

Effect of Pre and Postoperative Nursing Intervention on Pain and Postoperative Complications among Patients undergoing Hip Replacement

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Abstract: Hip replacement is a common surgical treatment in orthopedics. The successful recovery post hip replacement surgery requires not only proper surgical technique but also effective pre and postoperative nursing care which may be of great value in increasing level of post-operative comfort and reducing or preventing the occurrence of postoperative complications. **Purpose:** To determine the effect of pre and postoperative nursing intervention on pain and postoperative complications among patients undergoing hip replacement. **Setting:** The study was conducted at orthopedic departments at Menoufia University and Shebin El-Kom teaching hospitals. **Sampling:** A consecutive sample of 80 adult patients who were planned for hip replacement surgery was assigned randomly and alternatively into two equal groups, 40 patients for each group. **Instruments:** Three instruments were used for data collection: Structured interview questionnaire, visual analogue pain scale and observational checklist for performance and complications. **Results:** The majority of the study and control group (92.5%, 90% respectively) had worst pain level at pre intervention, while 65% of study group compared to 20% of control group had no pain at follow up period. There was statistically significant reductions of postoperative complications occurrence among study group compared to control group at postoperative period. **Conclusion:** pre and post postoperative nursing care had a positive impact on reducing patient's pain intensity and complications after hip replacement among study group than control group. **Recommendation:** Supervised health teaching regarding pre and postoperative care should be given among hip replacement patients to reduce pain and postoperative complications.

Keywords: *Complications, hip replacement, nursing intervention and pain.*

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Introduction

Hip arthroplasty (HA) is a common orthopedic surgery and one of the effective management for end-stage hip joint diseases, mostly for the elderly (Plunger et al., 2021). It is estimated that more than one million total hip replacements (THR) are annually performed worldwide due to fractures, osteoarthritis, bone tumors and other diseases (Ferguson et al., 2018 & Pollock et al., 2016).

Many causes may lead to damage of hip include primary and secondary osteoarthritis as a result of osteonecrosis, inflammatory conditions like rheumatoid arthritis, post traumatic and post infectious conditions. End stage arthritis of the hip joint leads to debilitating pain which impedes activity of daily living (Marahatta & Sigdel, 2020).

Hip arthroplasty is indicated when conservative measures like non-steroidal anti-inflammatory drugs (NSAIDs), and lifestyle modification are failed to relieve pain (Marahatta & Sigdel, 2020). The role of the hip prosthesis mainly is to totally or partially solve arthralgia, vascular deficiency of the hip, instability and functionality of the hip joint. The patient with HA becomes a chronic patient and the proper preoperative and postoperative nursing management becomes the therapeutic conduct of choice (Marcu et al., 2021).

The nurses have a significant role for assessing pain and physical activity to identify their patients' needs and improve their expectations regarding surgery's outcome. Nurses should increase patients' knowledge that help to promote patients' recovery, reduce patients' length of stay, and eased their financial burden (Abd-Allah et al., 2020).

Preoperative nursing education has also been found to provide patients

with a more realistic expectation of surgery, which correlates to a higher level of satisfaction with surgical outcomes for hip replacement in a variety of ways from directly measured outcomes, such as joint functionality and pain control, to more qualitative data, such as the psychosocial factors influencing surgery (Okafor & Chen, 2019).

The prevalence of persistent postoperative pain after total hip replacement ranged between 27% to 38% of the patients. Such persistent pain has a significant effect on the patient's activities of daily living and their quality of life that is a serious problem of suffering in addition to pain (Erlenwein et al., 2017). Moreover the International Surgical Outcomes Study showed that 16.5% of patients who underwent orthopedic surgery experienced complications. The incidence of complications in hip arthroplasty was 3.2% to 8.0% with an important variability between centers (Global patient outcomes after elective surgery, 2017). The nurse must be aware of and monitor for specific potential serious complications associated with total hip replacement. Complications that may occur include dislocation of the hip prosthesis, excessive wound drainage, thromboembolism, infection, and heel pressure ulcer (Gabbert et al., 2019).

To prevent the occurrence of postarthroplasty complications, appropriate nursing interventions during hospitalization with careful monitoring and preparing patients for discharge are required. The information provided to these patients on the pre and postoperative periods has a great impact on the recovery of these groups of patients (Andraws et al., 2016).

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The nurse should educate the patients for positioning in bed, isometric contractions of abdominal, gluteal, and quadricep muscle groups, getting up and lying down in bed, sitting, down and getting up from a chair, using the shower/bath, using the toilet, walking with a Zimmer frame or crutches up and down the stairs, getting in and out of the car, mobilization of the joint to facilitate venous return and prevent complications such as thrombophlebitis; and also the movements to be avoided in order to prevent dislocations (Sousa & Carvalho, 2017).

Also nursing education about exercises can decrease the degree of joint pain, promote the function of hip joint, and reduce postoperative complications (Zhao et al., 2021). The provision of pre and post nursing instructions for patients undergoing THR may be of great value in decreasing patients' pain, improving patients' functional status and reducing the occurrence of postoperative complications (Abd El-Naby et al., 2021).

