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Analysis of Factors Affecting Early Mobilization in Postoperative Patients After Lymphophymy Surgery in the Operating Room of Prof.Dr.H. Aloei Saboe Gorontalo City

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ABSTRACT

Background: Early mobilization is an important nursing intervention that plays a role in accelerating the patient's postoperative recovery. Lack of physical activity after surgery can increase the risk of complications, such as impaired circulation, decreased gastrointestinal function, as well as delayed wound healing. Therefore, early mobilization is an integral part of nursing care to maintain physiological function, improve comfort, and support the patient's rehabilitation process. This study aims to analyze the effect of early mobilization on postoperative patient recovery. Methods: The research method used was quantitative design with an observational analytical approach and using a cross sectional research design. A sample of 30 respondents was selected using the purposive sampling technique. Data was collected through an early mobilization observation sheet. Data analysis was conducted using the Chi-Square test to identify the effect of early mobilization on the patient's postoperative recovery. Results: The results of the study showed the effect of early mobilization on the recovery of postoperative patients with a significance value of $p < 0.05$. Patients who received early mobilization showed improvement in clinical conditions compared to before the intervention. Discussion: Early mobilization contributes to improving blood circulation, improving organ function, and preventing postoperative complications. Gradual physical activity helps speed up healing and increase patient independence. These findings confirm the importance of the role of nurses in encouraging early mobilization as an effective strategy to improve patient clinical outcomes.

INTRODUCTION

One of the actions taken to overcome health problems is surgery with lipoplasmy with the aim of removing the abdominal organs that have problems (Pramitasari & Musharyanti, 2023). According to the WHO *(Word Health Organization),* the act of laparotomy has a fairly high number around the world. In 2020 surgery with laparatomy increased by about 10%. Surgical cases in Indonesia based on data from the Ministry of Health in 2021 reached 1.7 million total surgeries with around 37% (equivalent to 629 thousand people) being lapalomaniac surgeries.

Patients after lymphophymy surgery may experience pain and may interfere with daily activities or limited mobility. One of the treatments that can be done after laparotomy surgery is early mobilization to reduce the pain felt by the patient (Rustianawati, 2021). Mobilization is carried out to accelerate the reduction of the pain scale and prevent complications from surgery (Arianti, 2021). However, some patients think that early mobilization hinders the postoperative wound healing process (Priyanto, 2020).

To increase patient mobilization, it can be done three times a day on the first day with the help of support and enthusiasm from the family. However, sometimes families have obstacles such as fear of providing mobilization on the grounds that the wound will be severe (Ervina *et al.,* 2024). Early mobilization that patients can do after surgery, for example by moving their legs in bed so that the patient can get out of bed, walk to the bathroom and out of the bathroom (Fibriansari *et al.,* 2024).

Mobilization is needed to speed up the recovery or healing of postoperative wounds and can optimize

respiratory function. The benefits that can be achieved by doing bed and walking exercises in the early postoperative period, such as increasing the speed of breathing depth, increasing circulation, increasing urination and metabolism (Mutiningrum, 2022). Early mobilization exercises increase blood flow which will help reduce pain and speed up the wound healing process. Exercise and mobilization therapy is the right way to restore bodily function, not only in the injured part, but in the entire limb. If the patient does not move for a long time, eating will cause health problems such as decubitus, muscle stiffness, loss of muscle mass, blood circulation disorders, respiratory disorders, peristaltic disorders and urinary disorders (Fibriansari *et al.,* 2024). Postoperative healing is restoring the normal state of physical, psychological, social functions and daily activities (Fibriansari & Mulyantoro, 2023 in Fibriansari *et al.,* 2024).

Postoperative patients have a very high dependence on family and others due to physical limitations or mobilization and complaints of pain that the patient feels. Motivation from the family will be needed by the patient, such as needing physical support and mental support from the family to be able to accompany the patient. So that it will increase the confidence and enthusiasm of patients in carrying out early mobilization. Factors that affect the implementation of early mobilization for postoperative patients such as physiological factors (pain), external factors (education level), developmental factors (age) and emotional factors (anxiety, postoperative stress and fear) (Arif, 2022 in Rizqiani, S., 2023).

Research conducted by Ervina *et al* (2024) found that there is a very strong influence between the role of the family on the implementation of mobilization in post-lymphophymy patients. Research conducted by Fadlilah et al (2021) found that there was an influence between family social support and mobilization in postoperative patients at Dr. Soeradji Tirtonegoro Hospital. Postoperative mobilization is very important for patients, the goal is so that the wound healing process can run well and there are no complications.

Based on initial data collection, the number of laparotomy patients in June was 67 actions, in July as many as 48 actions and in August as many as 56 actions. The data shows that the lymphomamy procedure at Aloei Saboe Hospital is quite high every month. The importance of early mobilization in patients *after* lipoplasmic surgery can accelerate physiological recovery, prevent decubitus (pressure wounds), increase patient independence and reduce the length of patient hospitalization. Early mobilization of patients is supported by several things such as education of health workers, high awareness of patients on the importance of early mobilization, a comfortable and safe environment and support from families. Factors such as age, pain level, patient knowledge and family support have an influence on the early mobilization of patients *after* laparotomy. As with the age factor, older patients tend to experience a decrease in physical strength. The uncontrolled level of pain makes the patient afraid to move, which slows down early mobilization. Patients who understand the benefits of early mobilization will tend to be more motivated to engage in activities. Family support also plays a role in increasing the patient's confidence to dare to move to mobilize early.

