

Effect of Nursing Care Regarding Postoperative Complications among Diabetic Patients after Hip Replacement Surgery

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Abstract

Background: The total hip arthroplasty surgery is an effectiveness intervention to improve patients function with osteoarthritis. This surgery is usually done for patients who aged more than 60 years and are associated with uncontrolled pain or hopeless damage hip joints. The effect of diabetes disease at post-surgical time, influencing on wounds healing process and promoting sores formation which lead to a complex of nursing care performance for patients has a big challenge, to deal with patients and their family feeling to help them to promote independence. **Objective:** This study aimed to evaluate the nursing management for diabetic patients undergoing surgical total hip replacement. **Materials and Methods:** A case-control study design applied on diabetic patients with a hip operation after fractured hip at orthopedic wards at Al-Rabea and Ninevah private hospitals in Mosul city. The study was conducted from September 10, 2022 until December 10, 2022. Postoperative nursing care provided to the control group was the daily common nursing care management in our hospitals, whereas that provided to the study group depended on a special standard nursing care management protocol. **Results:** Evaluation of postoperative disorders and complications showed a positive direction in decreasing their occurrence after depending on a special standard nursing care management protocol. **Conclusions:** The study concludes that all the postoperative complication may be relieved after total hip replacement as any surgical intervention if the orthopedic nursing staff applied the standard tool for nursing care management.

Keywords: Diabetes mellitus, hip replacement, impact

INTRODUCTION

Total hip surgeries replacement is done for patients with severe hip damage with an artificially made joint.^[1] In the United States, more than 168,000 had this type of surgeries and 30,000 implant substitutions are performed every year.^[2] The surgical intervention is usually for old age more than 60 years old with uncontrolled pain or severe and hopeless damaged hip joints.^[3] It seems that if the patients have a fracture or any other hip problem, she/he needs to assist in particularly with activity of daily living.^[4] Hip fractures ratio is about 1.6 million around the world whereas; it is a serious problem among 2000 health diseases which limit and influence on the patients' functionality and lead to the increase of mortality rate, but often a hip fracture can make changes in the lifestyle of elderly patents.^[3] Diabetes diseases are one of the many factors which increase hip operation incidence and is associated with a high mortality percentage. Currently it affects 415 million all over the world. About 9.1% is an

estimation of prevalence rate which represents of diabetes diseases in our city.^[5] In the postoperative period, diabetes is considered a risk factor for deteriorating wound healing and promoting the chance of infection.^[6] At the postoperative time, the rates of complications such as pneumonia, stroke, bleeding and prosthetic joint infection tend to increase, which are significant among diabetic patients.^[7] Infections are quite common, feared, prevalent, and searched complications.^[8] Currently, the nursing staff's responsibility is not only for physical and emotional care, but to act with other medical staff to deal with patient requirements.^[9] This group of patients provide a real nursing challenge because the patient

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with hip surgery is essentially an elderly patient who requires specific, postoperative care.^[10] In an evaluation by reduction of postoperative complications in patients after orthopedic surgery must be control of diabetes mellitus. After surgery, the patients are discharged from the operating room, then transferred to the Primary Care ward, which is responsible for proper management, treatment and control of blood sugar.^[7] In an evaluation by reduction of postoperative complications in patients before and after orthopedic surgery must be control of diabetes mellitus. After surgery, the patients are discharged from the operating room, then transferred to the orthopedic surgical ward, which is responsible for proper management, treatment and control of blood sugar.^[6] Patient care in the orthopedic unit is placed on lower list of priorities surrounded by negative progress, which made the recovery rarely.^[4] The risk in diabetes on orthopedic surgery results should be paid due attention and control on postoperative complications to improve patients and prevent negative prognosis.^[5] All management aimed to treat pain and restore joint motion and stability.^[11] This study targeted to evaluate the nursing care management at postoperative open reduction of hip prosthesis especially in patient with diabetes mellitus for one week after surgical intervention by applying a scientific nursing care principles and its influence on patient progress which may reduce prolonged hospitalization time.

MATERIALS AND METHODS

Ethics

Ethical approval was obtained to conduct the study from a local committee of publication ethics at University of Mosul, nursing college/department of clinical sciences, under the reference number 434 on 28 Sep 2022.

Study design

The researchers used a case-control study design among diabetic patients who has hip surgery.

Study setting

The study was conducted in the orthopedic wards at Al-Rabea and Ninevah private hospital in Mosul city.

