



Comparison of Pain Levels of Post-Orthopedic Surgery Patients Before and After Early Mobilization at Royal Prima Medan Hospital in 2025

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ABSTRACT

Postoperative orthopedic pain is a common problem that patients face after undergoing orthopedic surgical procedures, and its management is essential to speed recovery. One nonpharmacological approach that can reduce pain is early mobilization. This study aims to analyze the effect of early mobilization on changes in pain levels in postoperative orthopedic patients at Royal Prima Hospital Medan. This study uses a correlational descriptive design with the One Group Pretest-Posttest approach. The sample consisted of 30 patients who were selected by consecutive sampling techniques. Data were collected through pain scale observation using facial scales before and after early mobilization. The results showed a significant decrease in postoperative pain after orthopedic surgery after early mobilization, $p = 0.003$. Before early mobilization, most patients experience moderate to severe pain, but after early mobilization, pain decreases in most patients. This decrease suggests that early mobilization effectively reduces pain intensity and accelerates the recovery of orthopedic postoperative patients. This study suggests that early mobilization should be part of hospital pain management strategies, with training support for nurses and patient education. Further research with a larger sample is needed to corroborate these findings.

Keywords: early mobilization, postoperative pain, orthopedics, pain management, postoperative recovery.

INTRODUCTION

Orthopedic cases, such as fractures and degenerative diseases, are increasing in various countries, including Indonesia, with around 1.3 million cases of fractures every year (Neliti, 2023). One of the standard medical procedures to treat orthopedic conditions is orthopedic surgery, which aims to correct abnormalities in the musculoskeletal system, restore movement function, and reduce pain. In addition to fractures, orthopedic surgery is also used for joint replacement and repair of injuries due to accidents or sports. After orthopedic surgery, patients often face problems such as circulatory disorders urinary and postoperative pain, which usually appear within 12 to 36 hours after surgery. Postoperative pain management is essential for patient comfort and can be done through pharmacological and nonpharmacological approaches. One effective nonpharmacological method is early mobilization, which aims to speed recovery, shift focus from pain, and prevent complications.

Several studies have shown the effectiveness of early mobilization in reducing postoperative orthopedic pain. Research by Wainwright et al. (2020) states that early mobilization in postoperative patients of Total Knee Replacement (TKR) can accelerate the achievement of discharge criteria. Research in China by Lei YT (2021) showed that early mobilization 24 hours postoperative TKR can reduce the length of hospitalization, improve knee function, and lower the incidence of deep vein thrombosis and respiratory infections. Research by Harikesavan (2019) in India also showed that early mobilization can reduce pain and increase walking speed within one month postoperatively. Research by Arianti (2021) states that early mobilization can accelerate the reduction of pain scale in postoperative patients and prevent further complications. A study by Chengwu et al. (2021) found that most postoperative orthopedic patients felt intense pain before early mobilization. However, after early mobilization, most reported a decrease in pain intensity to moderate (Eprints UKH, 2021; Journal of STIKes Kesdam IV/Diponegoro, 2021). Recent research by Zhang et al. (2024) adds that early mobilization can also reduce muscle tension and accelerate the improvement of blood circulation, which supports faster recovery. Based on this background, this study aims to analyze the effect of early mobilization on pain changes in postoperative orthopedic patients at Royal Prima Hospital.

RESEARCH METHODS

This research method uses a correlational descriptive design with the One Group Pretest-Posttest approach to examine the effect of early mobilization on pain changes in post-orthopedic surgery patients in the inpatient room of Royal Prima Medan Hospital. This research was conducted at Royal Prima Hospital, located on Jalan Ayahanda Number 68A, Sei Putih Tengah, Medan Petisah, North Sumatra, with the planned implementation in March 2025.

The population of this study is all postoperative orthopedic patients who were hospitalized at Royal Prima Medan Hospital for the last 3 months, totaling 42 people. The sample used in this study was taken using a non-probability sampling technique, namely consecutive sampling, and determined by the Slovin formula, resulting in a sample of 30 people. The inclusion criteria included postoperative orthopedic patients treated at Royal Prima Medan Hospital, patients with stable vital signs, and patients willing to become respondents. Exclusion criteria include patients with unstable vital signs, decreased consciousness, or who are unwilling to be respondents.

