

Effect of Nursing Instructions on Functional Status and Occurrence of Postoperative Local Complications among Patients Undergoing Total Hip Replacement

Amel Gomaa Abd El-Naby¹, Dalia Salah El-Deen Abd El-Moneem^{2*}, Khaled Alhosis³

¹Assistant Professor of Medical Surgical Nursing, Faculty of Nursing, Cairo University, Egypt

²Assistant Professor of Medical surgical Nursing, Faculty of Nursing, Cairo University & Galala University, Egypt.

³Associate Professor of Leadership and Management, Nursing consultant, Head Department of Nursing Education, Qassim University Saudi Arabia

*Corresponding Author's Email: dr.dalia.elsedawy@nursing.cu.edu.eg

Abstract: Due to the dramatic increases in total hip replacement (THR) rate, it is important to provide patients with nursing instructions for improving patients' functional status and reducing the risk of developing post THR surgery complications. **Objective:** was to evaluate the effect of nursing instructions on functional status and the occurrence of postoperative local complications among patients undergoing total hip replacement. **Design:** A quasi-experimental (time series) design was utilized. **Setting:** The study was conducted at an orthopedic department in one of the teaching hospitals of Cairo University. **Sample:** A convenient sample of 60 adult male and female patients undergoing total hip replacement was recruited for this study from the selected orthopedic department. **Tools:** Three tools were utilized to collect data pertinent to the study; 1. Demographic and medical background information form. 2. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). 3. Post total hip replacement local complications' observational checklist. **Results:** Results supported the stated research hypotheses. As regards total mean scores of functional impairment status, there were statistically significant differences between the study and control groups after implementing nursing instructions at two weeks (t-test=3.573, p-value=0.001), one month (t-test=4.520, p-value=0.000), and two months of discharge (t-test=3.331, p-value=0.002), while there was no statistically significant difference between the study and control groups during the preoperative period. Concerning occurrence of post total hip replacement surgery complications, there were statistically significant differences between the study and control groups postoperatively at 2 weeks ($X^2=7.68$, p-value= 0.010), 1 month ($X^2=7.92$, p-value= 0.005), and 2 months of discharge ($X^2=10.58$, p-value= 0.001). **Conclusion:** The provision of pre and post nursing instructions for patients undergoing THR may be of great value in improving patients' functional status and reducing the occurrence of postoperative complications. **Recondition:** Endorse the nursing instructions in the earlier course of disease for such patients to ensure maximum benefit

Keywords: Functional status; nursing instructions; postoperative local complications and total hip replacement.

I. INTRODUCTION

Total hip replacement (THR) becomes a popular procedure in orthopedic surgery, whereby the hip joint is supplanted by prosthesis to relieve suffer and reestablishing the hip joint function [1, 2]. The number of patients requiring THR continuously increases due to demographic changes and life style trends [3, 4]. In fact, more than one million total hip replacements (THR) are done per year around the world; moreover, this number is anticipated to twofold during the coming two decades [5, 6].

In addition, after THR; patients have various restrictions in the hip movement with the purpose of avoiding prosthesis displacement. These limitations, in addition to fear of pain and destruction of the prosthesis, may considerably influence functional status. Several studies that specifically address preoperative functional status have reported significant correlation with postoperative status in patients with hip replacement [7, 4, 8, 9]. Additionally, Healy et al [10] states that the prevalence of THR is increasing and is often associated with additional complications, these complications can be catastrophic and life threatening.

In fact, patients who had undergone THR are usually able to perform activity of daily living 6 weeks after surgery, as about 90% of patients improved within three months [11]. However, after primary THA, patients are most likely to suffer from local complications as dislocation, it occurs during the first 6 to 8 weeks following surgery when the soft tissues are still healing, although dislocations might occur during the immediate postoperative period, patients have a lifetime risk for dislocation. Furthermore, other local complications that may occur include pain, blood clot formation, bleeding, deep vein thrombosis (DVT), as well as early or late infection [4].

Recently, medical advances, new management modalities, and policies to decrease costs, have contributed to decrease hospital stay following hip replacement, from 6–10 to 3–5 days. This means that much of the postoperative care and monitoring is done at home by patients and their families. This could be challenging, and the patients may require a guide to deal with such issues during recovery [12].

Hence, the effective recovery from THR needs appropriate surgical procedure as well as proper nursing interventions. The nursing concerns for such patients include pain management, improve mobility and provide knowledge about the rehabilitation process [13, 14]. Accurate nursing assessment of patients functional status preoperatively and providing patients with nursing instructions regarding practice proper postoperative posture, positioning, mobilization, ambulation, sitting and sleeping, home care, managing pain etc. will improve functional status, decrease the risk of complications after THR and improve patients' outcomes [15, 16]. Therefore, the purpose of this study was to evaluate the effect of nursing instructions on functional status and the occurrence of postoperative local complications among patients undergoing total hip replacement.

Significance of the stud:

In Egypt, the number of patients undergoing THR is rising steadily. Hip replacement surgery can be a lifesaving for the patients with advanced hip disorders. Patients face many challenges pre- and post-THR due to shorter hospital stays after hip replacement (3–5 days); fear of mobility and postoperative complications. Hence, objectives of nursing interventions for such patients include avoiding complications, providing proper movement, preventing pain, and providing knowledge about the disease, and management modality. Moreover, the nurse is a pivotal in promoting the proper care needed for these patients along the perioperative period.

A recent study demonstrated that THR studied subjects lack information related to preventing potential complications, wound care, medication regimen, practicing proper movements and postures, proper self-care practice, exercises program, and pain management at home [17]. Furthermore, in the field of nursing, there are scanty researches on nursing care and THR patient. Therefore, the present study was delivered with hope that the obtained findings will contribute to the patients, health care experts and nursing education along with research.