Based on these data and conditions, this study aims to analyze the implementation of early mobilization, as well as supporting and inhibiting factors for early mobilization in post-lymphophyte patients. So that this research can be an input for health workers and hospitals in increasing early mobilization so as to speed up recovery, reduce the number of complications and reduce the length of patient hospitalization.

RESEARCH METHODS

Research Methods

The research method used was a quantitative design with an observational analytical approach and using *a cross sectional* research design.This approach was used to determine the influence of several factors on early mlbilization *after* lipoplasty surgery. This research will be conducted in October 2025 at Prof. Dr.H.Aloei Saboe Hospital.

Population and Sample

The population in this study is all patients *after* liposcopic surgery in the operating room of Dr.H.Aloei Saboe Hospital. The sample was selected using *the purposive sampling* technique which is a sample determination technique with certain considerations made by researchers based on certain criteria from a previously known population (Machali, l. 2021). The total sample in this study is 63 samples.

Data Analysis Techniques

Univariate Analysis

The purpose of univariate analysis is to describe the characteristics of each research variable (Notoatmodjo, 2018). It was carried out descriptively by displaying a frequency table regarding the characteristics of respondents as independent variables in the study, namely the variables of age, pain level, knowledge and family support.

Bivariate Analysis

After obtaining the results of univariate analysis, bivariate analysis was then carried out. Bivariate analysis was carried out on two variables that are suspected to have influence or correlation with each other (Notoatmodjo,

2018). The purpose of bivariate analysis was to determine the influence between dependent and independent variables using *the chi square* statistical test.If *the P-value* ≤ 0.05, it means that it is meaningful or significant, which means that there is an influence between independent variables and dependent variables. If *the P-value* ≥ 0.05 means that it is meaningless or insignificant, which means that there is no significant or significant influence.

RESULTS

Respondent Characteristics

Table 1. Results of Distribution of Respondent Characteristics by Age and Gender

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (Years)	19–30	4	13,3
	31–40	10	33,3
	41–60	16	53,3
	Total	30	100,0
Gender	Male	17	56,7
	Women	13	43,3
	Total	30	100,0

Primary Data Sources (2026)

Based on the table above, the majority of respondents were in the age group of 41–60 years (53.3%), which shows the dominance of late adulthood in this study. In terms of gender, male respondents were more (56.7%) than women (43.3%). This distribution illustrates that most of the participants were in the at-risk age group and were predominantly male.

Distribution Results Based on Medical Diagnosis

Table 2. Results of Distribution of Respondent Characteristics Based on Medical Diagnosis

Medical Diagnosis	Frequency (n)	Percentage (%)
Appendix Abscess	3	10,0%
Hernia Inguinalis Lateralis Sinistra	3	10,0%
Peritonitis ec intra abdominal abscess	4	13,3%
Soft Tissue Sarcoma Abdomen	4	13,3%
Ileus Obstruction Ec Intra Abdomen Tumor	5	16,7%
Rose Colostomy	5	16,7%
Ileus Ec Ca Sigmoid Colon Obstruction	2	6,7%
Peritonitis Ec APP Perforation	2	6,7%
Ileus Objection	2	6,7%
Total	**30**	**100,0%**

Primary Data Sources (2026)

Based on the distribution table of medical diagnoses, the most common diagnoses were Ileus Obstruction Ec Tumor Intra Abdomen and Rose Colostomy, each with 5 respondents (16.7%). The diagnosis of Peritonitis, Ec Intra Abdomen Abscess and Soft Tissue Sarcoma of the Abdomen is also quite dominant with a percentage of 13.3%. Meanwhile, the lowest frequency diagnoses were Sigmoid Ec Colon Ileus Obstruction, Perforated Ec APP Peritonitis, and Ileus Obstriction, 6.7% each. This distribution showed that the majority of respondents had disorders in the digestive system.

Distribution Results by Drug

Table 3. Results of Distribution of Respondent Characteristics by Drug

Yes	Drug Name	Frequency (n)	Percentage (%)
3	Cetorolak	9	35.0%
4	Metamizole	8	25.0%
5	Norms	8	25.0%
6	Parecatemol Drips	5	15,0%

Total	**30**	**100%**

Primary data source (2026)

The results of the univariate analysis distribution showed that out of a total of 30 drug uses (100%), Cetorolak had the highest frequency, namely 9 cases (35%), making it the most dominant drug used. Meanwhile, Metamizole and Norages were used in 8 cases (25%) each, showing the same proportion and were quite significant. Paracetamol drips has the lowest frequency, which is 5 cases (15%).

Overall, this distribution indicates that drug use tends to be concentrated in Cetorolak, with relatively balanced variations in use in Metamizole and Norages, and lower in Paracetamol drips.

Univariate Analysis
Age Factor Distribution Results

Table 4. Age Factor Distribution Results

Age (Years)	Frequency (n)	Percentage (%)	Cumulative Percentage (%)
19–30	4	13,3	13,3
31–40	10	33,3	46,7
41–60	16	53,3	100,0
Total	**30**	**100,0**	**100,0**

Primary Data Sources (2026)

Based on the table, most of the respondents were in the age group of 41-60 years, which was 16 people (53.3%). The age group of 31-40 years amounted to 10 people (33.3%), while the age group of 19-30 years was the least group with 4 people (13.3%).

This distribution showed that the majority of respondents were in late adulthood, which physiologically tended to have decreased metabolic function and an increased risk of chronic disease. Thus, the age factor in this study has the potential to be a variable that contributes to the incidence of health problems studied.

