the main goal can still be achieved. Satisfaction was achieved in all patients without any significant postoperative complications.
Anna M, et al. (2023)	Patient Satisfaction Level of Enhanced Recovery after C-Section at Abby Maternal and Child Hospital Lhokseumawe	The results of the analysis showed 97.8% of respondents were satisfied with the service at the hospital after undergoing a cesarean section with the ERACS method of pain management at Abby Maternal and Child Hospital, Lhokseumawe. Most respondents experienced mild pain (87%) and were able to mobilize early after cesarean section and carry the baby for breastfeeding (95.7%). The side effects felt were nausea and vomiting in 8 patients (17.4%) and chills in 11 patients (23.6%).

Several studies have highlighted the increasing rates of cesarean deliveries in both developed and developing countries (Ali et al., 2018; Aziz & Warda, 2022; Bhatia et al., 2020; Gutema et al., 2020; Lee et al., 2021; Rafiei et al., 2018). The rise in cesarean delivery rates has prompted the need for definitive protocols to improve preoperative preparation, intra-operative surgical principles, and postoperative care (Muthyala et al., 2018). Additionally, the ERACS protocol has been shown to lead to improved outcomes in cesarean delivery, including reduced postoperative pain, decreased length of stay, and improved patient satisfaction (Mauliza et al., 2022; Mullman et al., 2020; Wilson et al., 2018). Furthermore, the ERACS protocol has been successfully implemented in low-risk elective cases posted for cesarean delivery in government hospitals, indicating its potential applicability in developing country settings (Narkhede et al., 2023).

Enhanced Recovery after Cesarean Surgery (ERACS) has gained attention in Indonesia as an evidence-based system to improve maternal outcomes and patient experience (Patel & Zakowski, 2021). The ERACS protocol includes preoperative, intraoperative, and postoperative pathways, focusing on maternal care and recovery (Caughey et al., 2019). In Indonesia, it is guided by Decree of The Minister of Health of The Republic of Indonesia Number HK.01.07/Menkes/1541/2022 Concerning National Guidelines for Medical Services for Anesthesiology and Intensive Therapy (Ministry of Health Indonesia, 2022). That decree describes each condition that needs to be met to use ERACS in the hospital starting from pre-operative, intra-operative, and post-operative. However, the specific protocol needs to be arranged by the hospital. The guidelines for postoperative care in cesarean delivery have created a pathway for postoperative care, emphasizing the importance of a comprehensive approach to recovery (Macones et al., 2019). Furthermore, the implementation of ERACS in elective procedures has been reported, highlighting the incorporation of the protocol into clinical practice in Indonesia (Sardimon et al., 2022). The guidelines and case report provide valuable insights into the implementation and impact of ERACS in the Indonesian healthcare setting. Overall, the evidence supports the adoption of ERACS in Indonesia as a means to enhance recovery, improve patient outcomes, and optimize the care pathway for cesarean delivery.

Anesthesia regulation in Indonesia is a critical aspect of healthcare delivery, ensuring patient safety and quality of care. The country has been actively involved in assessing anesthesia services, including the satisfaction level of pediatric anesthesia services (Sari et al., 2023). Additionally, there has been a focus on practical considerations for performing regional anesthesia, especially in the context of the COVID-19 pandemic, to ensure patient and staff safety, and equipment protection (Heijnen et al., 2021). Furthermore, the use of ultrasound-guided regional anesthesia in COVID-19 patients requires careful infectious precautions to prevent viral spread through equipment use (Murata et al., 2021). These references highlight the importance of adapting anesthesia practices to address public health challenges such as pandemics.

Moreover, one study in Indonesia revealed the comparison between general anesthesia (GA) and regional anesthesia (RA), it showed that surgery under regional anesthesia (RA) or local anesthesia appears to be affordable and cost-effective, especially in resource-constrained settings (Simanjuntak et al., 2018). This is particularly relevant for a developing country like Indonesia, where cost-effective healthcare solutions are crucial. However, according to human rights issues, general anesthesia (GA) and regional anesthesia (RA) need to be implemented under the standard of medical, ethical, and legal trends of pain management which guided in Law No.44 of 2009 concerning Hospitals Article 32 which states 18 rights of patients and families and Decree of The Minister of Health of The Republic of Indonesia Number HK.01.07/Menkes/1541/2022 Concerning National Guidelines For Medical Services For Anesthesiology and Intensive Therapy.