II. RESEARCH METHODOLOGY

Aim

The aim of this study was to evaluate the effect of nursing instructions on functional status and the occurrence of postoperative local complications among patients undergoing total hip replacement.

Research Hypotheses

To fulfill the aim of the current study the following research hypotheses were formulated:

H1: Study group who received nursing instructions would have lower total mean scores of functional status impairment comparing with the control group who received routine hospital care.

H2: Study group who received nursing instructions would have lower occurrence of postoperative local complications comparing with the control group who received routine hospital care.

Research design

A quasi-experimental (Time Series) control group design was applied in the current research. In time series design, data are gathered over an extended period and intrusions are delivered during this time. The extended time period could significantly referee the patients' changes to the nursing instructions [18].

Setting

This study was done at the orthopedic department in one of the teaching hospitals of Cairo University.

Subject

A convenient sample of 60 adult male and female patients admitted to the selected orthopedic department and agreed to participate in the study was recruited for this study according to the following established inclusion criteria were: (a) performing total hip replacement surgery for the first time; and (b) fully oriented in order to be able to respond to the questions and comprehend the instructions. On the other hand, patients with severe rheumatoid arthritis or systemic lupus, insulin-dependent (type 1) diabetes, uncontrolled diabetes, hemophilia, or those who had previous prosthetic joint were excluded from the study.

The G*Power 3.10 was used to estimate the required sample size. The significance level (p-value) was at 0.05, the test power $1 - \beta$ at 0.95, and the effect size at 0.85, a total of 55 patients were required. An additional 10 % of patients were added in order to compensate sample attrition. Patients were randomly equally assigned into control group who received routine hospital care or study group who received nursing instructions plus routine hospital care as the odd number was included in the control group while the even one was included in the study group. A sample of 70 patients were invited to participate in the current study, two patients died, 5 patients withdrawn from the total study sample during the implementation of the research because they had no concern to participate, and three patients had no compliance to the nursing instructions, finally, 60 patients completed the study.

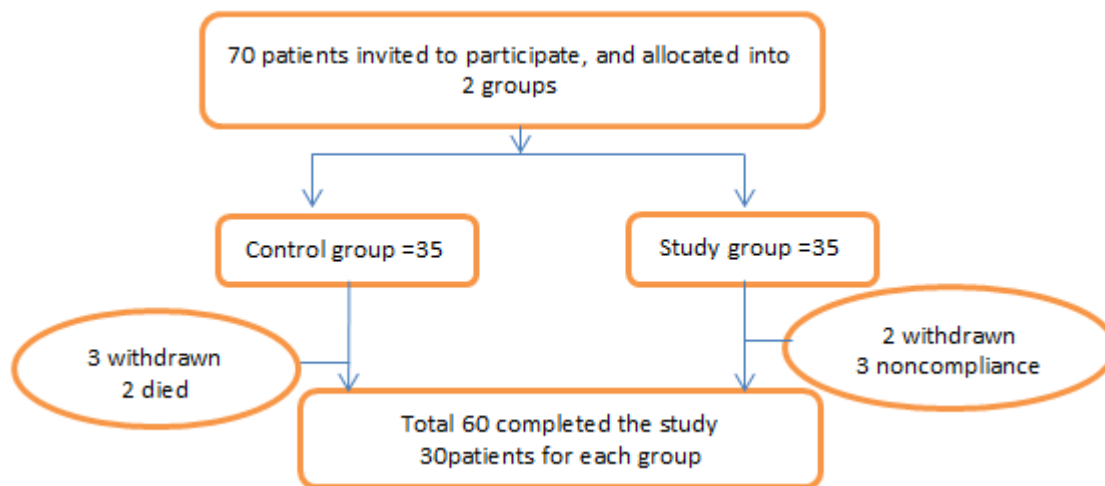


Figure (1) Sample Flowchart

Tools for data collection:

Data relevant to the current research were collected by the following tools:

1- Demographic and Medical Background Information Form (DMBIF). It consisted of two parts: (a) Demographic data that covered data related to patients' characteristics as age, gender, residence, occupation, educational level etc. And (b) Medical data covering medical related information as current diagnosis, presence of systemic lupus, insulin-dependent (type 1) diabetes, uncontrolled diabetes, hemophilia, or history of previous prosthetic joint.

2- Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). It is a standardized tool developed in 1982 at Western Ontario and McMaster Universities. It is a questionnaire available in English language and used to assess the functional status of patients with orthopedic disorders. It consisted of 24 items divided into 3 subscales including: Pain (5 items), Stiffness (2 items) and Physical function (17 items). Each question had 5 points likert scale (0-4) whereas 0 means none and 4 means extreme impairment with total score ranging between 0-96. Higher scores on the WOMAC refer to intolerable pain, stiffness, and functional limitation. Many studies reported the reliability and validity of the WOMAC with Cronbach's alpha=0.94 [19, 20].

3- Post Total Hip Replacement Local Complications' Observational Checklist. It was developed by the researchers in English language, it included four main common local complications with their sign and symptoms after THR: bleeding, hip dislocation, wound infection and deep venous thrombosis. The possible complications' responses are scored as present (1) and not present (0). Reliability was done using Cronbach's alpha test which yielded 0.75.

Ethical consideration

This study was approved by the research Ethics Committee of the Faculty of Nursing/Port Said University (Approval no: 25). On the other hand, an official permission was obtained from hospital administrators to conduct the study. The purpose and nature of the study as well as the importance was explained to the patients who met the inclusion criteria and were willing to participate in the study. Anonymity and confidentiality were granted through coding the data. Patients were assured that participation in this study is voluntary and they have the right to withdraw from the study at any time without giving any reason.

