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Analysis of the effect of early mobilization on the pain level of post-orthopedic surgery patients at Royal Prima Hospital in Medan in 2023

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Abstract
Orthopedic surgery is a surgical procedure associated with correcting deformities of the musculoskeletal system and can cause postoperative pain in clients. Pain control is significant in postoperative patients; relieved pain can reduce anxiety and allow them to breathe more deeply and quickly to tolerate rapid mobilization. This study aimed to analyze the effect of early march on the pain level of orthopedic postoperative patients. This descriptive correlational research approach is One Group Pretest-Postest research located at RSU. Royal Prima Medan, March 2023. The population of all orthopedic postoperative patient data for the last three months amounted to 76 patients. The technique for determining the number of samples used was using Slovin; 64 samples were obtained. Data analysis using the SPSS version 25 application, using univariate and bivariate methods (paired t-test) meaning limit of 0.05. The results before early mobilization showed that most respondents felt more pain, as many as 32 people (50%), while the minority experienced severe pain, as many as 13 people (20%). The majority of respondents can perform early mobilization well, as many as 41 people (64%), while the minority cannot perform early mobilization well, as many as 23 people (36%). After early march, the majority of respondents felt a little more pain, as many as 35 people (55%), and the minority felt more pain, as many as 29 people (45%). The paired t-test test obtained a p-value of $0.002 \leq 0.05$, concluding that Ho was rejected and Ha accepted. It concluded that early mobilization affected changes in pain in post-orthopedic surgery clients in the hospital room of Royal Prima Medan Hospital in 2023.

Keywords: Early mobilization, pain, orthopedics

Introduction

Orthopedic surgery is a procedure for correcting deformities to restore movement and stability and reduce pain and disability [1]. Orthopedic surgery is a surgical procedure associated with correcting deformities of the musculoskeletal system and orthopedic problems that aim to improve function by restoring movement and stability and reducing pain and disability. Problems often found in the postoperative period are circulation, urinary, wound, gastrointestinal, and safety and comfort problems. Surgery can cause postoperative pain in clients, usually felt 12 to 36 hours after surgery [2]. Pain is subjective; no two individuals experience the same pain, and no two instances of the same pain produce identical responses or feelings in an individual. Pain control is significant in postoperative patients; relieved pain can reduce anxiety, breathe more deeply, and easily tolerate rapid mobilization [3]. Pain assessment and analgesic appropriateness should be used to ensure that the postoperative patient's pain can be relieved, with the overall goal in pain management being to reduce pain as much as possible with the least possible side effects. Early mobilization in postoperative patients is a policy to guide the patient out of bed as soon as possible and guide him as quickly as possible to walk and shift the patient's focus from the pain experienced to his mobilization activities [4]. Early mobilization is a prominent factor in accelerating post-surgical recovery and can prevent post-surgical complications. The research results by Pristahayuningtyas *et al*. (2016) show an effect of early mobilization on changes in client pain levels after appendectomy surgery [5]. This study aims to analyze the impact of early mobilization on the pain level of orthopedic postoperative patients.

Research methods

This type of research uses a descriptive correlational research design, namely the effect of early mobilization on changes in pain in orthopedic postoperative clients using the Group Pretest-Postest approach. Research location at RSU. Royal Prima Medan, March 2023. The population of all orthopedic postoperative patient data for the last three months amounted to 76 patients. The technique of determining the number of samples used is using Slovin:

$$n = \frac{N}{1 + Ne^2}$$

n = 76/1+((76 x $(0.05)^2$)
n = 76/1+(76 x 0.0025)
n = 76/1+ 0.19
n = 76/1.19
n = 63,8 rounded up to 64 people.

Description
n = Minimum sample
N = Sample population
e = tolerance limit percentage (0.05)

Sample selection using nonprobability sampling, namely consecutive sampling. Sample inclusion criteria are orthopedic postoperative patients treated at Royal Prima Medan Hospital, which is in place when researchers conduct research. Patients ' vital signs (blood pressure, pulse, temperature, and respiration) are stable and willing to become respondents. Sample exclusion criteria include unstable vital signs, patients experiencing decreased consciousness, and unwillingness to become respondent

Table 1: Operational definition

Variable	Operational definition	Parameters	Measurement tools	Data scale	Results
Independent variable					
Mobilization early	A movement in the muscles of the body that is done as early as possible in the first 24 hours after surgery [6].	Early Mobilization Techniques	Early mobilization SOP	Ordinal	1. Can't do well 2. Can do well
Dependent variable					
Pain	An uncomfortable feeling that is highly subjective and only the person experiencing it can explain and evaluate it. [7].	Sheet Observation	Scale Face	Interval	1. Scale 0 No pain 2. Scale 1 Slight pain 3. Scale 2 Slightly more pain 4. Scale 3 More pain 5. Scale 4 Very painful 6. Scale 5 Severe pain

Data analysis using the SPSS version 25 application, using univariate and bivariate methods (paired t-test) to test differences in pain scale before and after early mobilization, the meaning limit is 0.05 so that the p value ≤ 0.05 then the statistics are called "meaningful" and if p ≥ 0.05 then the results of the calculation are "not meaningful".