Significance of the study

Each year, more than a million total hip replacement procedures are performed globally. This number is anticipated to double throughout the following ten years as the population matures (Fontalis et al., 2021). Kasr Al Ainy Hospital documented that the admitted patients for THR were about 1000 patients during year 2020 (General Authority for Healthcare Accreditation and Regulation, 2021). Moreover Menoufia University hospital performed 84 hip replacement surgeries in 2021 (Statistical records of surgery, Menoufia University hospital, 2021), while the total number of hip replacement surgeries in Shebin El-Kom teaching hospital were 50 patients in 2021 (Statistical records

of surgery, Shebin El-Kom teaching hospital, 2021).

Little research findings have indicated that pre and postoperative nursing intervention for hip replacement patients led to improvement of clinical outcomes because this intervention has a positive influence on patients' overall healing process that lead to decrease pain, improve activities and reduce incidence of surgical complications (Yager & Stichler, 2015). Therefore, the current study was carried out to determine the effect of integrative pre and postoperative nursing intervention on pain and postoperative complications among those patients.

Purpose of the study

The purpose of the current study was to determine the effect of pre and postoperative nursing intervention on pain and postoperative complications among patients undergoing hip replacement.

Research Hypotheses

The following research hypotheses were formulated to achieve the aim of the study:

- 1) Patients who receive pre and postoperative nursing intervention (study group) will have lower pain intensity than patients who do not (control group).
- 2) Incidence rate of postoperative complications among patients who receive pre and postoperative nursing intervention (study group) will be lower than patients who do not (control group).

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Method

Research design:

A quasi experimental research design was utilized to achieve the aim of this study.

Setting:

The study was conducted at orthopedic departments at Menoufia University and Shebin El-Kom teaching hospitals.

Sampling:

A consecutive sample of 80 adult patients who were planned for hip replacement surgery were assigned randomly and alternatively into two equal groups, 40 patients for each group. Group one was the study group. They received the designed pre and postoperative nursing intervention along with routine hospital care. Group two was the control group. They only received routine hospital care.

Inclusion criteria:

The study subjects were selected according to the following criteria:

- Admitted within at least 24 hours to orthopedic department before the surgery.

Exclusion criteria:

- Any cognitive impairment by patient's history or during explanation of consent procedure because these conditions may impair the ability to receive nursing intervention.
- Previous history of unilateral or bilateral leg deformities to avoid interference with the designed intervention that may affect the results.

Sampling technique:

The sample size was determined based on the following equation: $n_0 = Z^2 p q / e^2$ which was valid where n_0 was the sample size, Z^2 was the desired confidence level is 95% (1.96) (The value for Z was found in statistical tables which contain the area under the normal curve) and e was the desired level of precision 0.05 ($\pm 5\%$). So $n_0 = 3.92 \div .05 = 78.4$. This sample size was increased to 80 patients to compensate for attrition rate.

Instruments of the study:

Three instruments were used by the researcher for data collection, these instruments were:

- **Instrument 1:** Structured interview questionnaire.
- **Instrument 2:** Visual Analogue Pain scale (VAS).
- **Instrument 3:** Observational checklist for performance and complications.

Instrument I: Structured interview questionnaire:

It was developed by the researchers to assess baseline patient's personal and medical characteristics. It comprised of two parts as the following:

- **Part one: Personal data:** It comprised of seven questions about patient's age, sex, marital status,and occupation
- **Part two: Medical data:** It comprised of questions related to present medical history.

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Instrument II: Visual Analogue Pain scale (VAS):

It was developed by Bain et al., (2005) to rate the subjective level of pain intensity. The measurement was ranged from zero to ten, in which zero meant no pain while a score from 1 to 3 denoted mild pain, a score from 4 to 6 indicated moderate pain and a score from 7 to 10 illustrated worst pain.

The validity of visual analogue pain scale was shown to be good construct validity from 0.62 to 0.80 , reliability was also demonstrated with strong test-retest agreement (intraclass correlation coefficient= 0.95 were observed (Brokelman et al., 2012).

Instrument III: Observational checklist for performance and complications:

It was developed by the researchers to evaluate patient's performance and incidence of complications. It includes two parts as follow:

▪ **Part one: Patient's performance:** It was used to evaluate patient's performance of postoperative activities that should be done to be checked by the researchers if it practiced by the patients correctly or not. Examples of these activities were changing position, breathing exercise, moving and transferring technique. One mark was given for performing each step in the activities correctly, while zero mark was given for performing each step in the activities incorrectly or when patient did not perform it at all. Then all marks for each activity were summed and converted into percentage score. This score was categorized by the researcher as the following

inadequate (60% or less), adequate (more than 60%).

▪ **Part two: Incidence of complications:** It was used to evaluate incidence of patient's complications. It comprised of 5 items about postoperative local complications such as bleeding, deep vein thrombosis, wound infection, vascular complications and nerve complications. One mark was given for occurring a symptom, while zero mark was given for no symptom occurs. Then all marks for each symptom of complication were summed.

Procedure

Written approval:

A formal letter from the Dean of Faculty of Nursing, Menoufia University was sent to the responsible authorities of both hospitals to obtain their permission to carry out the study after explanation of the purpose of the study.

Instruments development:

The first and the third instrument were developed by the researcher, while instrument II was developed by Bain et al., (2005). The first and the third instrument were tested for content validity by five experts in the field of Nursing and Medical specialties to ascertain relevance, completeness and clarity. Modifications were done accordingly to ascertain relevance and completeness.