Pilot study:

A pilot study was conducted on 10% of the patients (6 patients) to examine applicability, clarity, reliability, and feasibility of the study tools as well as estimate the time needed to fill in the study tools. Necessary modifications were done accordingly. The pilot study sample was excluded from the main study sample. The findings of the pilot study showed that the study is feasible.

Procedure of the study:

Once official permission was granted to proceed with the proposed study, the study was conducted through three phases:

Preparatory phase: The researchers initiated data collection. Names of the potential patients who met the criteria for possible inclusion were obtained from the head nurse of the selected orthopedic department. Before the surgery, each potential patient was approached individually by the researchers. The purpose, nature, and significance of the study were clarified in addition to the expected follow up schedule. During the initial interview and after the consent had been signed, the researchers completed filling in the Demographic and Medical Background Information Form (DMBIF), assessed the physical functional status using Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). Patients were then divided into study and control groups.

Implementation phase: During this phase, the researchers provided nursing instructions for the study group for three consecutive sessions plus a debriefing session. Each session lasted from 30 to 45 minutes. It was provided in the form of a tutorial that affords information whilst continually ensuring that the patient has comprehended the instructional content which was adapted to patients' needs, lifestyle, level of education and expectations. The first session was considered as an introductory one which was concerned with providing patients with information about home care, proper posture for sleeping, sitting and moving safely, how to get in and out of bed and chair, as well as, how to sit down and rise from the toilet. The second section focused on pain management, incision care, allowed exercises and nutrition and medication regimen. The third session focused on how patients can go up and down stairs, get in and out of car/public transportation, signs of complications that require prompt actions, precautions to avoid dislocation of the new joint and importance of follow up.

The first session was conducted on the first 24hrs of admission, the 2nd session was conducted 2 days before surgery, the 3rd session was conducted 2 days post operatively and the last session (debriefing) was at discharge. In the last session; nursing instructional handout containing all nursing instructions and supplemented by illustrated photos was provided to the study group and discussion was opened for any questions or concerns. As well, revision was done regarding all

nursing instructions that were previously provided throughout the three instructional sessions. Additionally after discharge, patients in the study group were contacted through mobile phone twice per week as well as WhatsApp in order to encourage patients for implementing the nursing instructions and answering any questions.

Evaluation phase: Postoperative assessment of the patients' functional status and complications was done for the control group as well as the study group after providing the nursing instructions through three times postoperatively at 2 weeks, one month and 2 months after discharge at the time of patients' follow up visit in the outpatient unit.

Data collection phase was conducted over a period of eleven months started from April 2019 and extended up to February 2020 in the targeted hospital.

Statistical design:

The collected data were scored, tabulated and analyzed by personal computer using the statistical package for the social science (SPSS) program, version 20. Descriptive statistics (frequency distribution, percentage, means, and standard deviations) as well as inferential statistics (t-test and Chi square) were utilized to analyze data pertinent to the study. Level of significance was adopted at $p < 0.05$, while highly significant level was set at $p < 0.001$.

III. RESULTS

Findings of the current study are presented in three main sections: I) Description of the study sample characteristics and the medical related data. II) Comparison of mean differences between the study and control groups regarding to pain intensity, joint stiffness, physical impairment as well as total scores of functional status impairment along the study period. III) Comparison between the study and control groups regarding occurrence of post-operative local complications.

Section I) Description of the study sample characteristics and the medical related data.

Table (1): Frequency and Percentage Distribution of the Demographic Data among the Study and Control groups (N= 60)

Variables	Study group (n=30)		Control group (n=30)		Test	P- value
	No	%	No	%		
Age :						
20 - < 35	1	3.3	4	13.3	t-test= 1.448	0.158
35 - < 50	8	26.7	7	23.3		
50- < 65	11	36.7	12	40		
≥ 65	10	33.3	7	23.3		
Mean ± SD	57.2 ± 11.9		52.2 ± 12.5			
Gender:						
Male	13	43.3	15	50	X2 = 0.265	0.686
Female	17	56.7	15	50		
Marital status:						
Not married	2	6.7	4	13.3	X2 = 0.674	0.424
Married	28	93.3	26	86.7		
Education:						
Can't read& write	8	26.7	9	30	X2 = 1.865	0.172
Read and write	15	50	12	40		
Primary	5	16.7	4	13.3		
Secondary	2	6.7	5	16.7		
Work status:						
Employed	7	23.3	11	36.7	X2 = 1.180	0.107
Unemployed	23	76.7	19	63.3		
Residence:						
Rural	10	33.3	12	40	X2 = 0.285	0.586
Urban	20	66.7	18	60		

Result was significant at $p\text{-value} \leq 0.05$

Table (1) shows that, as regards age 36.7% of the study group and 40% of the control group had age ranged between 50 to less than 65 years, with a mean age of patients in the study and control groups as 57.2 ± 11.9 and 52.2 ± 12.5 years respectively. Regarding to gender, 56.7% of the study group and 50% of the control group were female. In relation to marital status, very high percentages were married among the study and control groups (93.3% & 86.7%) respectively.

With reference to the educational level, 50% of the study group and 40% of the control group can read and write. Additionally, 76.7% and 63.3% of the study and control groups respectively were unemployed; with 66.7% of the study group and 60% of the control group reside in urban areas. Moreover, there were no statistically significant differences between the study and control groups in relation to all demographic variables.