Research results

Table 2: Overview of research respondents, based on age, gender, education and employment status.

Characteristics	Category	Sum	Percentage
Age	<30 Years	1	2%
	30 s/d 40 Years	6	9%
	41 s/d 50 Years	32	50%
	>50 Years	25	39%
Total		64	100%
Gender	Male	36	56%
	Female	28	44%
Total		64	100%
Education	SMP (Junior High School)	18	28%
	SMA (High School)	25	39%
	Higher Education (D3, S1, S2, S3)	21	33%
Total		64	100%
Employment Status	PNS (Government employees)	22	34%
	Private	14	22%
	Entrepreneurship	28	44%
Total		64	100%

Source: Primary data, processed 2023.

Based on Table 1. it is known that the highest number of respondents in the age range of 41 to 50 years, namely 32 patients. Age reflects the physical condition of a person. In relation to the health sector, age can reflect certain health care needs in a person. Gender can show the physical condition of a person. In relation to the health sector, gender often gives a sense of a person's physical strength. The highest number of respondents in gender was male, totaling 36 patients. The level of education reflects the level of intellectuality of a person. The highest number of respondents in high school education was 25 patients. Employment status reflects the income level of a person. This condition often also reflects the choice of location for health checks. The highest number of respondents in employment status was civil servants (PNS), namely 28 patients.

Postoperative pain is a side effect that must be suffered by those who have undergone surgery, including orthopedic surgery. The pain can be caused by adhesions between tissues due to surgery. The pain is almost impossible to eliminate 100% and each person will experience different levels of pain. The level of pain can be seen on a facial scale with different levels where:

0 = No pain,
1 = Slight pain,
2 = Slightly more pain,
3 = More pain,
4 = Severe pain and
5 = Severe pain [8].

Table 3: Frequency and percentage distribution of pain levels of orthopedic postoperative clients before early mobilization at Royal Prima Medan Hospital in 2023

No	Pain level	Sum (n)	Percentage
1	Severe pain	13	20 (%)
2	Pain once	19	30 (%)
3	More pain	32	50 (%)
	Total	64	100 (%)

Source: Primary data, processed 2023.

Based on table 3. It is known that before early mobilization the majority of respondents felt more pain as many as 32 people (50%) while the minority of respondents experienced severe pain as many as 13 people (20%).

Table 4: Frequency and percentage distribution of early mobilization of orthopedic postoperative clients at Royal Prima Medan Hospital in 2023.

No	Early mobilization	Sum (n)	Percentage
1	Can do well	41	64%
2	Can't perform well	23	36%
	Total	64	100%

Source: Primary data, processed 2023.

Based on table 4. It is known that the majority of respondents can perform early mobilization well as many as 41 people (64%), while the minority of respondents cannot perform early mobilization well as many as 23 people (36%).

Table 5: Frequency and percentage distribution of pain levels of orthopedic postoperative clients after early mobilization at Royal Prima Medan Hospital in 2023

No	Pain level	Sum (n)	Percentage (%)
1	More pain	29	45
2	Slightly more painful	35	55
	Total	64	100,00

Source: Primary data, processed 2023.

Based on table 5. It is known that after early mobilization, the majority of respondents felt a little more pain as many as 35 people (55%) and the minority of respondents felt more pain as many as 29 people (45%).

Table 6: Pain level before and after early mobilization in orthopedic postoperative clients at Royal Prima Hospital

No	Pain Level	Jumlah (n)	Mean	SD	Min max
1	Early pre-mobilization	64	3.24	0.801	3-5
2	Early post-mobilization	64	2.12	0.481	2-3

Source: Primary data, processed 2023.

Based on table 6. shows that the average pain level before early mobilization is 3.24 and after early mobilization is an average of 2.12, there is a difference of 1.12 decrease. The minimum value of pain level in pre-early mobilization is 3 and the maximum value is 5, while in post early mobilization the minimum value of pain level is 2 and the maximum value is 3.

Table 7: Results of the wilcoxon signed ranks test description of changes in pain levels before and after early mobilization in orthopedic postoperative clients at Royal Prima Medan Hospital in 2023.