Study sampling

The sample consisted 52 patients with 26 for each group (case and control) with total hip replacement and who have history of diabetes mellitus. All the participants were adult (male and female) and their age ranged between 50 and 80 years. Their hospitalization period is at least 1 weeks after the surgery. The tool of the study constructed from (*Critical Care Nursing Book*) 2017 edition, standard of nursing care and management with total hip replacement surgery chapter was included some categories (pain related total hip replacement, impaired physical mobility, hemorrhage, neurovascular compromise, dislocation of prosthesis, deep vein thrombosis and wound infection).^[11]

The scientific and suitable nursing care management was investigated in orthopedic wards and it includes assessing physical condition before and after operation. Nursing care management was applied on the study group, whereas the control group was given traditional nursing care from hospital. The evaluation on the effects of the nursing care management at the end of first week for study group was compared with control group. The data were collected from September 10, 2022 through December 10, 2022. The evaluation of nursing care takes approximately (one week) postoperative arthroplasty, and it was based on nurses' observation and care management in the wards.

RESULTS

Table 1 shows that majority percentage of age were (60–70) years for each groups, (77%) from case group and (65.4%) from control group were female, both groups were of body weight (60–80) kg as 77% and 69% for control and study groups, respectively. 53.5% and 46% were widow for study and control groups, respectively, and higher percentages were retired as 65% and 57% for study and control groups, respectively. And 76.9% and 57% were illiterate for control and study groups respectively.

Table 1: The demographical characteristics of study sample (study and control) groups

Patients characteristics	Study group		Control group	
	F	%	F	%
Age				
50–60	6	23%	3	11.5%
60–70	18	69%	19	73%
70–80	2	8%	4	15.5%
Gender				
Male	6	23%	9	34.6%
Female	20	77%	17	65.4%
Body weight				
60–80	18	69%	20	77%
More than 80–100	7	27%	4	15.5%
More than 100–120	1	4%	2	7.5%
Type of work				
Employee	1	4%	2	8%
Free business	4	15.5%	7	27%
Retired	17	65%	15	57%
Out of work	4	15.5%	2	8%
Marital status				
Single	2	8%	4	15.5%
Married	9	34.5%	9	34.5%
Divorced	1	4%	1	4%
Widow	14	53.5%	12	46%
Level of education				
Illiterate	15	57%	20	76.9%
Primary	4	15.5%	2	8%
Intermediate	3	11.5%	2	8%
Preparatory	2	8%	1	4%
University	2	8%	1	4%

Table 2: Initial assessment of the sample (study and control groups)

Initial assessment	Study group		Control group	
	F	%	F	%
FBS test level average (mg/dL)				
150–190	2	8%	4	15.5%
190–230	14	53.8%	16	61.5%
More than 230	10	38.2%	6	23%
Family history with DM				
Yes	17	65%	14	53.8%
No	9	35%	12	46.2%
Type of fracture				
Partial	23	88.5%	25	96%
Complete	3	11.5%	1	4%
Cause of fracture				
Traumatic	25	96%	23	88%
Pathological	1	4%	2	8%
Congenital (DDH)	0	0%	1	4%
Other medical history				
Myocardial infarction	9	35%	10	38.2%
Congestive heart failure	10	38.2%	3	11.5%
Renal disease	2	8%	2	8%
Cancer	4	15.5%	0	0%
Activity of daily living (Katz Index)				
Yes	3	11.5%	7	27%
No	23	88.5%	19	73%
Causes of hip replacement				
Osteoarthritis	8	30.7%	11	42.3%
Rheumatoid	0	0%	1	4%
Trauma related arthritis	18	69.2%	14	53.8%

Table 2 shows that most of the sample have blood sugar between 190 and 230 (65% and 53.8%) with family history with DM for study and control groups, respectively. The majority of them have partial fracture, as 96% and 88.5% for study and control groups respectively, yet the highest percent of chronic diseases MI and congestive heart failure for both groups and most of the sample have bad exercise and activity of daily living.

Table 3 shows that both subjects suffering from pain after the operation (73%) of the study subject where 77% of the control subject, completely have impairment in their physical mobility (100%) of both groups, hemorrhage 92% of the study subject while (73%) of the control subject. This table also shows that (77%) of the study sample they have neurovascular compromise while (61.5%) of the control group, (0%) dislocation of prosthesis, deep vein thrombosis, wound infection, and Pulmonary embolism for two groups.

Table 4 demonstrates a significant relationship between applied the standard practices of nursing care and low incidence of complications for study group in pain severity, impaired physical mobility, hemorrhage and dislocation of prosthesis. By using chi-square test at *P* value 0.005.

Table 3: Patients' condition postoperative nursing assessment in both groups

Health status after operation during recovery time	Present		Not Present	
	F	%	F	%
Pain related total hip replacement				
Study group	19	73%	7	27%
Control group	20	77%	6	23%
Impaired physical mobility				
Study group	26	100%	0	0%
Control group	26	100%	0	0%
Hemorrhage				
Study group	24	92%	2	8%
Control group	19	73%	7	27%
Neurovascular compromise				
Study group	20	77%	6	23%
Control group	16	61.5%	10	38.5%
Dislocation of prosthesis				
Study group	0	0%	26	100%
Control group	0	0%	26	100%
Deep vein thrombosis				
Study group	0	0%	26	100%
Control group	0	0%	26	100%
Wound infection				
Study group	0	0%	26	100%
Control group	0	0%	26	100%
Pulmonary embolism				
Study group	0	0%	26	100%
Control group	0	0%	26	100%

