

Pain Differences Between Patients Undergoing Elective and Emergency Cesarean Sections: A Retrospective Study

Naia Ramadhani Salsabila¹, Herdiani Sulisty Putri^{2,3*},
Gatut Hardianto^{4,5*}, Prihatma Kriswidyatomo^{2,3}

¹Medical Study Program, Faculty of Medicine, Universitas Airlangga, Surabaya, Indonesia

²Department of Anesthesiology and Resuscitation,
Faculty of Medicine, Universitas Airlangga, Indonesia

³Department of Anesthesiology and Resuscitation,
Dr. Soetomo General Hospital, Surabaya, Indonesia

⁴Department of Obstetrics and Gynecology,
Faculty of Medicine, Universitas Airlangga, Indonesia

⁵Department of Obstetrics and Gynecology,
Dr. Soetomo General Hospital, Universitas Airlangga, Indonesia

E-mail: naia.ramadhani.salsabila-2021@fk.unair.ac.id ; herdiani-s-p@fk.unair.ac.id;
gatut.hardianto-2022@fk.unair.ac.id; prihatma.kriswidyatomo@staf.unair.ac.id

*Corresponding author details: Herdiani Sulisty Putri; herdiani-s-p@fk.unair.ac.id

ABSTRACT

Cesarean section is a surgical procedure involving an incision in the abdominal wall and uterus to deliver a baby. Based on urgency, it is classified into elective and emergency types. This procedure may trigger acute postoperative pain at the incision site, impacting both the mother and the baby. Effective pain management is essential for ensuring patient comfort and recovery. Identifying pain levels following cesarean delivery is crucial to determining appropriate interventions. Objective: To see the differences in pain experienced by patients undergoing elective and emergency cesarean sections at Dr. Soetomo General Hospital during the April-May 2024 period. Methods: An analytical study with a retrospective design. Results: The study included all patients undergoing elective and emergency cesarean sections at Dr. Soetomo General Hospital during April-May 2024. A total of 38 patients met the inclusion and exclusion criteria, with 25 patients undergoing emergency cesarean sections and 13 undergoing elective procedures. Postoperative pain intensity varied more widely among emergency cesarean patients, while all elective cesarean patients experienced mild pain. However, statistical analysis revealed no significant difference between the two groups. Conclusion: There is no significant difference in postoperative pain intensity between patients undergoing elective and emergency cesarean sections at Dr. Soetomo General Hospital during April-May 2024.

Keywords: cesarean section; elective; emergency; pain; differences.

INTRODUCTION

The rate of caesarean deliveries in Indonesia has shown a significant increase over the years. According to data from the Indonesian Ministry of Health, the percentage of caesarean deliveries rose from 10.6% in 2010 to 18.7% in 2018 and continues to grow annually. A caesarean section, as defined by the Royal College of Obstetricians and Gynaecologists (RCOG), is a surgical procedure involving incisions in the mother's abdominal wall and uterus to deliver the baby. This procedure has notable impacts on both the mother and the baby. Postoperative pain from incisions in the abdominal and uterine walls, which does not subside within a single day, can lead to limited maternal mobility,

disrupted mother-infant bonding, impaired maternal activities, delayed breastfeeding resulting in reduced infant nutrition, and potential effects on the newborn's immune system (Marfuah et al., 2019). Based on its urgency, caesarean sections are classified into two types: elective and emergency. Caesarean sections often result in postoperative pain responses, which vary between individuals and depend on their pain tolerance. The intensity of postoperative pain from caesarean sections ranks 9th among 179 surgical procedures, with 7% of women experiencing moderate to severe pain (McDonnell, 2009; Kintu, 2019). This pain is classified as acute and is generally localised to the surgical site.

Pain is a highly subjective experience, with individual perceptions varying significantly. According to the biopsychosocial model, pain perception is influenced by three primary factors: biological, psychological, and social. Variations in postoperative pain responses after cesarean sections can be influenced by several factors, including maternal psychological state, cultural influences, educational background, family medical history, and previous experiences that affect neurosensory processing (Atmawan et al., 2023; Darnall et al., 2017). Pain assessment scales and patient self-reports are essential tools for evaluating pain intensity. Various instruments are available to facilitate this assessment, including the Visual Analogue Scale/Graphic Rating Scale, Numerical Rating Scale (NRS), Verbal Rating Scale (VRS), and pain drawing.

Effective postoperative pain management is critical to ensuring patient comfort and optimal recovery. Inadequate postoperative pain management can lead to clinical and psychological complications, increasing morbidity and mortality rates while decreasing postoperative quality of life (Misal US, Joshi SA, 2016). Therefore, identifying the intensity of postoperative pain is crucial for implementing appropriate interventions and understanding maternal responses to caesarean section care (Gupta et al., 2016). This study aims to see the differences in pain profiles of patients undergoing elective and emergency cesarean sections at Dr. Soetomo General Hospital in 2023.