No	Pain level	Sum (n)	Mean	Z	*p-value*
1	Early pre-mobilization	64	3.24	-4.336	0,002
2	Early post-mobilization	64	2.12		

Source: Primary data, processed 2023.

Based on table 7. it is known that the score of changes in pain levels from the Wilcoxon test results when tested pre-test the mean value is 3.24, when tested post-test the mean value is 2.12. So the results obtained Z value = -4.336 then the p-value is $0.002 \leq 0.05$ so it is concluded that Ho is rejected and Ha accepts, which means that there is an effect of providing early mobilization on changes in pain in Orthopedic postoperative clients in the hospital room of Royal Prima Medan Hospital in 2023.

Discussion

Pain levels before early mobilization for orthopedic postoperative clients at Royal Prima Medan Hospital, 2023.

Pain is a highly individualized and subjective experience that can affect all people of all ages. The causes of pain are disease processes, injuries, procedures, and surgical interventions [9]. Surgery is an event that is biphasic to the human body, which has implications for pain management. The postoperative patients' recovery time commonly occurs within one or two hours. Postoperative patient recovery takes an average of 72.45 minutes, so patients will feel severe pain on par in the first two hours after surgery because the effect of anesthetic drugs has disappeared [10]. Pain in postoperative patients is not treated immediately, which will result in the patient's rehabilitation process being delayed, the patient's hospitalization becoming longer, the compilation level being high, and more costs. Patients focus all their attention on their pain [11].

Based on the results of research on 64 respondents about the effect of providing early mobilization on changes in pain in orthopedic postoperative clients in the hospital room of Royal Prima Medan Hospital in 2023, it is known that before the earlier rally, the majority of respondents felt more pain again while the minority of respondents experienced severe pain. The theory states that orthopedic postoperative pain has been reported as acute pain at extreme levels. This is due to the degree of damage that injuries start from superficial, soft tissue, bone exposed, blood vessels, and nerves.

Pain levels after early mobilization for orthopedic postoperative clients at Royal Prima Medan Hospital, 2023.

In general, pain is a feeling of discomfort that is generally associated with damage to body tissues or other factors [12]. Pain can be defined as an elusive and complex phenomenon, although universal, but still a mystery where pain is one of the human body's defense mechanisms that indicates the experience of problems, and pain is an individual's belief and how the individual responds to the pain he experiences. Pain in patients after orthopedic surgery is acute pain caused by tissue damage that occurs due to surgical incisions and previous trauma indicative of orthopedic fracture surgery [13].

Nurses have a role in managing pain, pain response, and side effects from administering pain relief therapy. In nursing interventions to improve the return of body function and reduce pain, patients are recommended to do early mobilization, namely joint motion training, gait, and activity tolerance according to ability and body alignment [14]. Exercise therapy and mobilization are appropriate modalities to restore body function to the injured part and the entire limb [15]. Exercise therapy can be in the form of passive and active exercise; exercise therapy can also be in the form of transfer, positioning, and ambulation to improve independent activity skills [16]. Based on the results of research on 64 respondents about the effect of early mobilization on changes in pain in orthopedic postoperative clients in the hospital room of Royal Prima Medan Hospital in 2023, it is known that after being given early mobilization, the majority of respondents felt a little more pain and the minority of respondents felt more pain again.

The effect of early mobilization on pain levels in orthopedic postoperative clients at Royal Prima Medan Hospital in 2023.

The results of the Wilcoxon Rank Test showed ρ-value = $0.002 < \alpha = 0.05$; this means that H0 is rejected and Ha is accepted there is an effect of providing early mobilization on changes in pain in post-orthopedic surgery clients in patients in the hospital room of Royal Prima Medan Hospital in 2023. The results of this study are the opinion of Pristahayuningtyas *s*. (2016), which shows that there is an effect of early mobilization on changes in the pain level of postoperative appendectomy clients at Baladhika Husada Hospital, Jember Regency [5]. Research conducted by Berkanis *et al*. (2020) shows that early mobilization affects pain intensity in postoperative patients, so it can be used as one of the nursing actions in dealing with postoperative patient pain. Mobilization is a significant factor in accelerating recovery and preventing postoperative complications; the benefits of early mobilization are increased blood circulation, which can reduce pain, prevent thrombophlebitis, provide nutrients for healing in the wound area, and improve the smooth functioning of the kidneys [11].

Conclusions

Pain levels before early mobilization in post-orthopedic surgery clients: Most felt more pain, and the minority experienced severe pain. After an earlier rally in most orthopedic postoperative clients, the storyline story is slightly more painful, and the minority feels more pain again. There is an effect of providing early mobilization on changes in pain in post-orthopedic surgery clients in patients in the hospital room of Royal Prima Medan Hospital in 2023.

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