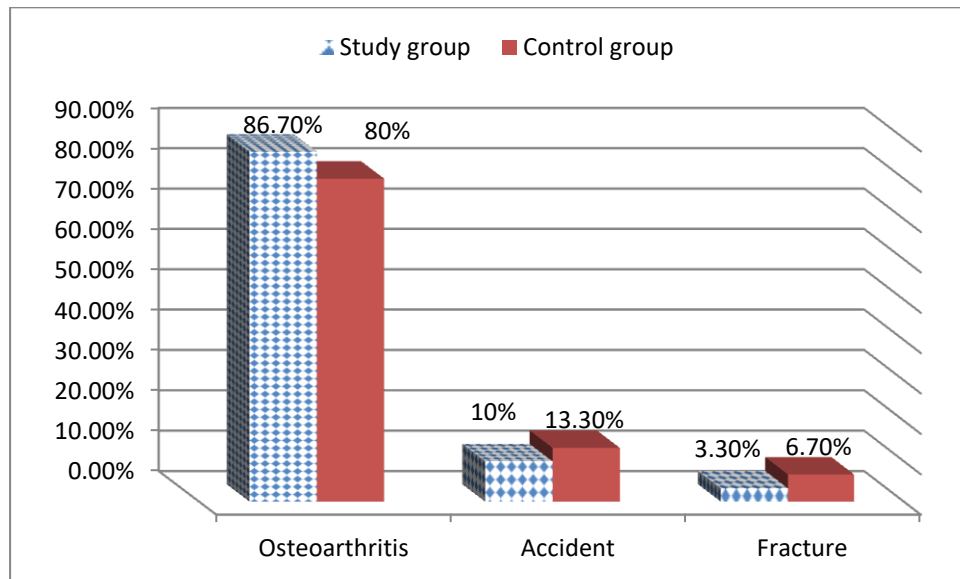


Figure (2): Percentage Distribution of the Medical Diagnosis among the Study and Control Groups (N=60).

Figure (2) illustrates that the highest percentages of the study group (86.7%) and control group (80%) were diagnosed as osteoarthritis with no statistically significant difference between both groups in relation to such variable ($X^2 = 0.586$, $p\text{-value} = 0.412$).

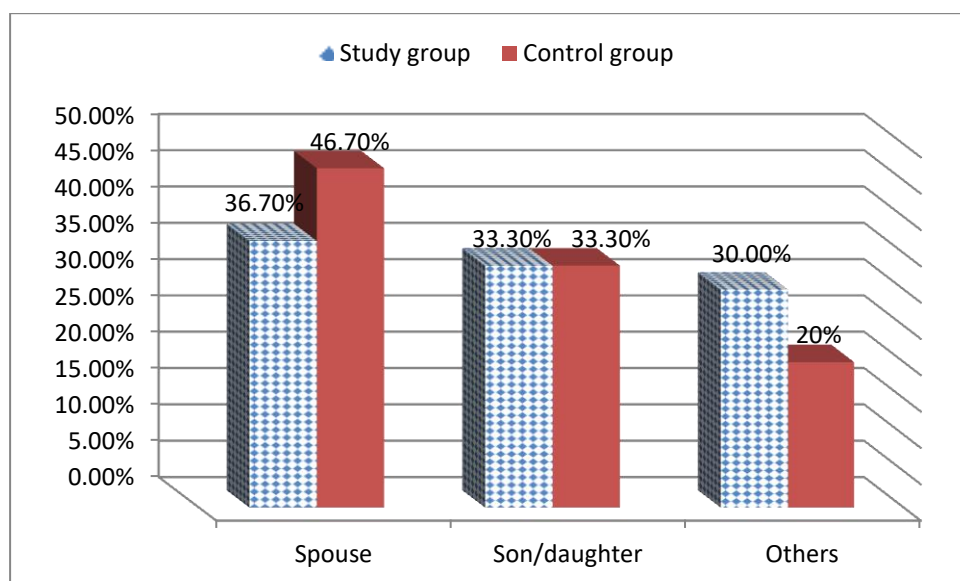


Figure (3) Percentage Distribution of the Caregivers among Study and Control Groups (N=60).

Figure (3) shows that 36.7% of the study group and 46.7% of the control group had spouses as their caregivers, with no statistically significant difference between both groups in relation to such variable ($X^2 = 0.90$, $p\text{-value} = 0.342$).

Sections II) Comparison of mean differences between study and control groups regarding to pain intensity, joint stiffness, physical impairment as well as total scores of functional status impairment along the study period.

Table (2): Comparison of Total Mean Scores between Study and Control Groups in Relation to Intensity of Pain along the Study Period (N=60).

Study period	Mean \pm SD		t- test	p-value
	Study group (n=30)	Control group (n=30)		
Pre-operative	14.5 \pm 2.9	15.1 \pm 3.6	1.126	0.269
2 weeks of discharge	9.2 \pm 3.1	13.5 \pm 5.1	4.495	0.000**
1 month of discharge	5.8 \pm 1.9	10.1 \pm 5.1	4.297	0.000**
2 months of discharge	4.2 \pm 1.5	8.7 \pm 7.2	3.292	0.003*

*Result is significant at $p\text{-value} \leq 0.05$

**Result is highly significant at $p\text{-value} \leq 0.001$

Table (2) reveals that, in relation to total mean scores of pain intensity, there was no statistically significant difference between the study and control groups ($t\text{-test} = 1.126$, $p\text{-value} = 0.269$) during preoperative period. However, there were highly statistically significant differences between the study and control groups after discharge, at two weeks ($t\text{-test} = 4.49$, $p\text{-value} = 0.000$), one month ($t\text{-test} = 4.297$, $p\text{-value} = 0.000$), also there was a statistically significant difference two months after discharge between both groups ($t\text{-test} = 3.292$, $p\text{-value} = 0.003$).

Table (3): Comparison of Total Mean Scores between the Study and Control Groups in Relation to Joint Stiffness along the Study Period (N=60).

