The Relation Between Early Mobilization And Wound Healing Process Of Patients After Laparotomy At Royal Prima Hospital, Medan, From 2020 To 2024

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Abstract.

An incision in the abdominal wall is made during laparatomy, a significant surgical surgery, and the healing duration for this incision can vary. Patients should engage in early mobilization, or physical activity to increase blood circulation and decrease the risk of problems, right after surgery. This can hasten the healing process of wounds. The purpose of this research is to find out how early mobilization affects wound healing, pain levels, and hospital stay duration for patients at Royal Prima Hospital Medan who have undergone a laparotomy. Using a cross-sectional design, this study employed quantitative analytical methods. Patients who underwent a laparotomy between 2020 and 2024 made up the study's population. Using inclusion and exclusion criteria, a convenience sample of 35 individuals was chosen. The data was examined using the ChiSquare test, which was derived from patient medical records. Early mobilization was performed by the majority of patients (91.4%), and 88.6% of those patients had satisfactory wound healing. "Significant relationships between early mobilization and wound healing (p = 0.000), pain severity (p = 0.003), and length of hospital stay (p = 0.018) were shown by statistical tests. It is evident that early mobilization is crucial for patients to experience faster wound healing, less pain, and a shorter hospital stay following laparotomy. In conclusion, patients' wound healing processes are significantly improved by early mobilization following laparotomy. The goal of healthcare providers is to educate patients and routinely practice early mobilization in order to hasten healing and avoid complications after surgery.

Keywords: *Early Mobilization; Wound Healing; Pain Intensity; Hospitalization and Laparatomy.*

I. INTRODUCTION

Laparotomy is a surgical procedure performed by making an incision in the abdominal wall. Examples of procedures include: a right paramedian incision for appendiceal masses, a McBurney incision for appendectomy, a Pfannenstiel incision for bladder or uterine surgery, a midline incision for extensive abdominal operations, as well as transverse and right subcostal incisions for cholecystectomy [1].The number of patients undergoing laparotomy procedures worldwide increases by 15% each year, according to the World Health Organization (WHO) [2]. In 2020, hospitals worldwide performed approximately 80 million laparotomy procedures, which increased to 98 million in 2021 [3], [4]. Approximately 1.2 million surgical procedures were performed in Indonesia in 2020. According to data from the Indonesian Ministry of Health [5], elective surgeries accounted for 32% of all surgical procedures conducted in the country, ranking eleventh among fifty different types of medical treatments [6], [7]. In North Sumatra, data from the local Health Office (2020) indicated an annual increase in hernia cases, with 473 cases reported from national data. Based on medical records from Haji General Hospital Medan, approximately 1,200 patients underwent surgical procedures from 2019 to November 2022, of which around 325 were laparotomies. From September to November 2022, there were 53 postoperative inpatients; 32 patients remained hospitalized for 5 days due to unhealed surgical wounds, while 21 patients were hospitalized for 3 days because their wounds had healed and they underwent early mobilization according to nursing recommendations [8], [9].

Post-laparotomy side effects include severe discomfort in the days following the procedure, impaired skin integrity, immobility, excessive bleeding, and potentially life-threatening infections. One of the most common complaints among post-laparotomy patients is pain, which results from tissue trauma that triggers the release of neurotransmitters such as bradykinin and serotonin. Unmanaged pain can prolong healing time and length of hospital stay, and may also lead to muscle stiffness, causing immobility, helplessness, and worsening of the patient’s condition. One intervention to reduce pain is early mobilization, which can accelerate the reduction of postoperative pain levels and prevent complications by improving blood circulation, reducing discomfort, and serving as an independent non-pharmacological intervention that

supports patient activity [10].Early mobilization enables patients to return to their normal condition and fulfill their daily movement needs by maintaining body function, improving blood flow, enhancing respiratory function, preserving muscle tone, and facilitating bowel and urinary elimination [1].

II. METHODS

The purpose of this study was to determine how early mobilization influences wound healing, pain levels, and length of hospital stay among patients at Royal Prima Hospital Medan who had undergone laparotomy. Using a cross-sectional design, this study employed a quantitative analytical method. The study population consisted of patients who underwent laparotomy between 2020 and 2024. Based on inclusion and exclusion criteria, a total of 35 participants were selected using a convenience sampling technique. Data were analyzed using the Chi-Square test and were obtained from patients' medical records [8], [11], [12], [13].

III. RESULT AND DISCUSSION

Univariate Analysis

Respondent Characteristics

The frequency distribution of respondent characteristics in this study, based on sociodemographic variables including age, sex, and education, is presented in Table 1 below.