Reliability:

The first and the third instruments were tested for reliability using a test retest method and a person correlation coefficient formula was used. The period between both tests was two

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weeks and the results were 0.97 for first instrument and 0.91 for the third. While second was proved to be valid and reliable (Brokelman et al., 2012).

Pilot study:

A pilot study was conducted prior to data collection on 10% of the study sample (8 patients) to test the feasibility, clarity and applicability of the instruments.

Ethical Considerations:

An approval from Ethical and research committee of the Faculty of Nursing, Menoufia University was obtained. A written consent was obtained from all subjects who met the inclusion criteria and agree to participate in the study after explanation of the purpose of study. Each subject was reassured that any obtained information would be confidential and would only be used for the study purpose. The researcher emphasized that participation in the study was entirely voluntary and anonymity of the subjects were assured through coding data.

Data collection:

- Data collection was extended over a period of 12 months from the first of October 2020 to end of September 2021.
- Subjects who agreed to participate in the study and fulfilled the inclusion criteria were interviewed individually by the researchers in orthopedic departments at Menoufia University and Shebin El-Kom Teaching Hospitals (before operation and immediately after operation then second day postoperative) then the follow up was performed after the

subjects were discharged in outpatient clinics

- The study was conducted in two consecutive phases: preoperative and postoperative phases as following:

1) The preoperative phase:

- All subjects of both groups were assessed individually for biodemographic data utilizing the first instrument part one and two. It took about 10-15 minutes.
- Assessment of pain was done for each subject of both groups using instrument II (Visual analogue pain scale). It took about 2-5 minutes.
 - The researchers prepared an instructional booklet about pre and postoperative nursing care after assessment as well as extensive literature review (Glassou et al., 2017). This booklet was supported by illustrative pictures and included information about pre and postoperative nursing management for hip replacement surgery as assessment of the subject's condition such as vital signs and pain intensity, technique of breathing exercise, methods of decreasing pain, respiratory hygiene, postoperative nutrition, wound care, sleeping and getting up from the bed.
- The researchers interviewed each subject of the study group individually in his/her room in the first day after admission for three teaching sessions; each of 40-60 minutes according to subject's level of understanding. The previously prepared booklet was distributed by the researchers at the beginning of first session. Lecture, group

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discussion, video, demonstration and return demonstration were used for illustration. The prepared protocol of care conducted through the following sessions:

- **During the first session:** The researchers instructed patient about pain relieving measures by applying ice pack (wrapped in piece of cloth to prevent tissue damage) at operative site for about 15 – 20 minutes every 4 to 6 hours in the day. Moreover the researchers taught patient about respiratory hygiene by instructed him to take deep breathing then cough. The frequency of performing coughing and deep breathing exercise was ten times every hour.
- **During second session:** The researchers demonstrated for each subject method of using the overhead trapeze for changing position. Also the researchers taught each subject about wound care such as subject's dressing should checked and changed according to the surgeon's instructions, observed for symptoms of infection at the site of the wound.
- Moreover the researchers taught each subject about postoperative nutrition: eating a diet rich in fiber such as whole grains, fruits and vegetables, taking enough fluids to avoid constipation (8-10 glasses / cups per day), eating lean proteins such as lean meat, poultry, and fish to speed healing and recovery after surgery and restore strength.

- Finally the researchers informed each subject about necessary postoperative precautions: avoiding acute flexion of hip not greater than 90°, crossing legs, hip adduction or internal rotation and elevating bed more than 45 degrees.

- **During third session,** the researchers refreshed the previous learnt knowledge and taught each subject of study group specific postoperative exercises. These exercises included ankle pumps, quadriceps setting, gluteal sets, heel slides, hip abduction, hip internal/external rotation and hip flexion/extension. The researchers informed subjects each type of previously mentioned exercise should performed 10 times per set twice a day. Moreover the researchers emphasized the importance of scheduled follow up and physician visits.

2) The postoperative phase:

- This phase began immediately postoperatively (within two hours from operation as nurse informed the researchers the time of patient's leaving the operating room) in which the researchers reinforced the necessary postoperative restrictions and proper position of the affected extremity.
- The researchers reminded all subjects of study group to use the measures for relieving pain and observe how patient applied it such as using ice pack for 20 minutes at one time, taking the prescribed pain medication, practicing breathing exercise, frequent changing of

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position every 2 hours and allowing body to rest.

- The researchers encouraged all subjects of study group to use the overhead trapeze for changing position, apply respiratory hygiene to reduce risk of lung complications, postoperative nutrition, wound care, sleeping and getting up from the bed.
- The researchers assessed the wound and presence postoperative complications by using part two of instrument III (observational checklist) as following:
 - Bleeding: immediately until the 2nd postoperative day.
 - Signs and symptoms of DVT, infection and vascular complications: 1st and 2nd week postoperatively. ;
 - Signs of nerve complications: post two weeks and one month from the operation.
- After subject's condition become stable in 3rd day postoperatively based on individual patient's abilities, the researchers assisted all subjects of study group to perform all previously learnt postoperative exercises to improve blood flow to lower extremities to prevent DVT.
- All subjects of both groups was assessed twice postoperatively (after 15 day and after one month) for their pain intensity using instrument II.
- All subjects of both groups was assessed twice postoperatively using instrument III as following: for their performance (after 15 day and after one month) using part one of third instrument and for complications

using part two of the same instrument (immediately and two days postoperative for bleeding, after one week and two weeks for signs of deep vein thrombosis, infection and vascular complications and after two weeks and one month for signs of nerve complications).