MATERIALS AND METHODS

This research is an analytical retrospective study aimed at observing differences in postoperative pain profiles between patients undergoing elective and emergency cesarean sections, using secondary data

in the form of medical records. The population of this study includes patients who underwent cesarean section procedures at RSUD Dr. Soetomo General Hospital during the period of April to May 2024. A total sampling method was applied by evaluating all medical records and including participants who met the inclusion and exclusion criteria during the specified period.

Inclusion and Exclusion Criteria

Patients who underwent cesarean section procedures (elective or emergency) with complete medical records, including pain intensity assessments using the Numerical Rating Scale (NRS), and those with procedures performed using the Pfannenstiel incision technique were included. Patients with prolonged surgeries lasting more than two hours or those admitted to the intensive care unit (ICU) postoperatively were excluded.

Ethics

The Dr. Soetomo General Hospital's Committee for Research Ethics has accepted this study. To ensure confidentiality, the identities of the patients are not disclosed in this study. The authors will be the only ones to keep and utilize all of the collected data for the aim of this research.

RESULTS

The results of this analytical retrospective study, based on secondary data from medical records of patients who underwent cesarean section procedures at RSUD Dr. Soetomo General Hospital during the period of April to May 2024, are reported quantitatively. A total of 38 patients were included in this study, consisting of 25 patients who underwent emergency cesarean sections and 13 who underwent elective procedures.

TABLE 1: Pain Intensity Based on the Type of Surgery.

Type of Surgery	Pain Intensity						Total		p-value
	Mild		Moderate		Severe		N	%	
Elective	N	%	N	%	N	%	N	%	0,088
Emergency	13	100	0	0	0	0	13	100	
	20	20	5	10	0	0	25	100	

Table 1 shows the distribution of pain intensity based on the type of surgery. In the elective cesarean section group, all patients (100%) reported mild pain, while no patients reported moderate or severe pain. In the emergency cesarean section group, most patients (80%) experienced mild pain, while a smaller proportion (20%) reported moderate pain.

No patients in the emergency group reported severe pain. After conducting statistical testing using the Mann-Whitney test, a p-value of 0.088 was obtained, which is greater than 0.05. Therefore, it can be concluded that there is no significant difference in pain intensity based on the type of surgery.

TABLE 2: Characteristics of Cesarean Section Patients at Dr. Soetomo General Hospital.

		Pain Intensity			N	(%)
		Mild	Moderate	Severe		
Age	Late Adolescence	6 (100%)	0 (0%)	0 (0%)	6	15,7%
	Early Adulthood	20 (87%)	3 (13%)	0 (0%)	23	60,5%
	Late Adulthood	7 (77,8%)	2 (22,2%)	0 (0%)	9	23,8%
Total					38	100%
Type of Anesthesia	General Anesthesia	30 (88,2%)	1 (25%)	0 (0%)	34	89,5%
	Regional Anesthesia	3 (75%)	5 (13,2%)	0 (0%)	4	10,5%
Total					38	100%

Table 2 shows the distribution of patients based on age and type of anesthesia. The majority of patients (60.5%) were in the early adulthood age group (26–35 years), followed by the late adolescent group (15.7%) and the late adulthood group (23.8%). Regarding the type of anesthesia, most patients (89.5%) received general anesthesia, while only a small proportion (10.5%) received regional anesthesia.

DISCUSSION

Characteristics of caesarean section patients at Dr. Soetomo General Hospital

The majority of patients fell within the early adulthood age group (70%), reflecting a common age range for childbirth. Both groups showed similar distributions in this category. These findings align with previous studies, which suggest that women in early adulthood are more likely to undergo cesarean sections, both elective and emergency, due to being emotionally and financially prepared for parenthood, with factors like job stability and family support playing a key role (Kessous et al., 2015; Krause et al., 2018). The pain intensity analysis across different age groups revealed that the majority of patients in each group experienced mild pain, with no reports of severe pain. The early adulthood group had the highest proportion of mild pain (87%), followed by the late adolescent and late adulthood groups. Only a small percentage of patients in each group reported moderate pain. This suggests that age is unlikely to significantly affect the intensity of postoperative pain, as mild pain was the predominant experience across all age groups.

Regarding anesthesia type, in the emergency group, nearly all patients (96%) received general anesthesia, while only 4% received regional anesthesia. This finding indicates a clear preference for the use of general anesthesia in both groups of patients undergoing cesarean section. The need to administer anesthesia quickly and effectively becomes the top priority, making general anesthesia a more practical choice (Huang et al., 2015). Additionally, factors such as patient anxiety and specific medical conditions can influence anesthesia choice. The majority of patients who received either general or regional anesthesia experienced mild pain

postoperatively, regardless of whether the cesarean section was elective or emergency. Only a small proportion of patients reported moderate pain in both anesthesia groups. This suggests that the type of anesthesia may not significantly impact the intensity of postoperative pain, as mild pain was the predominant experience in both general and regional anesthesia groups.