In the context of patient satisfaction, understanding the opinions and satisfaction of parents about their child's anesthesia service is vital for hospital funding and parent experience (Admass et al., 2022). This emphasizes the importance of patient-centered care and the need for regulatory measures to ensure high levels of satisfaction with anesthesia services.

Furthermore, the World Health Organization-World Federation of Societies of Anaesthesiologists (WHO-WFSA) International Standards for a Safe Practice of Anesthesia provide guidance for maintaining and improving the quality and safety of anesthesia care (Gelb et al., 2018). These standards are essential for informing regulatory frameworks and ensuring the delivery of safe anesthesia services in Indonesia. In the face of the COVID-19 pandemic, the Indonesian government has implemented policies aimed at controlling the spread of the virus, including large-scale social restrictions in various regions of the country (Saptono & Ayudia, 2020). These policies have implications for healthcare delivery, including anesthesia services, and highlight the intersection of public health policies and healthcare regulation. The ERACS protocol, endorsed by the Society for Obstetric Anesthesia and Perinatology (SOAP), has been recognized as a pathway for postoperative care in cesarean delivery (Badreldin et al., 2023; Bollag et al.,

2021; Macones et al., 2019; Sultan et al., 2022, 2023; Zanolli et al., 2023).

The challenges faced by rural health facilities in Indonesia due to a lack of basic equipment and medications have implications for anesthesia regulation, especially in ensuring equitable access to quality anesthesia services across different regions (Anggraini, 2023). Additionally, the weak coordination mechanism to ensure financial accountability during the COVID-19 pandemic in Indonesia underscores the broader governance challenges that may impact healthcare regulation (Warsono et al., 2023).

In conclusion, ERACS in Indonesia has become popular since the COVID-19 pandemic to reduce exposure to post-operative by reducing the length of stay at the hospital. Since that, the Ministry of Health established the Decree of The Minister of Health of The Republic of Indonesia Number HK.01.07/Menkes/1541/2022 Concerning National Guidelines for Medical Services for Anesthesiology and Intensive Therapy (Ministry of Health Indonesia, 2022). It is supported by Decree of The Minister of Health of The Republic Indonesia Number HK.01.07/Menkes/91/2017 Concerning National Guidelines for Medical Services Management of Pregnancy Complications (Ministry of Health Indonesia, 2017), and Regulation of The Minister of Health of The Republic of Indonesia Number 10 of 2015 Concerning Nursing Service Standards in Special Hospitals (Ministry of Health Indonesia, 2015). The review results show that ERACS have successfully increased the satisfaction of patients by reducing the level of pain, length of stay, infections, and complications, and accelerating early mobilization.

Framing pain management as an ethical issue, advocating for pain management as a legal right, offering constitutional guarantees and statutory regulations spanning negligence law, criminal law, and elder abuse, defining pain management as a fundamental human right, classifying the failure to provide pain management as professional misconduct, and issuing guidelines and standards of practice by professional bodies are just a few of the ERACS currently being applied for improvement. There is a discussion on the World Health Organization's involvement, especially in relation to the availability of opioids for pain relief. The conclusion is that pain management is a topic covered by a number of initiatives in the fields of law, ethics, and medicine, with the result that a willful refusal to treat pain is regarded as bad medicine, unethical behavior, and a violation of a fundamental human right.

Conclusion

There are eight journal articles selected in this review study. All of those are conducted in Indonesia from 2022 to 2023. Almost all of the studies mentioned the high patient satisfaction by using ERACS. In detail, it reports the decreasing level of pain, accelerating early mobilization, reducing infection and complications, and reducing the postoperative length of stay (LoS). However, some studies also revealed the weakness and side effects of ERACS including ineffective for accelerating colostrum exertion and less than half of respondents felt nausea, vomiting, and chills. There is a need for deeper study about the side effects of ERACS. Hospitals need to arrange the specific protocol of ERACS during pre-operative, intra-operative, and post-operative to promote pain management as an effort to the fundamental human right of pregnant patients who plan to give birth by painless cesarean and recover quickly.

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Conflicts of Interest
The authors declare no conflict of interest.

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