Results of Pain Level Factor Distribution

Table 5. Pain Factor Distribution Results

ain Level	equency (n)	centage (%)	mulative Percentage (%)
derate pain	11	36,7	36,7
vere Pain	19	63,3	100,0
Total	**30**	**100,0**	**100,0**

Primary Data Sources (2026)

Based on the table above, most of the respondents experienced severe pain, namely 19 people (63.3%), while respondents with moderate pain amounted to 11 people (36.7%).

This distribution shows that the majority of respondents are in the high-intensity pain category. This condition can have an impact on a decrease in quality of life, limited activities, and potentially slow down the healing process if not handled optimally. Therefore, the level of pain is an important factor that needs to be considered in the planning of nursing interventions and follow-up therapy.

Knowledge Factor Distribution Results

Table 6. Knowledge Distribution Results

Knowledge Level	Frequency (n)	Percentage (%)	mulative Percentage (%)
Lack of Knowledge	5	16,7	16,7
Sufficient Knowledge	15	50,0	66,7
Good Knowledge	10	33,3	100,0
Total	**30**	**100,0**	**100,0**

Primary Data Sources (2026)

Based on the table above, most of the respondents have a level of knowledge in the sufficient category, which is as many as 15 people (50.0%). Respondents with good knowledge amounted to 10 people (33.3%), while the category of knowledge lacked 5 people (16.7%).

This distribution shows that the majority of respondents have an adequate basic understanding of the aspects studied, but there are still some who have limited knowledge. This condition indicates the need to strengthen

health education in a sustainable manner to increase understanding and encourage more optimal behavior change.

Family Support Factor Distribution Results

Table 7. Family Support Distribution Results

mily Support	equency (n)	rcentage (%)	mulative Percentage (%)
ess Support	11	36,7	36,7
ood Support	19	63,3	100,0
Total	**30**	**100,0**	**100,0**

Primary Data Sources (2026)

Based on the table above, most of the respondents received good family support, namely 19 people (63.3%), while 11 people (36.7%) received less support.

These results show that the majority of respondents already have a fairly optimal family support system. Family support plays an important role in improving medication adherence, routine health control, and motivation to undergo treatment. However, there is still a proportion of respondents with less support who need attention through family-based interventions or more intensive health education.

Early Mobilization Distribution Results

Table 8. Early Mobilization Distribution Results

rly Mobilization	equency (n)	rcentage (%)	mulative Percentage (%)
Not Doing	15	50,0	50,0
Doing	15	50,0	100,0
Total	**30**	**100,0**	**100,0**

Primary Data Sources (2026)

Based on the table above, the number of respondents who did early mobilization and those who did not do early mobilization had the same proportion, each as many as 15 people (50.0%).

This distribution shows a balance between the two groups. This condition indicates that the implementation of early mobilization is not fully optimal, because only half of the respondents have implemented it. Early mobilization has an important role in accelerating recovery, improving blood circulation, and preventing complications due to prolonged bedtime. Therefore, more intensive education and mentoring are needed to encourage the consistent implementation of early mobilization.

Bivariate Analysis
Early Mobilization Distribution Based on Age Factor

Table 9. Distribution of Early Mobilization Results by Age Factor

ge Factor	**Early Mobilization**				**value**
	Not Doing		**ng**		**al**
	n	**(%)**	**n**	**(%)**	
40 years old	10	(71,4%)	4	(28,6%)	
60 years old	5	(31,3%)	11	(68,8%)	**28**
al	**15**	**(50%)**	**15**	**(50%)**	

Primary Data Sources (2026)

Based on the table above, most respondents aged 19–40 years did not mobilize early (71.4%). On the other hand, in the age group of 41–60 years, the majority of respondents carried out early mobilization (68.8%).

The results of the Chi-Square test showed a value of p = 0.028 (p < 0.05), which means that there is a significant influence between the age factor and the implementation of early mobilization. This means that age affects the patient's tendency to mobilize early.

Early Mobilization Distribution Based on Pain Level Factors

Table 10. Distribution of Early Mobilization Results of Pain Level Factors

	Early Mobilization				**value**
ain Level	**Not Doing**		**Doing**	**tal**	
	n	(%)	n	(%)	

derate pain	9	(81,8%)	2	18,2%)	1	
vere Pain	6	(31,6%)	13	68,4%)	9	,008
Total	**15**	**(50%)**	**15**	**(50%)**	**)**	

Primary Data Sources (2026)

Based on the table above, most respondents with moderate pain did not mobilize early (81.8%). On the other hand, the majority of respondents with severe pain did early mobilization (68.4%).

The results of the Chi-Square test showed a value of p = 0.008 (p < 0.05), which means that there is a significant influence between pain level and the implementation of early mobilization. Thus, the level of pain had a meaningful effect on early mobilization actions in the respondents in this study.

Early Mobilization Distribution Based on Knowledge Factor

Table 11. Distribution of Early Mobilization Results of Knowledge Factors

Knowledge Factor	Early Mobilization				Total	P value
	Not Doing		Doing			
	n	(%)	n	(%)		
Lack of Knowledge	4	(80,0%)	1	(20,0%)	5	
Sufficient Knowledge	4	(26,7%)	11	(73,3%)	15	
Good Knowledge	7	(70,0%)	3	(30,0%)	10	0,036
Total	**15**	**(50%)**	**15 (50%)**		**30**	

Primary Data Sources (2026)

Based on the table above, respondents with sufficient knowledge mostly carried out early mobilization (73.3%). On the other hand, in the minority of knowledge groups, the majority did not mobilize early (80.0%). In the good knowledge group, most of them also did not do early mobilization (70.0%).

The results of the Pearson Chi-Square test showed a value of p = 0.036 (p < 0.05), which means that there is a significant influence between the level of knowledge and the implementation of early mobilization.