Table 1. Frequency Distribution of Respondents' Sociodemographic Characteristics

No	Respondent Characteristics	Frequency	Percentage (%)
1	**Age**		
	17-25 Year	2	5,7
	26-35 Year	3	8,6
	36-45 Year	9	25,7
	46-55 Year	10	28,6
	>55 Year	11	31,4
2	**Gender**		
	Male	18	51,4
	Female	17	48,6
	Total	**35**	**100,0**

Source: Primary Data, 2025

Based on Table 3.1, the majority of respondents were in the age group above 55 years, totaling 11 individuals (31.4%), while the smallest age group was 17–25 years, comprising 2 individuals (5.7%). In terms of gender characteristics, male respondents were slightly more dominant, with 18 individuals (51.4%), compared to female respondents, totaling 17 individuals (48.6%).

Frequency Distribution of Early Mobilization Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

The results of the study illustrate the distribution of early mobilization performed by post-laparotomy patients at Royal Prima Hospital Medan. These data are presented in Table 2 below:

Table 2. Frequency Distribution of Early Mobilization Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Mobilization D	Frequency	Percentage (%)
Performed	32	91,4
Not performed	3	8,6
Total	35	**100,0**

Source: Primary Data, 2025

Based on Table 2, the majority of patients who underwent laparotomy performed early mobilization, totaling 32 individuals (91.4%), while only 3 individuals (8.6%) did not perform early mobilization.

Frequency Distribution of Wound Healing Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025 [9]

The findings of the study show the distribution of wound healing among post-laparotomy patients at Royal Prima Hospital Medan. These data are presented in Table3 below:

Table 3. Frequency Distribution of Wound Healing Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Wound Healing	Frequency	Percentage (%)
adequate wound healing	31	88,6
Impaired wound healing	4	11,4
Total	35	**100,0**

Source: Primary Data, 2025

From Table 3, it can be seen that the majority of post-laparotomy patients experienced adequate wound healing, totaling 31 individuals (88.6%), while 4 individuals (11.4%) experienced impaired wound healing.

Frequency Distribution of Pain Intensity Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

The results of the study show the distribution of pain intensity experienced by post-laparotomy patients at Royal Prima Hospital Medan. These data are presented in Table 4 below.

Table 4. Frequency Distribution of Pain Intensity Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Pain Intensity	Frequency	Percentage (%)
Mild	8	22,9
Moderate	21	60,0
Severe	6	17,1
Total	**35**	**100,0**

Source: Primary Data, 2025

From Table 4, it can be seen that the majority of post-laparotomy patients experienced moderate pain intensity, totaling 21 individuals (60.0%), while 8 individuals (22.9%) experienced mild pain, and 6 individuals (17.1%) experienced severe pain.

Frequency Distribution of Length of Hospital Stay Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

The results of the study show the distribution of the length of hospital stay among post-laparotomy patients at Royal Prima Hospital Medan. These data are presented in Table 5 below.

Table 5. Frequency Distribution of Length of Hospital Stay Among Post-Laparotomy atients at Royal Prima Hospital Medan in 2025

Length of Hospital Stay	Frequency	Percentage (%)
Short	10	28,6
Prolonged	25	71,4
Total	**35**	**100,0**

Source: Primary Data, 2025

From Table 5, it can be seen that the majority of post-laparotomy patients had a prolonged length of hospital stay, totaling 25 individuals (71.4%), while 10 individuals (28.6%) experienced a short length of stay. This indicates that most patients required a longer duration to reach a stable condition and be deemed ready for discharge.

Bivariate Analysis

Normality Test

Before analyzing the relationship between variables, a normality test was conducted to determine whether the data were normally distributed. In this study, the Shapiro–Wilk method was used for the normality test, considering the sample size was fewer than 50 respondents. The results of the normality test for the variables of early mobilization, wound healing, pain intensity, and length of hospital stay are presented in Table 6 below.

Table 6 Shapiro–Wilk Test of Normality

	Shapiro-Wilk		
	Statistic	df	Sig.
Early Mobilization	.317	35	.000
Wound Healing	.372	35	.000
Pain Intensity	.785	35	.000
Length of Hospital Stay	.601	35	.000

Lilliefors Significance Correction

Based on the results of the normality test using the Shapiro–Wilk method, the significance (Sig.) value for all variables was 0.000 ($p < 0.05$). This indicates that all four research variables (early mobilization, wound healing, pain intensity, and length of hospital stay) were not normally distributed. Since the data were not normally distributed, the analysis of relationships between variables was conducted using a non-parametric test, namely the Chi-Square test.

Relationship Between Early Mobilization and Wound Healing Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

The relationship between early mobilization and wound healing [14], [15], among post-laparotomy patients at Royal Prima Hospital Medan in 2025 was examined using a bivariate analysis. The results of the data analysis are presented in Table 7 below.