- A comparison was done between both groups (study and control groups) to assess the effect of pre and postoperative nursing intervention on pain and postoperative complications among patients undergoing hip replacement.

Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS software (Statistical Package for the Social Sciences, version 26, SPSS Inc. Chicago, IL, USA). For quantitative data, mean and standard deviation were calculated. For qualitative data; frequency, percentage or proportion were calculated, comparison between two groups was done using Chi-square test (χ^2). For comparison between means of two groups of parametric data of independent samples, student t-test was used. For comparison between means of two groups of non-parametric data of independent samples, Z value of Mann-Whitney test was used. Correlation between variables was evaluated using Pearson's correlation coefficient (r). The level of significance was set as P-value < 0.001 was highly statistically significance difference, P-value < 0.05 was statistically significance difference and P-value > 0.05 was no statistically significance difference.

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Results:

Table (1): This table shows that, more than one third of studied sample (study and control groups) were 55 to 65 years (45 % & 35% respectively). Less than two thirds of them were males (60.0% and 62.5% respectively). Concerning marital status, the majority of study and control group groups were married (80% and 87.5% respectively). Concerning to level of education, about one third of both study and control groups (37.5% and 30.0% respectively) were illiterate.

There were no statistically significant differences between both groups regarding all personal characteristics.

Table (2): This table shows that, more than one third of both study and control groups (37.5% and 40% respectively) admitted to hospital because of erosion in the hip joint because of osteoporosis. More than half of them (57.5% and 55% respectively) performed hip replacement for reducing sever hip pain.

There were no statistical significant differences between both groups regarding all present medical history.

Table (3): This table is shows that, majority of study and control groups (92.5%, 90% respectively) had worst pain level at pre intervention, while 65% of study group compared to 20% of control group had no pain at follow up period. There was highly significant improvement of pain level among study group than control group at post intervention and follow up period (P-Value = 0.000**).

Figure (1): It is observed that, majority of study group at post

intervention and on follow-up period (85% and 82.5% respectively) had adequate total performance level compared to minority of control group (25% and 20% respectively). There was highly statistical significant better total performance level for study group than control group post intervention and on follow up period.

Table (4): This table shows that, almost all subjects of both study and control groups had no bleeding (0% and 10% respectively) immediatly postoperative compared to 0% and 20% respectively 2 days postoperativly. As regards symptoms of DVT, 22.5% of study group and 57.5% of control group had localized redness one week postoperativly that was significantly improved to 12.5% of study group compared to 40% of control group post two weeks. Regarding symptoms of infection 10.0% of study group and 47.5% of control group had fever and chills one week postoperativly that was highly significantly improved among study group to 5.0% than control group (57.5%) post two weeks. Regarding manifestations of vascular complications, 25% of study group compared to 52.5% of control group had localized pain two weeks postoperativly that was significantly improved to 17.5% of study group than 45% of control group one month postoperativly. Regarding symptoms of nerve complications 7.5% of study group and 25% of control group had weakness one week postoperativly that was significantly improved among study group (2.5%) than control group (16%) two weeks postoperativly.

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Table (1): Percentage distribution of studied subjects according to their personal characteristics. (n=80)

Personal characteristics	Studied subjects (n=80)				X ²	p-value
	Study group (n=40)		Control group (n=40)			
	No	%	no	%		
Age						
25 – < 35 years	5	12.5	6	15.0	2.214	.529
35 – < 45 years	6	15.0	10	25.0		
45 – < 55 years	11	27.5	10	25.0		
55-65 years	18	45.0	14	35.0		
Sex					.053	.818
Male	24	60.0	25	62.5		
Female	16	40.0	15	37.5		
Marital status					.827	.363
Single	8	20.0	5	12.5		
Married	32	80.0	35	87.5		
Education level					7.086	.131
Illiterate	15	37.5	12	30.0		
Read and write	12	30.0	17	42.5		
Secondary education	6	15.0	7	17.5		
University education	7	17.5	4	10.0		
Occupation					6.454	.091
Housewife	14	35.0	12	30.0		
Manual work	7	17.5	17	42.5		
Administrative work	12	30.0	7	17.5		
Not working	7	17.5	4	10.0		

Table (2): Percentage distribution of present medical history of studied Subjects. (n=80)