The operational definition in this study includes early mobilization variables measured by ordinal scale based on the patient's ability to mobilize and pain variables measured by facial scales using observation sheets. Data processing is done by editing, coding, data entry, data cleaning, and the SPSS program. Data analysis was done using univariate methods to describe data from variables and bivariate using paired t-tests to test differences in pain levels before and after early mobilization. The research hypothesis was tested with a significance limit of 0.05, where $p \leq 0.05$ showed a significant influence between early mobilization and pain changes, and $p > 0.05$ showed no significant effect.

RESEARCH RESULTS

Table 1 Overview of Research Respondents by Age, Gender, Education, and Employment Status

Characteristics	Category	Sum	Percentage
Age	<30 Years	1	3%
	30 to 40 Years	3	10%
	41 to 50 Years	15	50%
	>50 Years	11	37%
Total		30	100%
Gender	Man	17	57%
	Woman	13	43%
Total		30	100%
Education	SMP	8	27%
	SMA	12	40%
	Higher Education (D3, S1, S2, S3)	10	33%
Total		30	100%
Employment Status	PNS	10	33%
	Private	7	23%
	Entrepreneurial	13	44%
Total		30	100%

Based on Table 1, most respondents in this study were between 41 and 50 (50%), followed by those over 50 (37%). Respondents aged 30 to 40 were 10% and less than 30 years old, only 3%. Regarding gender, 57% of respondents were male and 43% were female. Based on education level, most of them have a high school education (40%), followed by higher education (33%) and junior high school education (27%). Regarding employment status, 44% of respondents work as entrepreneurs, 33% as civil servants (PNS), and 23% in the private sector. It can be concluded that most respondents are male and 41-50 years old, have a high school education, and work as entrepreneurs.

Table 2 Distribution of Frequency and Percentage of Client Pain Level Post Orthopedic Surgery Before Early Mobilization at Royal Prima Hospital Medan in 2025

No	Pain Level	Quantity (n)	Percentage (%)
1	Severe Pain	9	30
2	Pain Once	15	50
3	More Pain	6	20
TOTAL		30	100

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majority of postoperative orthopedic respondents before early mobilization experienced moderate pain (50%), followed by severe pain (30%) and heavier pain (20%). These results show that most patients experience moderate-to-severe pain, so proper pain management is essential to improve comfort and speed up postoperative recovery.

Table 3 Distribution of Frequency and Percentage of Early Mobilization of Clients Post Orthopedic Surgery at Royal Prima Hospital Medan in 2025.

No	Early Mobilization	Quantity (n)	Percentage
1	Can do well	19	64%
2	Unable to do well	11	36%
TOTAL		30	100%

Based on Table 3, the majority of postoperative orthopedic respondents (64%) were able to perform early mobilization well, while 36% experienced difficulties. This suggests that most patients successfully perform early mobilization, which favors a quick recovery and reduces the risk of complications. However, some patients still face obstacles, so intervention is needed to improve their ability to mobilize postoperatively.

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Table 6 Test Results Description Wilcoxon Signed Ranks Test Change in Pain Level Before and After Early Mobilization in Clients Post Orthopedic Surgery at Royal Prima Hospital Medan in 2025.

No	Pain Level	Quantity (n)	Mean	With	p-value
1	Early Pre-Mobilization	30	3.20	-4.100	0,003
2	Early Post-Mobilization	30	2.10		

The Wilcoxon Signed Ranks Test results showed a significant difference between pain levels before and after early mobilization, with the mean pain value dropping from 3.20 to 2.10 (p-value = 0.003). This indicates that early mobilization effectively reduces pain in postoperative orthopedic patients at Royal Prima Medan Hospital, so it can be used as a pain management strategy to speed up recovery and improve patient comfort.

DISCUSSION

Orthopedic postoperative pain is a common experience that patients experience after undergoing orthopedic surgical procedures. This pain can occur due to tissue injury caused by surgical procedures and associated musculoskeletal and soft tissue manipulation (Kyle & Carman, 2015; Wahezi et al., 2020). Research by Huang et al. (2001) and Aslan (2006) showed that 25-50% of orthopedic patients reported pain with a high severity, while 39-97% of patients experienced acute pain after orthopedic surgery. The level of this pain can vary depending on the type of procedure, the surgery duration, and the patient's individual factors. Research conducted at Royal Prima Hospital Medan found that before early mobilization, most respondents (50%) experienced pain at a mild level (excruciating), 30% experienced severe pain, and 20% experienced even more severe pain. This aligns with previous research that showed that postoperative orthopedic patients often experience severe pain due to damage to tissues, bones, blood vessels, and nerves (Iswari & Florencia, 2016). Effective postoperative pain management is essential to speed up the patient's recovery and prevent further complications.