Early Mobilization Distribution Based on Family Support Factors

Table 12. Distribution of Early Mobilization Results Family Support Factors

mily Support	Early Mobilization				tal	value
	Not Doing		Doing			
	n	(%)	n	(%)		
ficient Support	9	(81,8%)	2	18,2%)	1	
ood Support	6	(31,6%)	13	68,4%)	9	
Total	**15**	**(50%)**	**15**	**(50%)**	**)**	**,008**

Primary Data Sources (2026)

Based on the table above, most respondents with family support did not do early mobilization (81.8%). On the other hand, the majority of respondents with good family support did early mobilization (68.4%).

The results of the Pearson Chi-Square test showed a value of p = 0.008 (p < 0.05), which means that there is a significant influence between family support and the implementation of early mobilization. Thus, the better the family support, the more likely the patient is to mobilize early.

DISCUSSION

Univariate Analysis

Medical Diagnosis

Based on the distribution of medical diagnoses in the table, it can be seen that most of the respondents are dominated by cases of Ileus Obstruction Ec Intra-Abdomen Tumor as well as patients with Rose Colostomy procedure, which indicates that disorders of the gastrointestinal system are the most common clinical conditions found in this study. Theoretically, obstructive ileus is a surgical emergency that occurs due to mechanical obstruction in the lumen of the intestine, either due to tumors, adhesions, hernias, or strictures, which causes disruption of normal peristalsis. This condition can cause various clinical manifestations such as abdominal distension, colic pain, vomiting, and fluid and electrolyte balance disorders. If not adequately treated, obstructive ileus can develop into intestinal ischemia, necrosis, and perforation that have the potential to increase patient morbidity as well as mortality. In addition, colostomy is generally performed as a surgical intervention to divert the fecal elimination pathway in patients with intestinal obstruction, colon malignancy, or intraabdominal

inflammatory complications, so the high frequency of these procedures reflects the presence of a significant gastrointestinal pathological condition. On the other hand, diagnoses such as peritonitis that also appear in the data distribution describe the presence of serious inflammatory processes in the peritoneum that are often caused by perforation of intraabdominal organs or the spread of infection, which can physiologically trigger systemic responses in the form of hemodynamic disorders, increased metabolic needs, and the risk of sepsis.

This distribution pattern is in line with the theory that obstructive and intraabdominal inflammatory disorders are the main causes of patients undergoing abdominal surgical treatment, and have a wide impact on the patient's physiological function, including the digestive system, fluid balance, and the stability of the patient's general condition (Townsend, 2021).

Researchers assume that medical diagnosis has an effect on early mobilization. Patients with more severe or complex diagnoses tend to experience limitations in mobilization due to unstable physical conditions. In contrast, patients with milder medical conditions tend to be faster in early mobilization.

Types of Drugs

The characteristics of respondents based on the use of drug types in this study showed that there was a variation in the pattern of analgesic therapy given to 30 respondents. Data distribution shows that Cetorolak is the most widely used drug, namely in 9 respondents (35%). This high proportion indicates that most respondents are likely to experience moderate to severe pain, requiring analgesics with stronger potency and rapid onset of work. In clinical practice, Cetorolak is often used as the main choice in acute pain conditions, so the dominance of its use in this study is rational.

Furthermore, the use of Metamizole and Norages was found in 8 respondents (25%) respectively. This same proportion suggests that both drugs act as a significant alternative therapy. Metamizole is known to have good analgesic and antipyretic effects with relatively high tolerance, so it is often used in a variety of pain conditions. Meanwhile, Norages—which are generally a combination of analgesics—can have a synergistic effect in reducing pain. The similarity in the frequency of use of these two drugs may reflect the clinical considerations of health workers in adjusting therapy based on the specific conditions of the respondents, such as pain levels, response to previous medications, and safety factors.

On the other hand, Paracetamol drips were used in 5 respondents (15%), making it the drug with the lowest proportion. This can be due to the characteristics of Paracetamol which is generally used for mild to moderate pain, so its use becomes more limited in certain cases. In addition, intravenous forms of preparation are usually only given for special conditions, such as patients who cannot use oral medications or need a faster effect, so the amount of use is relatively less than other medications.

Based on these findings, the researcher's assumption can be formulated that the variation in the use of the type of drug in the respondents is influenced by several main factors, namely the severity of the pain, the clinical condition of the patient, and the consideration of the effectiveness and safety of the drug. The dominance of Cetorolak use suggests that most respondents are likely to be in conditions that require more intensive pain management. Meanwhile, the high use of Metamizole and Norages indicates the need for alternative therapies that remain effective but may have different side effect profiles. The low use of Paracetamol drips indicates that the indications for its use are more selective and adjusted to certain conditions.

Overall, these characteristics reflect that the selection of analgesic therapy in respondents has taken into account the principle of rationality of drug use, in which health workers adjust the type of drug to the clinical needs of each patient. These findings also show a tendency to use analgesics with stronger potential in the majority of respondents, which can be a general idea of the severity of pain conditions in the study population.

Age Factor

Based on the results of the distribution of the frequency of the age factor to 30 respondents, it was found that most of the respondents were in the age group of 41–60 years, namely 16 people (53.3%). Furthermore, the age group of 31-40 years amounted to 10 people (33.3%), while the age group of 19-30 years was the least, namely 4 people (13.3%). The valid percentage shows the same number as the overall percentage, so it can be concluded that there is no missing data on the age variable. Cumulatively, the percentage reached 46.7% in the age group up to 31–40 years and became 100% after the addition of the age group of 41–60 years.