Present medical history	Studied subjects (n=80)				X ²	p-value
	Study group (n=40)		Control group (n=40)			
	no	%	no	%		
Causes of present hospitalization					5.575	.233
• Hip joint erosion caused by osteoporosis	15		16	40.0		
• Rheumatoid arthritis	13	32.5	11	27.5		
• Bone fractures	9	22.5	13	32.5		
• Hip joint erosion caused by osteoporosis and rheumatoid arthritis	1	2.5	0	0.0		
• Hip joint erosion caused by osteoporosis and bone fractures	2	5.0	0	0.0		
Duration of present complain					15.893	.001
• A week - < a month	5	12.5	0	0.0		
• Month - < two months	13	32.5	4	10.0		
• 2-3 months	11	27.5	10	25.0		
• > 3 months	11	27.5	26	65.0		
Reasons of hip-replacement surgery*					2.054	.561
• Reducing hip pain	23	57.5	22	55.0		
• Help improving hip joint function	18	45.0	17	42.5		
• Hip joint diseases	1	2.5	1	2.5		
Types of hip replacement					1.614	.204
• Total hip replacement	27	67.5	32	80.0		
• Partial hip joint replacement	13	32.5	8	20.0		
The waiting period before surgery					1.841	.175
• Less than three days	20	50.0	26	65.0		
• From three days to a week	20	50.0	14	35.0		

N.B: Reasons of the waiting period before surgery for both group were for investigations and x-ray

* Some subjects of study group chose more than one answer.

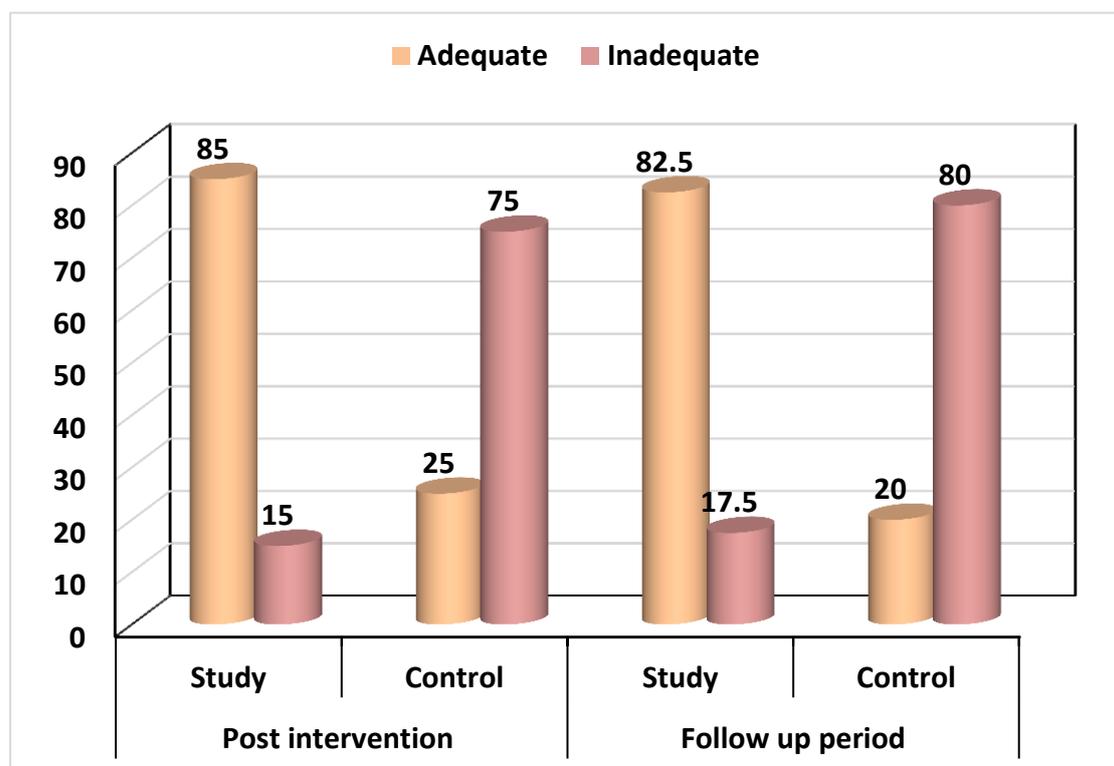
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Table (3): Distribution of pain level among study and control groups throughout study period (n=80)

Pain level	Pre intervention				Post program				Follow-up period			
	Study group (n=40)		Control group (n=40)		Study group (n=40)		Control group (n=40)		Study group (n=40)		Control group (n=40)	
	no	%	no	%	No	%	no	%	no	%	no	%
None	0	0.0	0	0.0	0	0.0	0	0.0	26	65.0	8	20.0
Mild	0	0.0	0	0.0	22	55.0	2	5.0	13	32.5	22	55.0
Moderate	3	7.5	4	10.0	16	40.0	33	82.5	1	2.5	3	7.5
Worse	37	92.5	36	90.0	2	5.0	5	12.5	0	0.0	7	17.5
X²/ p-value	0.157/ 0.692				23.85/0.000**				19.84/0.000**			
Mean total score ±SD	7.77±0.800		7.70±0.911		3.50±1.79		5.22±1.25		0.77±1.16		2.87±2.68	

** highly statistically significance p<0.001

Figure (1): Percentage distribution of total performance score among studied subjects post intervention and on follow up period (n=80).



X21/p-value between study and control post intervention (29.09 /0.000**)

X22/p-value between study and control during follow-up period (31.27 /0.000**)

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Table (4): Percentage distribution of postoperative complications occurrence or its symptoms among both studied groups one and two weeks postoperatively (n=80).