Study period	Mean \pm SD		t- test	p-value
	Study group (n=30)	Control group (n=30)		
Pre-operative	5 \pm 1.4	5.1 \pm 2.4	0.278	0.783
2 weeks of discharge	2 \pm 1.8	4.6 \pm 2.9	4.510	0.000**
1 month of discharge	1.3 \pm 1.1	3.2 \pm 2.3	4.361	0.000**
2 months of discharge	0.7 \pm 1.1	1.8 \pm 2.5	2.160	0.039*

*Result is significant at $p\text{-value} \leq 0.05$

**Result is highly significant at $p\text{-value} \leq 0.001$

In relation to total mean scores of joint stiffness, table (3) displays that there was no statistically significant difference between the study and control groups ($t\text{-test} = 0.278$, $p\text{-value} = 0.783$) during preoperative period. While there were highly statistically significant differences between the study and control groups postoperatively along the three times of assessment, after two weeks ($t\text{-test} = 4.510$, $p\text{-value} = 0.000$), one month ($t\text{-test} = 4.361$, $p\text{-value} = 0.000$), and two months of discharge ($t\text{-test} = 2.160$, $p\text{-value} = 0.039$).

Table (4): Comparison of Total Mean Scores between the Study and Control Groups in Relation to Physical Impairment along the Study Period (N=60).

Study period	Mean \pm SD		t- test	p-value
	Study group (n=30)	Control group (n=30)		
Pre-operative	49.1 \pm 6.7	51 \pm 14.1	0.657	0.517
2 weeks of discharge	28.7 \pm 12.8	39.3 \pm 14.1	2.816	0.009*
1 month of discharge	19.9 \pm 8.7	27 \pm 8.3	3.666	0.001**
2 months of discharge	17.2 \pm 7.9	22.9 \pm 8.4	2.937	0.006*

*Result is significant at $p\text{-value} \leq 0.05$

**Result is highly significant at $p\text{-value} \leq 0.001$

With reference to total mean scores of physical impairment, table (4) shows that there were statistically significant differences between the study and control groups postoperatively after performing the nursing instructions for the study group by the end of two weeks (t-test=2.816, p-value=0.009), one month (t-test=3.666, p-value=0.001), and two months of discharge (t-test=2.937, p-value=0.006).

Table (5): Comparison between the Study and Control Groups in Relation to Total Mean Scores of Functional Status Impairment along the Study Period (N=60).

Study period	Mean ± SD		t- test	p-value
	Study group n=30	Control group n=30		
Pre-operative	68.4 ± 7	71.2 ± 18.2	0.795	0.433
2 weeks of discharge	40 ± 16.3	57.4 ± 20.4	3.573	0.001**
1 month of discharge	27 ± 10.7	40 ± 13.9	4.520	0.000**
2 months of discharge	22.1 ± 9.4	33.5 ± 16.8	3.331	0.002*

*Result is significant at p-value ≤ 0.05

**Result is highly significant at p-value ≤ 0.001

Regarding to total mean scores of functional status impairment, table (5) reveals that, there were highly statistical significant differences between the study and control groups postoperatively by the end of the two weeks (t-test=3.573, p-value=0.001) and one month (t-test=4.520, p-value=0.000), also there was a statistically significant difference after two months of discharge (t-test=3.331, p-value=0.002). While there was no statistically significant difference between the study and control groups during preoperative period (t-test=0.795, p-value=0.433).

Sections III): Comparison between the study & control groups regarding occurrence of post-operative local complications.

Table (6): Frequency and Percentage Distribution and Comparison between the Study and Control Groups Regarding Occurrence of Post-operative Local Complications (N= 60).

Complications	Study group n=30		Control group n=30		X2	p-value
	No.	%	No.	%		
***2 weeks of discharge:						
None	27	90	21	70	7.68	0.010*
Bleeding	0	0	0	0		
Hip dislocation	0	0	1	3.3		
Wound infection	3	10	8	26.7		
DVT	0	0	1	3.3		
***1 month of discharge:						
None	28	93.3	22	73.3	7.92	0.005*
Bleeding	0	0	0	0		
Hip dislocation	0	0	1	3.3		
Wound infection	2	6.7	6	23.3		
DVT	1	3.3	2	6.7		
***2 months of discharge:						
None	29	96.7	21	70	10.58	0.001**
Bleeding	0	0	0	0		
Hip dislocation	1	3.3	6	20		
Wound infection	0	0	4	13.3		
DVT	0	0	0	0		

*Result is significant at p-value ≤ 0.05

**Result is highly significant at p-value ≤ 0.001

*** This variable is not mutually exclusive

Table (6) shows that, after 2weeks of discharge 10% of the study group and 26.7% of the control group had wound infection, while 1 month after discharge 6.7% and 23.3% of the study and control groups respectively suffered from wound infection, this percentage decreased at 2 months of discharge to be zero in the study group while 13.3% of the

control group still suffer from wound infection. Moreover, 3.3% of the study group and 20% of the control group suffer from hip dislocation by the end of the 2 months of discharge. Additionally, there were statistically significant differences between the study and control groups postoperatively after 2 weeks ($X^2=7.68$, p -value= 0.010), and one month ($X^2=7.92$, p -value= 0.005), while after 2 months of discharge the difference was highly significant ($X^2=10.58$, p -value= 0.001).

IV. DISCUSSION

Joint replacement is an attempt to reduce pain and improve functional status and mobility. The number of patients undergoing total hip replacement annually is anticipated to rise within the following two decades [21]. The discussion of the study results is explained in the following three sections: Section I: Explanation of the study results pertinent to demographic characteristics and medical related data. Section II: Explanation of the results regarding the first research hypothesis. Finally, Section III: Explanation of the results related to the second research hypothesis.

Section I: Explanation of the demographic characteristics and medical related data

Concerning the demographic characteristics, the current study results showed that, about two thirds of both the study and control groups had an age ranged between 50 to more than or equal to 65 years, with a mean age of 57.2 ± 11.9 and 52.2 ± 12.5 years respectively. Relatively, the highest percentages of the study sample were female, married, can read and write, unemployed, and reside in urban areas. Moreover, approximately four fifth of the study and control groups were diagnosed with osteoarthritis, and the highest percentages of both groups reported that spouses are the caregivers. Additionally, there were no statistically significant differences between study and control groups in relation to all demographic and medical variables; this means that the two groups of the study were homogenous groups.