The dominance of respondents in the age range of 41–60 years shows that this study involves more individuals in the late adult phase to early adulthood. In this age range, various physiological changes occur such as decreased metabolic function, reduced insulin sensitivity, and increased body fat accumulation. In addition, long-term exposure to risk factors such as unhealthy diet, lack of physical activity, and stress can increase the likelihood of health problems. This explains why this age group has the highest proportion.

The age group of 31–40 years ranked second showed that the risk of health problems began to increase in productive age. In this phase, the demands of modern work and lifestyle often contribute to the emergence of metabolic risk factors. Meanwhile, the 19-30 year old age group has the lowest proportion, which can be attributed to physical and metabolic conditions that are generally still optimal at a young age.

Overall, the age distribution of respondents illustrates that the older a person gets, the greater the tendency

to be exposed to health risk factors. Therefore, age is an important variable in analyzing the characteristics of respondents and in designing more targeted promotive and preventive efforts.

This is in line with the Theory (Sun et al., 2022) Which explains that age is an irreversible risk factor that plays an important role in increasing the incidence of non-communicable diseases, including type 2 Diabetes Mellitus. As we age, there is a decrease in pancreatic beta cell function, an increase in insulin resistance, and a change in body composition that increases the accumulation of visceral fat. These physiological changes lead to impaired glucose regulation and increase the risk of metabolic complications (Sun et al., 2022)

In addition, longitudinal research suggests that the biological aging process accelerates the occurrence of low-level chronic inflammation (*Inflamed*), which contributes to metabolic disorders and an increased risk of chronic diseases in middle to advanced age(Ferrucci et al., 2023). This explains why the 41–60 year old age group in the study had the highest proportion.

Recent epidemiological data also show that the prevalence of Diabetes Mellitus increases significantly after the age of 40 due to accumulated exposure to risk factors such as a high-calorie diet, lack of physical activity, and long-term metabolic stress (Organization, 2025)These findings reinforce that the age distribution in the study is in line with global trends in metabolic diseases.

Pain Level Factors

Based on the results of the distribution of the frequency of pain level factors to 30 respondents, it was found that most of the respondents experienced severe pain as many as 19 people (63.3%), while respondents with moderate pain amounted to 11 people (36.7%). The *percent* and *valid percent* values show the same number, so it can be concluded that there is no missing data on the pain level variable. The cumulative percentage showed that 36.7% of respondents were in the moderate pain category and increased to 100% after the severe pain category was added.

The dominance of the severe pain category illustrates that the majority of respondents are in a state of significant discomfort. Clinically, severe pain is usually characterized by high intensity that interferes with daily activities, sleep quality, concentration, as well as the individual's psychological state. High-intensity pain is also often associated with broader inflammatory processes, tissue damage, or complications of a disease that has not been well controlled. This condition can worsen the body's physiological responses, such as increased blood pressure, pulse rate, and stress hormone levels.

Meanwhile, respondents with moderate pain, although less numerous, still need attention because pain at this level can still interfere with physical and emotional functioning. Moderate pain generally allows the patient to continue to be active, but with certain limitations. If not treated adequately, moderate pain has the potential to progress to severe pain or chronic pain.

Physiologically, pain is the body's protective response to tissue damage. However, when pain lasts for a long time or is high in intensity, changes can occur in the peripheral and central nervous systems that cause increased sensitivity to pain stimuli (*sensitization*). This explains why suboptimal pain control can worsen the patient's condition.

The implications of this distribution suggest that most respondents require more comprehensive pain management, both through pharmacological and non-pharmacological approaches such as relaxation, distraction, education, and physical therapy techniques. Regular pain assessments are important to ensure that the interventions given are effective and appropriate to the severity experienced by the patient.

Overall, the results of the distribution of pain levels showed that the majority of respondents were in the severe pain category, indicating the need for more intensive clinical attention in the management of patients' conditions to improve comfort, function, and quality of life.

This is in line with the theory(Raja et al., 2021) . This definition confirms that pain is a multidimensional phenomenon that involves not only tissue damage, but is also influenced by biological, psychological, and social factors. In the development of modern pain science, the concept of *nociplastic pain* explains that increased pain intensity can occur due to changes in signal processing in the central nervous system even if no obvious tissue damage is found (Garland & Hanley, 2021)

Based on the results of the frequency distribution of 30 respondents, the majority of respondents experienced severe pain as many as 19 people (63.3%), while moderate pain was experienced by 11 people (36.7%). Identical valid percentage and percentage values indicate the absence of missing data on pain level variables. Cumulatively, 36.7% of respondents were in the moderate pain category and increased to 100% after the severe pain category was added. This data indicates that most of the respondents are in a state of high-intensity pain.

Neurophysiologically, severe pain can be associated with the central sensitization mechanism, which is a condition when the nervous system experiences an increased response to stimuli so that the pain threshold decreases and pain perception increases. Recent studies show that changes in nerve plasticity in persistent pain cause increased excitability of neurons so that the intensity of pain is felt more severely (Esmaeili et al., 2021). This mechanism explains why most respondents report severe pain.

In addition to biological aspects, pain intensity also has a close effect on quality of life and daily functioning. Recent research shows that the higher the intensity of pain, the greater the disruption to physical

activity, sleep quality, and the psychological state of the individual (Alodhua et al., 2024). Thus, the dominance of severe pain in this study has significant clinical implications because it has the potential to reduce overall patient well-being.

Meanwhile, respondents with moderate pain still require clinical attention, because without proper intervention, the pain can progress to a chronic condition or increase in intensity. A comprehensive pain management approach, based on biopsychosocial, is essential to optimize symptom control and improve patients' quality of life.