Table 7. Results of the Chi-Square Test on the Relationship Between Early Mobilization and Wound Healing Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Early Mobilization	**Wound Healing**						**P-Value**
	Adequate		**Impaired**		**Total**		
	□	**%**	**□**	**%**	**□**	**%**	
Performed	31	88,6	1	2,9	32	91,4	
Not Performed	0	0,0	3	8,6	3	8,6	0,000
Total	**31**	**88,6**	**4**	**11,4**	**35**	**100,0**	

Source: Processed Data, 2025

Of the 32 participants who engaged in early mobilization, 31 individuals (88.6%) experienced successful wound healing, while only 1 individual (2.9%) showed less-than-optimal outcomes (Table 6). Meanwhile, all three respondents (8.6%) who did not participate in early mobilization experienced below-average wound healing. The p-value of 0.000 ($p < 0.05$) obtained from the Chi-Square test indicates that Ha is accepted. Early mobilization provided substantial benefits for post-laparotomy patients at Royal Prima Hospital Medan in 2025, demonstrating a significant association between these variables.

Relationship Between Early Mobilization and Pain Intensity Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

A bivariate analysis was conducted to determine the relationship between early mobilization and pain intensity among post-laparotomy patients at Royal Prima Hospital Medan in 2025. The results of the analysis are presented in Table 8 below.

Table 8. Results of the Chi-Square Test on the Relationship Between Early Mobilization and Pain Intensity Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Early Mobilization	**Pain Intensity**								**P-Value**
	Mild		**Moderate**		**Severe**		**Total**		
	□	**%**	**□**	**%**	**□**	**%**	**□**	**%**	
Performed	8	22,9	21	60,0	3	8,6	32	91,4	
Not Performed	0	0,0	0	0,0	3	8,6	3	8,6	0,003
Total	**8**	22,9	**21**	**60,0**	**6**	**17,2**	**35**	**100,0**	

Source: Processed Data, 2025

Table 8 shows that among the 32 participants (91.4%) who underwent early mobilization, the majority (21 out of 32) reported moderate pain intensity, followed by mild pain (22.9%) and severe pain (8.5%). Meanwhile, all three respondents (8.6%) who did not perform early mobilization reported severe

discomfort. The Chi-Square test indicated that the alternative hypothesis (Ha) was accepted, with a p-value of 0.003 ($p < 0.05$). Thus, in 2025, patients who underwent laparotomy at Royal Prima Hospital Medan were more likely to experience higher pain intensity if early mobilization was not performed.

Relationship Between Early Mobilization and Length of Hospital Stay Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

A bivariate analysis was conducted to examine the relationship between early mobilization and the length of hospital stay among post-laparotomy patients at Royal Prima Hospital Medan in 2025. The results of the analysis are presented in Table 3.9 below.

Table 9. Results of the Test on the Relationship Between Early Mobilization and Length of Hospital Stay Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025

Early Mobilization	Length of Hospital Stay						P-Value
	Short		Prolongrd		Total		
	□	%	□	%	□	%	
Performed	23	65,7	9	25,7	32	91,4	
Not Performed	0	0,0	3	8,6	3	8,6	0,034
Total	**23**	**65,7**	**12**	**34,3**	**35**	**100,0**	

Source: Processed Data, 2025

Table 9 indicates that among the 32 respondents (91.4%) who engaged in early mobilization, most experienced a shorter length of hospital stay, with 23 individuals (65.7%) categorized as having a short stay, while 9 individuals (25.7%) fell into the prolonged-stay category. In contrast, all three respondents (8.6%) who did not perform early mobilization (100%) experienced a prolonged length of stay. The Chi-Square test produced a p-value of 0.034 ($p < 0.05$), indicating that the alternative hypothesis was accepted. Consequently, there is a significant relationship between early mobilization and the length of hospital stay among post-laparotomy patients at Royal Prima Hospital Medan in 2025.

IV. CONCLUSION

Based on the findings of the study entitled *"Early Mobilization and Its Effects on Wound Healing Among Post-Laparotomy Patients at Royal Prima Hospital Medan in 2025,"* several conclusions can be drawn. Early mobilization was shown to be strongly associated with improved wound healing outcomes among post-laparotomy patients. A total of 88.6% of patients who engaged in early mobilization (91.4% of the sample) demonstrated satisfactory wound healing, with a p-value of 0.000 indicating a statistically significant effect. These results suggest that initiating movement shortly after surgery enhances circulation and accelerates the wound healing process.

Furthermore, early mobilization was significantly related to reduced pain intensity, as reflected by a p-value of 0.003. Patients who mobilized early reported lower pain levels, which in turn may help prevent postoperative complications such as wound infection and bleeding. Early mobilization also contributed to a shorter length of hospital stay. The Chi-Square test ($p = 0.018$) confirmed that patients who performed early mobilization recovered more quickly and were discharged sooner than those who remained immobilized. The effectiveness of early mobilization was also influenced by factors such as age, physical condition, and the support provided by nursing staff. Encouragement and assistance from healthcare professionals and family members played an important role in ensuring adherence to mobilization procedures. Overall, early mobilization represents an effective non-pharmacological intervention that promotes faster wound healing, reduces pain intensity, prevents complications, and shortens hospitalization duration for post-laparotomy patients.

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