The findings of the present study were consistent with those of an Egyptian study done by El Shemey and Elsaay [4] who conducted a study entitled "Efficacy of implementing nursing care protocol on total hip replacement patient's outcome in orthopedic department at Tanta University Hospital" they reported that the highest percentages of the sample were female, married, and illiterate and they pointed that arthritis is the leading cause of joint replacements among the studied subjects. In this respect, McFadden [7] found that the population of patients receiving THA is growing among middle-aged adults. On the same line, Stark et al., [22] who carried out a study entitled "The quality of recovery on discharge from hospital: A comparison between patients undergoing hip and knee replacement – a European study" which showed that females constituted the majority of the studied patients with a mean age of 65+12 years, and a higher percentage was employed and had higher education. They added that the incidence increased among females than males and got higher with age.

Section II: Explanation of the results regarding the first research hypothesis:

In relation to total mean scores of pain intensity, there was no statistically significant difference between the study and control groups during preoperative period. However, there were highly statistically significant differences between the study and control groups by the end of two weeks, and one month of discharge while at two months after discharge the difference was only significant indicating that the study group had lower mean scores of pain after implementing nursing instructions in comparison to the control group. This could be interpreted in the light of the fact that the given nursing instructions provided information regarding pain management strategies either pharmacological as instructions regarding analgesic use or non- pharmacological as the application of cold packs to the surgical site (cryotherapy), and practice deep breathing exercises that provide relaxation, all of these instructions could promote pain relief.

The results of the current study were similar to those of Qi et al. [23] who performed a research aimed to examine the consequences of nursing instructions on pain and joint recovery among 100 patients with artificial hip replacements. The study revealed that the patients showed significant improvement in the study group than the control group.

However, the results of the current study were inconsistent when compared with those of Fox [24] in a study entitled "Implementing an integrative pre and post- operative educational intervention for older adults undergoing total hip and knee replacement". The result revealed that pain intensity in the study group was to some extent decreased overall, but no statistically significant difference in pain intensity between the study and control groups. As well, Ashley [25] conducted a study entitled "The effect of preoperative education on postoperative pain after joint surgery: An integrative literature review". Findings from the literature revealed that, giving preoperative instructions before a total knee replacement have no effect on pain postoperatively.

Concerning the total mean scores of joint stiffness, the finding of this study displayed that there was no statistically significant difference between study and control groups during preoperative period. However, there was a statistically significant difference between study and control groups after implementing nursing instructions along the three times of assessment postoperatively, at two weeks, one month and two months of discharge, indicating that joint stiffness improved among the study group when compared to the control group. The researchers' interpretation for this result is that practicing exercise, as one of given nursing instructions, could decrease joint stiffness, moreover, decrease pain intensity which encourage the patients to practice daily motions that also contributes to improve joint stiffness. The results of the present study are matched with those of a study done by Changsuphan, Kongvattananon & Somprasert [26] and Drugs.com [27] which stated that patients who had worsened stiffness and pain after surgery, the pain and stiffness improved with exercise.

In relation to the total mean scores of physical status; the findings of this study revealed that there were statistically significant differences between the study and control groups after implementing the nursing instructions by the end of two weeks, one month and two months of discharge, indicating that physical status improved among the study group after implementing nursing instructions when compared to the control group. From the researches point of view, the nursing instructions regarding joint protection skills, transfer techniques, pre and post-operative exercises, joint care and home-base exercise, as well as proper nutrition which delivered to the patients could reduce pain and improve function, that potentially allowing increased physical function. This finding is in the same line with that of a study performed by Jeldi et al. [28] and Yip [29] who pointed that preoperative education when given to patients lead to better physical status after operation. However, the study results were inconsistent with those of a study carried out by Hammett et al. [30] that aimed to conduct a systematic review and meta-analysis on changes in physical activity after total hip or knee arthroplasty, the results revealed that physical activity following total knee or hip replacement did not improve at 6 months even though quality of life, pain, and joint functioning were improved

Regarding to functional status impairment, there was no statistically significant difference between the study and control groups during preoperative period in relation to total mean scores of functional status, while there were statistically significant differences between them after implementing the nursing instructions by the end of the two weeks, one month, and two months of discharge. As the study group had lower mean scores of functional status impairment than the control group indicating improved functional status among the study group when compared to the control group, therefore, the first research hypothesis was supported. These results can be interpreted in the light of that when the patients practiced exercise and learned how to perform daily movements correctly and adhered to nursing instructions that reduce pain and stiffness of the joints, all these will lead to an improvement in the physical condition and that, in turn, will contribute to the improvement of the functional status. Moreover, such interventions could also enhance patients' compliance with rehabilitative exercises and improve hip joint functional recovery.

This finding is in accordance with Moyer, Ikert, Long & Marsh [31] who conducted a study entitled "The value of preoperative exercise and education for patients undergoing total hip and knee replacement: A systematic review and meta-analysis", they stated that after a preoperative program, patients undergoing THA had significantly less postoperative pain than the control group and postoperative function status was also significantly improved compared with the control group. As well, ElShemey and Elsaay [4] study on the effect of nursing protocol on patients' functional status found an improvement in the study group; however, there were no statistically significant differences between the two groups.