Overall, the distribution of pain levels in this study showed the dominance of severe pain supported by modern neurophysiological theories and recent scientific evidence, thus confirming the importance of systematic pain evaluation and intervention in clinical practice. Researchers assume that pain levels are the main factor influencing early mobilization. Respondents with mild to moderate levels of pain were better able to mobilize compared to respondents who experienced severe pain, because pain can cause fear and discomfort when moving.

Knowledge Factor

Based on the results of the frequency distribution of 30 respondents, it was found that most of the respondents had sufficient knowledge as many as 15 people (50.0%). Furthermore, respondents with good knowledge amounted to 10 people (33.3%), while 5 people (16.7%) lacked knowledge. The same *percent* and *valid percent values* indicate that there is no missing data in this variable. Cumulatively, 16.7% of respondents were in the category of lack of knowledge, increasing to 66.7% after the addition of the category of sufficient knowledge, and reaching 100% in the category of good knowledge.

This distribution shows that the majority of respondents have a sufficient understanding of the topic being studied, but are not fully optimal. Knowledge in the "adequate" category indicates that the respondent has understood basic information, but may not have a deep or comprehensive understanding yet. This is in line with the theory (Oh et al., 2021). Which explains that knowledge influences an individual's perception of the susceptibility and severity of a disease, which further impacts decisions to take preventive measures or treatment (Oh et al., 2021).

Respondents with good knowledge (33.3%) showed the ability to understand information more deeply and were more likely to implement appropriate health behaviors. Recent studies have shown that higher levels of knowledge are positively correlated with adherence to therapy, control of risk factors, and the ability to perform self-care (*Self-care*) (Sørensen et al., 2023). This confirms that improving health literacy can contribute to better clinical outcomes.

Meanwhile, respondents with less knowledge (16.7%) remained an important concern. Lack of understanding can lead to low risk awareness, delays in seeking treatment, and non-compliance with medical recommendations. Recent research shows that low health literacy has an effect on increased complications and suboptimal health outcomes (Nutbeam & Lloyd, 2021). Therefore, this group requires more intensive educational interventions.

Overall, the distribution of knowledge factors in this study showed that although most respondents were in the fair to good category, there was still a proportion with less knowledge that required attention. Improving community-based health education, individual counseling, and providing easy-to-understand information are important strategies to improve the quality of knowledge and ultimately improve health behaviors and outcomes.

Family Support Factors

Based on the results of frequency distribution to 30 respondents, it was found that the majority of respondents had good family support as many as 19 people (63.3%), while sufficient support was 11 people (36.7%). The *same percent* and *valid percent* values indicate that there is no missing data on this variable. Cumulatively, 36.7% of respondents were in the category of sufficient support and increased to 100% after the addition of the category of good support.

The dominance of good family support indicates that most respondents receive attention, help, and family involvement in dealing with their health conditions. This is in line with the theory (Thoits, 2024). Which explains that social support plays a protective factor that can reduce stress, increase individual coping and improve health outcomes through buffering mechanisms against psychological distress (Thoits, 2024). This means that the better the support received, the more likely it is that the individual will be able to manage the disease effectively.

Meanwhile, respondents with sufficient family support (36.7%) still need attention. Suboptimal support can lead to low motivation, non-adherence to therapy, and increased risk of stress and anxiety. Recent studies have shown that low social support is associated with an increased risk of psychological disorders and poor health outcomes (Landvatter et al., 2022). Therefore, family-based interventions are an important strategy in improving the quality of patient care.

Overall, the distribution of family support factors in this study showed that most respondents had received good support, which had the potential to have a positive impact on health conditions and quality of life. However, education and family empowerment efforts are still needed so that the support provided is more optimal and sustainable.

Early Mobilization

Based on the results of the frequency distribution of 30 respondents, it was found that as many as 15 people (50.0%) did not mobilize early, and another 15 people (50.0%) did early mobilization. The same *percent* and *valid percent* values indicate that there is no missing data in this variable. The cumulative percentage reached 50.0% in the category of not doing and increased to 100% after the category of doing was added. This data shows a balanced distribution between respondents who do and do not engage in early mobilization.

Early mobilization physiologically plays a role in improving blood circulation, improving lung function, maintaining muscle strength, and preventing complications such as deep vein thrombosis, decubitus, and decreased functional capacity. This is in line with the theory (Franz et al., 2025). which shows that patients who perform early mobilization have a shorter duration of hospitalization and a lower risk of complications compared to patients who have prolonged immobilization (Franz et al., 2025). Light physical activity done gradually can stimulate cardiovascular and metabolic responses that support the healing process.

Early mobilization in postoperative patients is greatly influenced by the type of surgery performed, especially related to the location and length of the incision, the tissues involved, and the level of postoperative pain. Midline incisions that are most commonly used in emergency cases such as peritonitis and intestinal obstruction generally cause higher pain because they involve cutting the linea alba as the main supporting structure of the abdominal wall. This condition causes patients to experience limitations in performing movements that require torso stability, such as getting up from a sleeping, sitting, and standing position, resulting in delays in early mobilization. In contrast to paramedian or transverse incisions which cause milder pain and provide better stability of the abdominal wall, it is easier for patients to start mobilizing gradually. This type of subcostal incision can also affect the ability to mobilize because it creates discomfort when breathing deeply or standing up straight due to the involvement of the intercostal muscles and diaphragm. Thus, the variation in the type of laparatomy incision directly affects the intensity of pain and the patient's ability to perform initial postoperative activities. This explains that in patients with wider incisions or located in the midline of the abdomen, the level of pain tends to be heavier and is one of the factors that inhibit early mobilization, so optimal pain management and physical and psychological support are needed to facilitate the recovery process (Putra & Widodo, 2025).