Postoperative complications and it's symptoms	One week postoperatively						Two weeks postoperatively					
	Study group (n=40)		Control group (n=40)		X2	p-value	Study group (n=40)		Control group (n=40)		X2	p-value
	No	%	no	%			no	%	no	%		
Bleeding	0	0.0	4	10.0	4.21	.040	0	0.0	8	20.0	8.88	.003
Symptoms of DVT												
Swelling	6	15.0	25	62.5	19.01	.000**	7	17.5	20	50	9.44	.002*
Pain	10	25.0	21	52.5	6.73	0.012*	7	17.5	18	45.0	7.04	0.004*
Warm skin	2	5.0	4	10.0	.721	.396	7	17.5	29	72.5	1.01	.314
Redness	9	22.5	23	57.5	10.20	0.001**	5	12.5	16	40.0	7.81	0.005*
Symptoms of infection												
Fever and Chills												
Redness	4	10.0	19	47.5	13.73	.000**	2	5.0	23	57.5	25.65	.000**
Opening wound	7	17.5	26	65.0	18.62	.000**	3	7.5	21	52.5	19.28	.000**
drainage	0	0.0	13	32.5	15.52	.000**	0	0.0	8	20.0	8.88	.003*
Prolonged wound	2	5.0	15	37.5	12.62	.000**	1	2.5	13	32.5	12.46	.000**
drainage	3	7.5	11	27.5	5.54	.019*	0	0.0	9	22.5	10.14	.001**
Excessive wound drainage												
Symptoms of vascular complications												
Pain	10	25.0	21	52.5	6.37	0.012*	7	17.5	18	45.0	7.04	0.008*
Swelling	0	0.0	5	12.5	5.33	.021	0	0.0	4	10.0	4.21	0.04*
Instability	0	0.0	2	5.0	.05	.152	0	0.0	8	20.0	4.21	0.040*
Symptoms of nerve complications												
Numbness and tingling	1	2.5	4	10.0	1.920	.166	0	0.0	4	10.5	4.21	.040
Pain	10	25.0	21	52.5	6.37	0.012*	7	17.5	18	45	7.04	0.008*
Weakness	3	7.5	10	25.0	4.50	0.034*	1	2.5	8	16.0	6.13	.013*

*Significant

** highly significant difference

NB: Bleeding was assessed immediately and 2 days postoperatively while manifestations of vascular complications were assessed 2 weeks and one month postoperatively

Discussion:

Most patients with hip joint replacements experience pain and function deficits regarding the postoperative outcomes as well as various postoperative complications. Therefore, active nursing care during the perioperative period is particularly important so nursing interventions for such patients include providing information about the disease, avoiding

complications, providing proper movement and preventing pain. Moreover, the nurse is a crucial in promoting the appropriate care required for these patients along the perioperative period (Abd El-Naby et al; 2021, Heo et al; 2019, Nabil, 2017 and Qi et al., 2017).

In this study, the effect of pre and postoperative nursing intervention on

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pain and postoperative complications among patients undergoing hip replacement was investigated.

This discussion covered the following parts: Pain level, performance level pre and postoperative nursing intervention and occurrence of postoperative complications among studied groups

Pain score pre and postoperative nursing intervention:

The current results study showed that, the pain intensity among majority of both study and control groups pre intervention was worse that was highly significantly decreased among study group than control group post intervention and during follow-up period. This improvement stresses the effect of the designed pre and postoperative nursing intervention. From point view of the researchers, this might be attributed to the use of cold packs for decreasing inflammation and swelling by causing vasoconstriction and numbing of nerve ending and the relaxation effect of deep breathing exercise. These findings were in accordance with Pinskiy et al., (2021) who studied "the effect of a preoperative physical therapy education program on short-term outcomes of patients undergoing elective total hip arthroplasty" in Barzilai and stated that the intervention group reported lower pain intensity while walking on postoperative day compared to the control group.

Also, Zhao et al., (2022) who studied "effect of painless rehabilitation nursing for hip replacement patients" in China, reported that significant lower visual analogue pain score of the observation group than that of the control group.

Moreover these findings are in accordance with Ming & Yu (2022) who studied "nursing rehabilitation on

perioperative of artificial hip arthroplasty" in China and Moharrami et al., (2021) who investigated "preoperative education for pain relief after the lower limb joint replacement surgery" in Iran and stated that the pain score of the study group at discharge, 1 month, 3 months, and 6 months after operation was lower compared to that of the control group..

These findings supported the first study hypothesis.

Performance level at postoperative period

The current study exhibited that there was a highly statistical significant better total performance level (adequate) for study group at post intervention and follow-up period than control group. This might be related to the illustrated given booklet and the continuous encouragement by the researchers to practice guided exercises throughout the intervention period. These findings were consistent with the study done by Ebrahim et al., (2021) who conducted a study in Emirate about "impact of guidelines for older adults subscribers at the orthopedic out patient clinics after hip joint replacement" showed that more than half of older adult patients s' practice of exercises within 3-6 weeks after surgery were partially dependent in the post-guidelines phase. Also, more than half of older adult subscribers practices of exercises within 6-9 weeks after hip joint replacement were independent in the pre-guidelines phase.

Also these findings were matched with Schoenbaum, (2019), who conducted a study in Iran titled "Toward fewer procedures and better outcomes of total hip replacement" and reported, majority of subjects' practices of related exercises were completely

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independent in the follow-up guidelines phase.