Section III: Explanation of the results related to the second research hypothesis:

In relation to local complications after THR, this study finding revealed that, the most common complications following THR were first surgical site infection, followed by hip dislocation, then deep venous thrombosis (DVT) after 2 weeks and one month of discharge, while after 2 months of discharge hip dislocation considered the first complications. This result agreed with that of Bauer & Resnick [32]; Dawson-Amoah, Raszewski, Duplantier and Waddell [33]; LU, XIAO and XUE [34] which mentioned that the second most common complication following total hip replacement is dislocation following infection. Similarity, Changsuphan et al. [26] and Elsayed, Mohassab and Mazeed [35], stated that possible complications after surgery may include hip dislocation, severe pain, infection, swelling and bleeding. As well, the finding regarding surgical site infection (SSI) after THR, is consistent with those of two studies carried by Grammatico-

International Journal of Novel Research in Healthcare and Nursing

Vol. 8, Issue 2, pp: (247-259), Month: May - August 2021, Available at: www.noveltyjournals.com

Guillon, Baron, Rosset, Gaborit [36], and Liu et al. [37], which revealed that hip and knee replacement infection occurred within the first 30 days after surgery in 30% of patients.

Moreover, there were statistically significant differences between the study and control groups after performing pre and postoperative nursing instructions at the end of 2 weeks, 1 month and after 2 months of discharge, indicating that occurrence of complications was lower among the study group when compared to the control group. This finding supported the second research hypothesis. Additionally, this result agreed with El Shemey and Elsaay [4], who found that there was a statistically significant decrease in occurrence of local complications of THR between the control and study groups after implementing nursing care protocol.

Hence, the researchers and Specht, Kjaersgaard-Andersen, Kehlet and Pedersen [38] emphasized that complications following hip replacement surgery can usually be prevented with performing careful nursing instructions. This should ideally begin prior to surgery to improve the functional status and ensure an optimal outcome in all patients following a hip replacement. The results of the current study may be attributed to exposure of the studied subjects to the pre and postoperative nursing instructions.

V. CONCLUSION

In light of the present study findings, the provision of nursing instructions for patients undergoing THR may be of great value in improving patients' functional status and reducing occurrence of postoperative complications. Moreover, the current study results supported the two research hypotheses.

VI. RECOMMENDATIONS

Based on the study results, the following recommendations are suggested

- Endorse the nursing instructions in the earlier course of disease for such patients to ensure maximum benefit.
- Provide THR patients with multidisciplinary instructional program
- Replicate the study on a larger probability sample in different settings for generalizing the findings.

Conflicts of Interest

The authors report no conflicts of interest.

ACKNOWLEDGEMENTS

The researchers are extremely grateful to all participants of this research.

REFERENCES

- [1] Dargel, J., Oppermann, J., Brüggemann, G., & Eysel, P. (2014). Dislocation following total hip replacement. *DtschArzteblInt*; 111(51-52): 884–890.
- [2] Derar, H., & Shahinpoor, M. (2015). Recent patents and designs on hip replacement prostheses. *Open Biomed Eng J.*; 9: 92–102.
- [3] Leitner, L., Türk, S., Heidinger, M., Stöckl, B., Posch, F., Maurer-Ertl, W., Leithner, A., & Sadoghi, P. (2018). Trends and economic impact of hip and knee arthroplasty in Central Europe: Findings from the Austrian National Database. *Scientific Reports*; 8:4707.
- [4] El Shemey, M. B., & Elsaay, O. A. (2015). Efficacy of implementing nursing care protocol on total hip replacement patient's outcome in orthopedic department at Tanta University Hospital, *IOSR Journal of Nursing and Health Science*; 4(5) Ver. III: 118-132.
- [5] Meiri, R., Rosenbaum, T. & Kalichman, L. (2014). Sexual function before and after total hip replacement: Narrative review. Available at: <https://doi.org/10.1002/sm2.35>Get rights and content.
- [6] Zagra, L. (2017). Advances in hip arthroplasty surgery: What is justified?; *EFORT Open Rev*; 2(5): 171–178.

International Journal of Novel Research in Healthcare and Nursing

 Vol. 8, Issue 2, pp: (247-259), Month: May - August 2021, Available at: www.noveltyjournals.com