In addition to physical benefits, early mobilization also has a positive impact on psychological aspects. Recent systematic studies have shown that mobilization that begins in the early stages of treatment can increase patient confidence, reduce anxiety, and improve sleep quality (Franz et al., 2025). Thus, early mobilization not only accelerates physical recovery but also supports emotional well-being.

However, the fact that 50% of respondents did not mobilize early indicates potential barriers, such as pain, fear of moving, lack of education, or limited support from health workers and families. Prolonged immobilization can lead to decreased muscle mass, impaired circulation, and delayed functional recovery (Franz et al., 2025). Therefore, education about the importance of mobilization and assistance in its implementation is very important.

Overall, the balanced distribution of early mobilization in this study showed a variation in practice among respondents. Given the physiological and psychological benefits that have been proven in the current literature, early mobilization needs to be optimized through educational and collaborative approaches to improve clinical outcomes and accelerate the patient's recovery process.

Bivariate Analysis

Early Mobilization Distribution Based on Age Factor

Based on the table of the influence of age factors with early mobilization, in the age group of 19-40 years there were 10 respondents (71.4%) who did not mobilize early and 4 respondents (28.6%) who did early mobilization out of a total of 14 people. In contrast, in the age group of 41–60 years, only 5 respondents (31.3%) did not mobilize early, while 11 respondents (68.8%) did early mobilization out of a total of 16 people. Overall, the distribution of respondents was balanced between those who did not commit and did early mobilization (50% each). The p value = 0.028 (< 0.05) showed a statistically significant influence between the age factor and the implementation of early mobilization.

This is in line with the theory (Esmaeili et al., 2021). Which suggests that the middle adult age group has a better level of adherence to rehabilitative interventions than young adults, due to increased health awareness and experience of disease conditions (Esmaeili et al., 2021)This is in line with the finding that the majority of respondents aged 41–60 years old mobilize early.

Physiologically, although older age is often associated with decreased bodily function, individuals in the 41–60 age range are generally in a transition phase to the elderly with higher preventive awareness. A 2022 systematic study showed that the active involvement of middle-aged patients in early mobilization correlated with faster functional recovery as well as a decrease in length of hospitalization (Esmaeili et al., 2021)

On the other hand, in the age group of 19–40 years, the high proportion of those who do not engage in early mobilization can be influenced by the perception that the body condition is still strong so the risk of complications is considered low. This low perception of vulnerability is often an obstacle in the implementation of promotive-

preventive behaviors (Esmaeili et al., 2021)

Thus, the results of the analysis show that there is a significant influence between age and early mobilization. The 41–60 year old age group did more early mobilization than the 19–40 year old group. These findings confirm the importance of age-appropriate educational approaches to improve adherence to early mobilization.

The researchers assumed that the age distribution of respondents affected early mobilization ability. Respondents with younger ages tend to have better physical conditions so that they mobilize faster. On the other hand, elderly respondents tend to experience physical limitations and decreased bodily functions that can hinder early mobilization.

Early Mobilization Distribution Based on Pain Level Factor

Based on the table of the effect of pain level with early mobilization, in the moderate pain group, there were 9 respondents (81.8%) who did not do early mobilization and 2 respondents (18.2%) who did early mobilization out of a total of 11 people. On the other hand, in the severe pain group, there were 6 respondents (31.6%) who did not mobilize early and 13 respondents (68.4%) who did early mobilization out of a total of 19 people. Overall, the distribution of respondents between those who did not commit and did early mobilization was 50% each. The p value = 0.008 (< 0.05) showed a statistically significant influence between pain level and the implementation of early mobilization.

This is in line with the theory (Bushnell et al., 2025). Yang explains that the perception of pain is influenced by the interaction of physiological and psychological factors, including anxiety, attention, and subjective meanings of pain. This modern reinterpretation of the theory emphasizes that the experience of pain is not always in line with the degree of tissue damage, but is also influenced by patient support, education, and coping (Bushnell et al., 2025). This may explain why in the severe pain group, more respondents engage in early mobilization, possibly due to more optimal pain management interventions or higher motivation to speed recovery.

On the other hand, in the moderate pain group, a high proportion of those who do not mobilize early can be associated with the perception of discomfort that is still quite annoying but has not received intensive pain interventions. The perception of fear of worsening the condition can also be a psychological factor that inhibits mobilization (Meissner et al., 2025)

Thus, the results of the analysis showed that there was a significant influence between pain level and early mobilization. Interestingly, the severe pain group actually did more early mobilization than the moderate pain group. These findings indicate that effective pain management as well as proper education can increase patient participation in early mobilization, regardless of the level of pain intensity felt.

Researchers assume that pain levels are the main factor influencing early mobilization. Respondents with mild to moderate levels of pain were better able to mobilize compared to respondents who experienced severe pain, because pain can cause fear and discomfort when moving.

Early Mobilization Distribution Based on Knowledge Factor

Based on the table of the influence of knowledge factors with early mobilization, in the category of knowledge lacking, there were 4 respondents (80.0%) who did not mobilize early and 1 respondent (20.0%) who did early mobilization out of a total of 5 people. In the category of sufficient knowledge, there were 4 respondents (26.7%) who did not do and 11 respondents (73.3%) who did early mobilization out of a total of 15 people. Meanwhile, in the category of good knowledge, there were 7 respondents (70.0%) who did not do and 3 respondents (30.0%) who did early mobilization out of a total of 10 people. Overall, the distribution of respondents was balanced (50% did not commit and 50% did). The p value = 0.036 (< 0.05) showed a statistically significant influence between the level of knowledge and the implementation of early mobilization.