Occurrence of postoperative complications among studied groups

The findings of the present study revealed that almost all occurred postoperative complications were significantly lower among study group than control group all over postoperative period. These findings were consistent with the study done by Abd El-Naby et al., (2021) and El Shemey & Elsaay, (2015) who studied "impact of implementing nursing care protocol on total hip replacement patient's outcome" at Tanta University hospital and mentioned that there were statistically significant differences between the study and control groups postoperatively regarding bleeding, infection and DVT.

As regards to occurrence of DVT the findings of the present study revealed that there were statistically highly significant reductions of D.V.T occurrence for study group than control group at one week and two weeks postoperative. This result was in agreement with El-Sayed et al., (2016) who studied "effect of nursing care standards for preventing deep vein thrombosis among patients undergoing hip surgery " in orthopaedic unit and outpatient clinics at Benha university Hospital and found that there were decrease in all items related to clinical manifestations of DVT in study group than control group during and after one month from discharge and incidence of DVT among patients in study group was lesser than patients in control group. This may be related to instruction of researchers to study group patients about importance of early mobilization and postoperative exercises.

As regards to occurrence of infection the findings of the present study

revealed that there were statistically significant reduction of infection occurrence for study group than control group at one week and two weeks postoperatively. This result agreed with Liu, et al., (2019) who "studied factors affecting the incidence of surgical site infection after hip fracture surgery" in China and Grammatico-Guillon et al., (2015) who studied "surgical site infection after primary hip and knee arthroplasty" in France. They mentioned that reductions of infection occurrence for study group than control group postoperatively.

From the researchers point of view, these results were accepted as the researchers provided a valuable nursing intervention to study group which had a clear effect on reductions of postoperative complications occurrence. This result stress the importance of the given instruction about methods of protection from postoperative infection and importance of healthy diet as well as wound care.

These findings supported the second study hypothesis.

Conclusion:

- Pre and post postoperative nursing care has a positive impact on reducing patient's pain intensity and complications after hip replacement among study group than control group.

Recommendation:

- Supervised health teaching regarding pre and postoperative care should be given for hip replacement patients to reduce pain intensity and decrease/prevent incidence of postoperative complications.
- A similar study can be replicated at different settings and on large

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probability sample to allow for greater generalization of the findings.

References:

- Abd El-Naby, J.A., Abd El-Moneem, E.S.D & Alhosi, K. (2021). Effect of nursing instructions on functional status and occurrence of postoperative local complications among patients undergoing total hip replacement. *International Journal of Novel Research in Healthcare and Nursing*; 2 (8): 247-9.
- Abd-Allah, E., Mohammed, A., Abd El-Ghany, G., & Mohammed, R. (2020) Knowledge and concerns of elderly patients regarding the total joint replacement surgery. *Mansoura Nursing Journal (MNJ)*.; 7(2): 65-75.
- Andrews, J., Akhavan, S., Chan, V., Lehil, M., Pong, D., & Bozic, K.J . (2016) . Higher preoperative patient activation associated with better patient-reported outcomes after total joint arthroplasty. *JBJS Rev.*; 6(8): 33-7.
- Bain, G., kuwahata, T., Raymod, B. & Foster, R. (2005). Tea tree hydrogel dressing used in wound care, available at http://www.ridc.govr.aul/reports/tt_0105-114. Retrieved on 3-6-2018.
- Brokelman, RB., Haverkamp, D., Van Loon, C., Hol, A., VanKampen, A. & Veth R. (2012). The validation of the visual analogue scale for patient satisfaction after total hip arthroplasty. *Eur Orthop Traumatol Jun.*;3(2):101-5.
- Ebrahim, S.R., Yanni, S.N., Abd-Elmohsen, S.A. & Shafik, S.A.M. (2021). Impact of guidelines for older adults subscribers at the orthopedic outpatient clinics after hip joint replacement. *Egyptian Journal of Nursing & Health Sciences*; 2(2): 2682-6.
- El Shemey, M., & Elsaay, O. (2015). Impact of implementing nursing care protocol on total hip replacement patient's outcome. *IOSR Journal of Nursing and Health Science* .; 4 (5) : 28-32.
- El-Sayed, D., Abd-Allah, K., Hegazi, M., & Mohammed, S. (2016). Effect of nursing care standards for preventing deep vein thrombosis among patients undergoing hip surgery on nurses' performance and patients' outcome. *IOSR Journal of Nursing and Health Science* .;5(4) :10- 2.
- Erlenwein, J., Müller, M. , & Fall, D . (2017). Clinical relevance of persistent postoperative pain after total hip replacement . *J Pain Res.*; 10: 2187- 9
- Ferguson, R.J, Palmer, A.J., Taylor, A., Porter, M.L., Malchau, H. & Glyn-Jones S. (2018). Hip replacement. *Lancet*; 392(58):1662–71.
- Fontalis, A., Berry, D. & Shimmin A. (2021): Prevention of early complications following total hip replacement. *SICOT J.*; 61(7): 1-2.
- Gabbert, T., Filson, R. & Bodden, J. (2019). Summary: NAON best practice guidelines, total hip replacement (arthroplasty). *Orthopedic Nursing*; 38(1): 225-9.
- General Authority for Healthcare Accreditation and Regulation (2021): GAHAR Handbook for Hospital Standards. Available at <https://www.gahar.gov.eg/upload/gahar-handbook-forhospital-standards.216-261>.