DISCUSSION

The surgical intervention is a problematic process with different kinds of complication because all the patients were under a critical situation. Thus, every patient has a chronic disease need to apply a special with focus care. In contrast, the old ages are a sensitive for any type of surgery in particular if they had a chronic disorder; they were under observation with a special attention. Diabetic is the one of most popular chronic diseases^[12] which can affect on the surgical prognoses. The importance of the current study comes from several variables, like type of operation, old age, and diabetic problem. In this case, our nursing care is considered a corner stone to reducing the chance of a complications or at least reducing the time of this complication if it happened.^[13] The results of our study mention on some important point in relation with the main targets and research objectives. First of all, the researchers selecting a case-control design to getting a clear different between samples how are under a specific nursing management and other one. The body weight (69%) played an important role to make a tension on the bone and muscles which led to this type of surgical treatment and the majority of samples were old age; however, about the half of sample (57%) was low level of education that means some of works do not need graduation qualification like Belding or any other

Table 4: Comparing outcomes of the nursing care management for study and control groups

Patient condition for the nursing care	Study group		Control group		Chi-square test
	At the end of 1 st week		At the end of 1 st week		
	<i>F</i>	%	<i>F</i>	%	
Pain related total hip replacement					
Non-present	20	76.9%	9	34.6%	Sig.
Present	6	23%	17	65.3%	
Impaired physical mobility					
Non-present	18	69.2%	4	15.3%	Sig.
Present	8	30.7%	22	84.6%	
Hemorrhage	18	69.2%	10	38.4%	Sig.
Non-present	8	30.7%	16	61.5%	
Present					
Neurovascular compromise					
Non-present	14	53.8%	9	34.6%	Not Sig.
Present	12	46.1%	17	65.3%	
Dislocation of prosthesis					
Non-present	25	96.1%	14	53.8%	Sig.
Present	1	3.8%	12	46.1%	
Deep vein thrombosis					
Non-present	24	92.3%	22	84.6%	Not Sig.
Present	2	7.6%	6	23%	
Wound infection					
Non-present	23	88.4%	18	69.2%	Not Sig.
Present	3	11.5%	8	30.7%	

hard works which was influencing on musculoskeletal system and this point was for researchers and patient not cooperating during nursing managements. In Table 2, the researchers try to do a primary assessment of the sample for both groups (study and control) to estimation the and review a general health status and remarking the most probable complications and it was an attempt to clarify some predisposing and risk factors more than a half of patients was hyperglycemia in both group selection (53.8%) for study sample and (61.5%) in control group; it was depending on criteria of sample selection and affinity ratio for a family history. Also, about (38.2%) with congestive heart failure (96%) a trauma causes of fracture in study on the other side about (96%) with a partial fracture in control group. when the researchers assess the activity of daily living by using a scale, there are no differences between two groups, case and control and the percentage number was convergent in particular in negative answer it is a consider other limitation of current study that show us some evidences for a disability for the majority of patient. Finally, this table demonstrate a high value for most serious disease that be a condition of surgical intervention, for example arthritis which was (69.2%) with study case and (53.8%) in control sample. Table 3 shows patients' condition for postoperative common complication which should happen after surgery,

furthermore is effecting on the duration of hospital stay and prognosis of intervention to positive direction. in this case the researchers did immediately previous assessment for sample and summarize the complications it may happen, before transferring to the wards and apply nursing care. The most numbers and percentage were a symmetrical except the result of hemorrhage in study group was a higher than control (92.3%) and neurovascular compromise was 77%. The study aimed to evaluating the nursing performance post hip replacement surgery this objective fined in Table 4 which was reveal a huge difference for nursing care outcomes after one week when we compared between control and case group for all complications categories. High percentage for each group however it was a better in case group than control after applied a standard nursing care in one-week duration. These complications led to prolonged hospital stay^[14,15] and increased patient's deterioration post-surgical procedure.^[16,17] Many research said the diabetic disease is responsible for chance of deep vein thrombosis (7.6%) in case and (23%) for control, and wound infection was (11.5%) in case and (30.7%) for control. In addition, the dislocation and mobility are very important in this type of operation as well as most of sample was old age which led to converting to second surgery,^[18] although the study group was better than control (96.1%) not present for dislocation in case and about a half (53.8%) in control.

CONCLUSIONS

The study concludes that all the postoperative complication may be relieved after total hip replacement as any surgical intervention if the orthopedic nursing staff do all their management day-after-day scientifically and gradually after this big health problem. Also the researchers conclude that nursing intervention results achieving the effect of case study nursing care. The recommendations based on the study results had adopted the nursing care management for the hip replacement patients in all the clinical setting of the orthopedic wards as well as further studied are required on a larger number and on other hospitals which have orthopedic wards.

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Conflicts of interest

There are no conflicts of interest.

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