- [7] McFadden, B. (2013). Is there a safe coital position after a total hip arthroplasty? *Orthopedic Nursing*; 3 (4): 223–226.
- [8] Erlenwein, J., Müller, M., Falla, D., Przemec, M.P., Fingsten, M., Budde, S., Quintel, M., & Petzke, F. (2017). Clinical relevance of persistent postoperative pain after total hip replacement – a prospective observational cohort study. *J Pain Res*; 10: 2183–2193.
- [9] Wainwright, T. W., Gill, M., McDonald, D. A., Middleton, R. G., Reed, M. & Ljungqvist, O. (2020). Consensus statement for perioperative care in total hip replacement and total knee replacement surgery: Enhanced recovery after surgery (ERAS®) Society recommendations. *Acta Orthop*. 91(1): 3–19. doi: 10.1080/17453674.2019.1683790.
- [10] Healy, W. L., Iorio, R., Clair, A. J., Pellegrini, V. D., Valle, C. J., & Berend, K.R. (2016). Complications of total hip arthroplasty: Standardized list, definitions, and stratification developed by the hip society. *Clin Orthop Relat Res*; 474(2): 357–364.
- [11] Winternitz, W. (2016). Postoperative care for hip replacement. Available at: www.arthritis-health.com › hip-surgery.
- [12] Molloy, I. B., Martin, B. I., Moschetti, W. E., & Jevsevar, D. S. (2017). Effects of the length of stay on the cost of total knee and total hip arthroplasty from 2002 to 2013. *J Bone Joint Surg Am.*, 1; 99(5): 402–407.
- [13] Pierre, D., Mustafa G., & Ngoc, L. (2017). Nurses' responsibilities in postoperative pain management following total hip arthroplasty. Bachelor's thesis; Social service and healthcare degree program in Nursing. JAMK University of Applied Sciences.
- [14] Vera, M. (2019). 5 total joint replacement: Nursing care plans. Available at: nurseslabs.com › ... › Musculoskeletal Care Plans.
- [15] Sanjuan, R. I., Franco, N., & Valdivia, A. (2014). Prosthetics school importance of patient education prior to prosthetic hip and knee surgery *J Nurs Care*, ISSN:2155-6105 JNC, an open access journal, Sanjuan-Cervero et al., *J Nurs Care*; 3:6.
- [16] Barden, R. M. & Chandler, K. (2016). Nursing care of the hip replacement patient. *Musculoskeletal Key*. Available at: musculoskeletalkey.com › nursing-car.
- [17] Hosny, E. M. (2018). Discharge needs of patients after total hip arthroplasty. *Med. J. Cairo Univ*; 86 (1): 179-185. Available at: WWW.medicaljournalofcairouniversity.net.
- [18] Polit, D.F. & Beck, C.T. (2014) *Essentials of nursing research: Appraising evidence for nursing practice*. (8th Ed.), Lippincott Williams & Wilkins: Philadelphia.
- [19] Raeissadat, S.A., Sedighpour, L., & Ghorbani, E. (2017). Correlation of Western Ontario and McMaster Universities Osteoarthritis (WOMAC) and Short Form 36(SF36) Questionnaires in patients with knee osteoarthritis. *RemedOpenAccess*; 2:1058.
- [20] Khuman, R., Chavda, D., Surbala, L., & Bhatt, U. (2018). Reliability and validity of modified western ontario and mcmaster universities osteoarthritis index gujarati version in participants with knee osteoarthritis; 12 (1): 8-15.
- [21] Ackerman, L. N., Bohensky, M. A., Zomer, E., Tacey, M., Gaelic, A. & Steiger, R. (2019). The projected burden of primary total knee and hip replacement for osteoarthritis in Australia to the year 2030. *BMC Musculoskelet Disord*; 20: 90. doi: 10.1186/s12891-019-2411-9
- [22] Stark, A. J., Charalambous, A., Istomina, N., Salantera, S., Sigurdardottir, A. K., Sourtzi, P., Valkeap, K., & Bachrach-Lindström, M. (2016). The quality of recovery on discharge from hospital: A comparison between patients undergoing hip and knee replacement – a European study. John Wiley & Sons Ltd. *Journal of Clinical Nursing*, doi: 10.1111/jocn.13278.
- [23] 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. Available at: www.alliedacademies.org › articles › e...

International Journal of Novel Research in Healthcare and Nursing

 Vol. 8, Issue 2, pp: (247-259), Month: May - August 2021, Available at: www.noveltyjournals.com

- [24] Fox, C. M. (2014). Implementing an integrative pre and post-operative educational intervention for older adults undergoing total hip and knee replacement. Doctoral Dissertation. Grand Valley State University. Kirkhof College of Nursing.
- [25] Ashley, B. M. (2017). The effect of preoperative education on postoperative pain after joint surgery: An integrative literature review. *Creative nursing*; 23 (1):42. DOI: 10.1891/1078-4535. Available at: dx.doi.org ›.
- [26] Changsuphan, S., Kongvattananon, P., & Somprasert, C. (2018). Patient readiness for discharge after total hip replacement: An integrative review. *Journal of Health Research*; 32(2): 164-171. DOI 10.1108/JHR-01-2018-016. Available at: www.emeraldinsight.com/2586-940X.htm
- [27] Drugs.com. (2020). Total hip replacement. Available at: www.drugs.com › ... › Discharge Care
- [28] Jeldi, A. J., Deakin, A. H., Allen, D. J., Granat, M. H., Grant, M., & Stansfield, B. W. (2017). Total hip arthroplasty improves pain and function but not physical activity. *arthroplasty*; 32(7):2191-2198. doi:10.1016/j.arth.2017.02.002.
- [29] Yip, K. H. (2019). Nursing care for patients undergoing total hip arthroplasty. Available at: www.researchgate.net › publication › 3.
- [30] Hammett, T., Simonian, A., Austin, A., Butler, R., Allen, K., Ledbetter, L., & Goode, A. (2017). Changes in physical activity after total hip or knee arthroplasty: A systematic review and meta-analysis of six- and twelve-month outcomes. *Arthritis Care & Research*; 70(6):892-901. DOI 10.1002/acr.23415
- [31] Moyer, R., Ikert, K., Long, K., & Marsh, J. (2017). The value of preoperative exercise and education for patients undergoing total hip and knee arthroplasty: A systematic review and meta-analysis. *JBJS Rev*; 5(12):e2. doi: 10.2106/JBJS.RVW.17.00015. Available at: www.ncbi.nlm.nih.gov › pubmed
- [32] Bauer, T. & Resnick, L. (2017). Preventing and managing post THA hip dislocations. *JBJS Case Connect*; 7: e11.
- [33] Dawson Amoah, K., Raszewski, J., Duplantier, N., & Waddell, B. S. (2018). Dislocation of the hip: A review of types, causes, and treatment. *Ochsner J*; 18: 242-252.
- [34] Lu, Y., Xiao, H., & Xue, F. (2019). Causes of and treatment options for dislocation following total hip arthroplasty (Review). *Experimental and Therapeutic Medicine*; 18: 1715-1722, DOI: 10.3892/etm.7733
- [35] Elsayed, O. M., Mohassab, A. M., & Mazed, M. G. (2017). Total hip replacement after acetabular fracture: A review article. *The Egyptian Journal of Hospital Medicine*; 69 (3): 2059-2062. DOI : 10.12816/0041059.
- [36] 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>.
- [37] 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: 382.
- [38] Specht, K., Kjaersgaard-Andersen, P., Kehlet, H., Pedersen, B. D. (2015). Nursing in fast-track total hip and knee arthroplasty: A retrospective study. *International Journal of Orthopaedic and Trauma Nursing*; 19, 121-130. Available at: www.elsevier.com/locate/ijotn.