The Type of Surgery and Its Effect on Pain Intensity

This study indicates that patients who underwent elective cesarean sections experienced uniformly mild postoperative pain, while those who underwent emergency cesarean sections showed a broader range of pain intensity, with most experiencing mild pain and a smaller proportion reporting moderate pain. Despite the difference in pain intensity between the two groups, no patients in either group experienced severe pain. This suggests that while elective cesarean sections are associated with milder postoperative pain, the overall pain levels in both groups were manageable.

Furthermore, statistical analysis using the Mann-Whitney test was conducted, yielding a p-value greater than 0.05, which indicates no significant difference in pain levels between the two groups. These findings align with previous studies that indicate emergency cesarean sections often result in higher pain levels (Smith et al., 2023). The implications of this study are significant, suggesting that healthcare providers may need to consider tailored pain management strategies for patients undergoing emergency cesarean sections to enhance recovery and patient satisfaction. Overall, while both groups managed their pain effectively, the variability in pain intensity underscores the need for continued research into optimizing postoperative care for cesarean section patients.

CONCLUSION

The pain assessment results for emergency cesarean sections show that the majority of patients who underwent elective cesarean sections experienced mild pain, with no reports of moderate or severe pain. Similarly, most patients in the emergency cesarean section group also experienced mild pain, although a small number reported moderate pain,

with no reports of severe pain. Statistical analysis using the Mann-Whitney test revealed that, although there was a tendency for a difference in pain intensity between the two groups, the results did not show a significant difference ($p > 0.05$). Therefore, there is no statistically significant difference in pain intensity between patients who underwent elective and emergency cesarean sections.

ACKNOWLEDGEMENT

The authors sincerely thank all the individuals at the Faculty of Medicine, Airlangga University Surabaya, and employees of Dr. Soetomo General Hospital, Surabaya, for their valuable guidance and support during this research.

REFERENCES

- [1] Betran, A., Torloni, M., Zhang, J. & Gülmezoglu, A. (2015). WHO Statement on Caesarean Section Rates. **BJOG: An International Journal of Obstetrics & Gynaecology**, 123(5), pp. 667–670. <https://doi.org/10.1111/1471-0528.13526>
- [2] Royal College of Obstetricians and Gynaecologists (RCOG) (2022). Considering a caesarean birth. Available at: <https://www.rcog.org.uk/for-the-public/browse-our-patient-information/considering-a-caesarean-birth/>
- [3] Marfuah, D., Nurhayati, N., Mutiar, A., Sumiati, M. & Mardiani, R. (2019). Pain Intensity among Women with Post-Caesarean Section: A Descriptive Study. **KnE Life Sciences**. <https://doi.org/10.18502/kls.v4i13.5322>
- [4] Cunningham, F.G., McGraw-Hill Education & Al, E. (2014). **Williams obstetrics**. New York: McGraw-Hill Medical.
- [5] McDonnell, J.G., Curley, G., Carney, J., Benton, A., Costello, J., Maharaj, C.H. & Laffey, J.G. (2008). The Analgesic Efficacy of Transversus Abdominis Plane Block After Cesarean Delivery: A Randomized Controlled Trial. **Anesthesia & Analgesia**, 106(1), pp. 186-191. <https://doi.org/10.1213/01.ane.0000290294.64090.f3>
- [6] Kessous, A., et al. (2015). Trends in cesarean delivery: A longitudinal study of delivery rates. **American Journal of Obstetrics and Gynecology**, 213(3), pp. 320.e1-320.e7.
- [7] Krause, K., et al. (2018). Socioeconomic factors influencing the age at first childbirth in women. **European Journal of Public Health**, 28(1), pp. 91-96.
- [8] Huang, X., Lei, J., Walker, M. & Zhou, J. (2011). Cesarean delivery for first pregnancy and neonatal morbidity and mortality in second pregnancy. **European Journal of Obstetrics and Gynecology and Reproductive Biology**, 158(2), pp. 204-208.
- [9] Smith, J., Brown, R., & Jones, T. (2023). The role of expectations, subjective experience, and pain in postoperative outcomes: A comparison between elective and emergency cesarean sections. **Pain Management**, 15(4), pp. 245-256. Available at: <https://pubmed.ncbi.nlm.nih.gov/36879419>
- [10] Atmawan, D., Kurniawan, H., Estiko, R. & Allinda, T. (2023). Relationship Between Pain Severity in Post- Caesarean Section and Its Preoperative Factors. **JAI (Jurnal Anestesiologi Indonesia)**, 15(3), pp. 202-210. <https://ejournal.undip.ac.id/index.php/janesti/article/view/57730>
- [11] Misal, U.S., Joshi, S.A., & Shaikh, M.M. (2016). Delayed recovery from anesthesia: A postgraduate educational review. **Anesthesia: Essays and Researches**, 10(2), pp. 164-172. <https://doi.org/10.4103/0259-1162.177614>
- [12] Gupta, A., et al. (2022). Predicting the Severity of Acute Pain after Cesarean Delivery. **Current Pain and Headache Reports**, 26(7), Article 12. Available at: <https://link.springer.com/article/10.1007/s11916-024-01301-y>