This is in line with the theory (Jones et al., 2021). Which explains that individuals with a better level of knowledge tend to have a higher perceived *benefit* perception of a health action and *a lower perception of barriers* (Jones et al., 2021). This can be seen in the sufficient knowledge group, where the majority of respondents (73.3%) carried out early mobilization. Adequate knowledge allows patients to understand that early mobilization can prevent complications such as thrombosis, decubitus, and decreased muscle function.

However, the finding that in the category of good knowledge, more people did not mobilize early (70.0%) showed that knowledge alone is not always directly proportional to behavior. Theory *Theory of Planned Behavior* mentioned that in addition to knowledge, attitude factors, subjective norms, and perceived behavioral control also determine the implementation of health measures (Ajzen, 2022). In other words, even if a person has a good understanding, obstacles such as pain, fear, or lack of support can hinder the implementation of early mobilization.

Recent research has also shown that increased knowledge through structured education significantly increases patient participation in early rehabilitation programs, especially when accompanied by health care workers and families (Xie et al., 2023). This emphasizes that education needs to be combined with a motivational approach and practical assistance so that consistent behavior changes occur.

Thus, the results of the analysis show that there is a significant influence between the knowledge factor and early mobilization. The group with sufficient knowledge showed the highest level of early mobilization implementation, while knowledge was less correlated with low implementation. These findings confirm that

comprehensive and sustainable educational interventions are urgently needed to improve adherence to early mobilization.

The researcher assumes that the level of knowledge of the respondents has an effect on early mobilization. Respondents who had a good knowledge of the benefits of early mobilization tended to be more obedient and motivated to move. Conversely, a lack of knowledge can lead to misperceptions that hinder the implementation of mobilization.

Early Mobilization Distribution Based on Family Support Factors

Based on the table of the influence of family support with early mobilization, in the support category, there were 9 respondents (81.8%) who did not mobilize early and 2 respondents (18.2%) who did early mobilization out of a total of 11 people. On the other hand, in the good support category, there were 6 respondents (31.6%) who did not do and 13 respondents (68.4%) who did early mobilization out of a total of 19 people. Overall, the distribution of respondents was balanced between those who did not commit and did early mobilization (50% each). The p value = 0.008 (< 0.05) showed a statistically significant influence between family support and the implementation of early mobilization.

This is in line with the theory (Thoits, 2024). which explains that emotional, informational, instrumental, and reward support from family can improve coping skills and strengthen patients' adaptive behavior (Thoits, 2021). In the good support category, the majority of respondents carried out early mobilization (68.4%), which shows that the presence of family plays a role in providing psychological encouragement and physical assistance when the patient begins to move.

Recent research has shown that family involvement in the rehabilitation process increases patient adherence to mobilization programs as well as lowers levels of anxiety and fear of pain (Franz et al., 2025). Instrumental support such as helping patients sit, walk, or simply accompany during mobilization provides a significant sense of security, thereby reducing psychological barriers.

On the other hand, in the category of sufficient support, most respondents (81.8%) did not mobilize early. This condition indicates that suboptimal support can be an obstacle to the implementation of rehabilitative measures. Recent studies have also shown that low social support correlates with low adherence to health interventions and an increased risk of complications due to immobilization (Raja et al., 2021).

Thus, the results of the analysis show that there is a significant influence between family support and early mobilization. Respondents with good family support did more early mobilization than those who only received enough support. These findings confirm the importance of a family-based approach in increasing the success of early mobilization programs as part of efforts to accelerate patient recovery.

Researchers assume that family support has a major influence on early mobilization. Respondents who received good family support, both emotionally and physically, tended to be more confident and motivated to mobilize. Conversely, the lack of family support can cause the patient to feel scared and not dare to move.

CONCLUSION

1. The age of the patient after lipoplasty surgery showed an influence on the implementation of early mobilization. Patients with younger ages tend to have an easier time mobilizing early than elderly patients due to their physical condition and better recovery capabilities.
2. The level of pain of patients after lipoplasty surgery has an effect on the implementation of early mobilization. Patients with lower levels of pain are better able to perform early mobilization, while patients with high levels of pain tend to experience resistance in mobilization.
3. Patient knowledge about early mobilization has an effect on the implementation of early mobilization in patients after lipoplasty surgery. Patients who have good knowledge of the benefits of early mobilization are more cooperative in carrying out mobilization activities after surgery.
4. Family support is influential with the implementation of early mobilization in patients after lipoplasty surgery. Good family support can increase motivation, confidence, and help patients mobilize during the recovery period.

ADVICE

1. For Hospitals

It is necessary to develop a more structured standard operating procedure (SOP) for early mobilization and strengthen pain management programs so that patients are more comfortable in carrying out postoperative activities.

1. For Nurses

Nurses are expected to increase pre- and post-operative education on the importance of early mobilization, provide active assistance when patients begin to move, and conduct regular pain assessments to support successful mobilization.

2. For Patients

   Patients are advised to follow the recommendations of health professionals related to early mobilization gradually and not to delay activities due to fear, as long as the medical condition is declared stable.

3. For Families

   The family is expected to provide optimal emotional support and physical assistance to the patient, as well as actively participate in the treatment and recovery process.

4. For the Next Researcher

   It is recommended to conduct studies with longitudinal or experimental designs, involving more study sites, and adding other variables such as type of anesthesia, length of operation, and comorbidities to obtain more comprehensive results.

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