Effect of Pre and Postoperative Nursing Intervention on Pain and Postoperative Complications among Patients undergoing Hip Replacement

- Glassou, E.N.; Pedersen, A.B. & Hansen, T.B (2017). Is decreasing mortality in total hip and knee arthroplasty patients dependent on patients' comorbidity? *Acta Orthop.*, 88: 288–93.
- Global patient outcomes after elective surgery. (2017). prospective cohort study in 27 low-, middle- and high-income countries. *Br J Anaesth.*;119(3):553-5
- Grammatico-Guillon, L., Baron, S., Rosset, P., & Gaborit, C. (2015). Surgical site infection after primary hip and knee arthroplasty: A cohort study using a hospital database. Available at: <https://doi.org/10.1017/ice>. retrieved on 2016.
- Heo ,S., Harris,L. & Lewin,A. (2019). Complications to 6 months following total hip or knee arthroplasty: Observations from an Australian clinical outcomes registry. *BMC Musculoskeletal Disorders.*; 21:602-3.
- Liu, x., Dong, z., Li, J., Feng, Y., Cao, G., Song, X., & Yang, J. (2019). Factors affecting the incidence of surgical site infection after geriatric hip fracture surgery: A retrospective multicenter study. *Journal of Orthopaedic Surgery and Research*; 14 (1):382-5.
- Marahatta, S.B., & Sigdel A. (2020). Functional outcome of primary total hip arthroplasty using Harris Hip Score in arthritic hip. *Europasian J Med Sci.*;2(2):5- 8.
- Marcu, F.M.; Negrut, N., Uivaraseanu, B., Ciubara, A., Lupu, V.V., Dragan, F., Lupu, A., & Ciubara, A.B. (2021). Benefits of combining physical therapy with occupational therapy in hip arthroplasty. *J Pers Med.*; 11:2- 5.
- Ming, X. & Yu, Y. (2022). Effect of rehabilitation nursing under the guidance of the health action process approach model on perioperative nursing effect of artificial hip arthroplasty: effect on promoting quality of life and postoperative rehabilitation. *Computational and Mathematical Methods in Medicine*; 22 (1): 6-7.
- Moharrami, M., Anvari, M.H. & Gheshlaghi, A.L. (2021). Preoperative education for pain relief after the lower limb joint replacement surgery. *Meta-Analysis Trauma Monthly*; 26(1): 52-60.
- Nabil, M. (2017). Dual mobility cups in primary total hip arthroplasty for patients at risk of dislocation. *MOJ Orthop Rheumatol .*;7(4):2-3.
- Okafor, L. & Chen, A. F. (2019). Patient satisfaction and total hip arthroplasty: A review. *Arthroplasty*; 1 (6): 2-4.
- Pinskiy, M., Lubovsky, O. & Kalichman, L. (2021). The effect of a preoperative physical therapy education program on short-term outcomes of patients undergoing elective total hip arthroplasty: A controlled prospective clinical trial. *Acta Orthop Traumatol Turc.*; 55(4): 306–10.
- Plunger, M.J., Fromel D.E & Maurer, A. (2021). Total hip arthroplasty revision surgery: Impact of morbidity on perioperative outcomes. *J Arthroplasty* ; 36(2):676–81.
- Pollock M., Somerville L., Firth A & Lanting B. (2016). Outpatient

Effect of Pre and Postoperative Nursing Intervention on Pain and Postoperative Complications among Patients undergoing Hip Replacement

- total hip arthroplasty, total knee arthroplasty, and unicompartmental knee arthroplasty: A systematic review of the Literature. *JBJS Rev.* ; 4(12): 74-6.
- Qi, Y., Hao, S N., Zhang, J., Zhao, C. B. & Lian, Y. (2017). Effects of comprehensive nursing on the pain and joint functional recovery of patients with hip replacements. *Biomedical Research*; 28: 12-4.
- Schoenbaum SC. (2019). Toward fewer procedures and better outcomes of total hip replacement: *J Am Med Assoc*
- Blumenthal D. The variation phenomenon. *N Engl J Med.*; 32 (4):188-9.
- Sousa, L., & Carvalho, M. (2017) . Pessoa com osteoartrosena ancae joelhoem contexto de internamentoem ortopedia. In C. Marques Vieira e L. Sousa, Cuidados de Enfermagem de Reabilitação à pessoaao Longo da Vida; Lusodidacta: Loures, Portugal; 8 (1) :405–20.
- Statistical records of surgery, Menoufia University hospital. (2021).
- Statistical records of surgery, Shebin El-Kom teaching hospital. (2021).
- Yager M. & Stichler J. (2015).The effect of early ambulation on patient outcomes for total joint replacement. *Orthopedic Nursing*; 34(4):197- 202.
- Zhao, X., Bain, R. & Yang, J. (2022). Effect of painless rehabilitation nursing for hip replacement patients. *Hindawi Computational and Mathematical Methods in Medicine* 4 available at <https://doi.org/10.1155/2022/5164973>retrived on 18 May 2022.