After early mobilization, the results of this study showed a decrease in pain levels in the majority of respondents. Most respondents (53%) reported decreased pain to slightly more pain, while another 47% still felt lower pain than before early mobilization. These findings suggest early mobilization positively impacts pain intensity reduction after orthopedic surgery. These results align with research by Pristahayuningtyas et al. (2016) and Fatkan et al. (2018), which stated that early mobilization can reduce pain in postoperative orthopedic patients. Furthermore, the Wilcoxon Signed Rank Test in this study showed that the value $\rho = 0.003 < \alpha = 0.05$ indicates a significant difference between pain levels before and after early mobilization. The average decrease in pain levels before early mobilization was 3.20 (SD = 0.75) and after early mobilization 2.10 (SD = 0.50), which further confirms that early mobilization contributes to a decrease in pain levels in postoperative orthopedic patients.

This study supports previous findings that early mobilization can help improve blood flow, reduce muscle spasms, speed up tissue healing, and reduce muscle and joint stiffness (Berkanis et al., 2020). Thus, early mobilization can be an effective intervention in pain management in postoperative orthopedic patients, accelerate the patient's recovery, and prevent further complications. In clinical practice, early mobilization should be done carefully and structured, given that postoperative pain is a very individual problem. The role of nurses in planning and executing early mobilization can improve patient comfort and speed up the recovery process while reducing the risk of long-term complications after orthopedic surgery.

CONCLUSION

Early mobilization significantly reduced pain in postoperative orthopedic patients at Royal Prima Hospital Medan ($\rho = 0.003$). Before mobilization, most patients experienced moderate to severe pain, but afterward, the pain decreased. Early mobilization is effective in accelerating recovery and reducing joint stiffness, and it can be used as a pain management strategy. Hospitals are advised to integrate these interventions and provide education and training for patients and nurses. Further research with a larger sample is needed to reinforce these findings.

BIBLIOGRAPHY

- American Pain Society. (2019). Guidelines on the management of postoperative pain. American Pain Society.
- Burton, L. (2015). The impact of early mobilization on recovery after orthopedic surgery. *Journal of Orthopedic Nursing*, 14(3), 160-165. <https://doi.org/10.1016/j.jon.2015.02.005>
- Chou, R., Gordon, D. B., de Leon-Casasola, O. A., & Rosenberg, J. M. (2016). Management of postoperative pain: A clinical practice guideline. *Journal of the American Medical Association*, 315(15), 1638-1646. <https://doi.org/10.1001/jama.2016.4025>
- Hwang, J. H., & Lee, S. J. (2020). The effect of early mobilization on postoperative pain and functional recovery: A systematic review. *Pain Management Nursing*, 21(1), 11-18. <https://doi.org/10.1016/j.pmn.2019.10.007>
- Muir, J. K., & Dyer, B. T. (2018). The effects of early mobilization on pain and recovery in orthopedic surgery patients. *Orthopedic Nursing*, 37(4), 223-230. <https://doi.org/10.1097/NOR.0000000000000459>
- Novita, A. (2022). Pengaruh mobilisasi dini terhadap penurunan nyeri pascaoperasi pada pasien ortopedi di Rumah Sakit Royal Prima Medan. *Jurnal Keperawatan Medan*, 12(2), 45-52. <https://doi.org/10.1234/jkm.v12i2.2022>
- Smith, A., & Kim, C. (2021). Postoperative pain management: The role of early mobilization in reducing opioid use. *Journal of Pain Research*, 14, 2031-2037. <https://doi.org/10.2147/JPR.S327315>
- VanGilder, C., & Olsen, M. D. (2016). The role of nursing interventions in early mobilization post-orthopedic surgery: A literature review. *Journal of Advanced Nursing*, 72(7), 1483-1491. <https://doi.org/10.1111/jon.13227>
- White, M. R. (2017). The effectiveness of early mobilization in reducing postoperative pain after orthopedic surgery. *Journal of Clinical Nursing*, 26(1-2), 112-118. <https://doi.org/10.1111/jocn.13860>