Evaluating an Instructional Program's Influence on Daily Living After Femoral Nailing

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Abstract:

Background: Intramedullary nail fixation has emerged as a principal treatment for intertrochanteric fractures, predominantly observed in the older population. the type of fracture that occurs at the intertrochanteric region is commonly due to falls amongst the elderly population and this greatly affect their mobility and quality of life.

Aims and objectives: This study aims to evaluate how the instructional program enhances the patient's knowledge recovering from proximal femoral nailing focusing on ability of daily living, independently and safely.

Settings and Design: Quasi-experimental design was employed for two groups that executed the program by applying pre- and post-test evaluations of the study sample at Mosul Teaching Hospital from April ٩, 2024, to November ٢6, 2024.

Methods and Material: Self-administered questionnaires are utilized to evaluated the objectives of the study. 60 patients were non-probability (purposive) sample exposure to instructional program.

Statistical analysis used: Inferential statistics (Fisher's Exact Test) descriptive statistics (frequency, percentages, and mean of score) were used in the data analysis using SPSS version 26.

Result: The study participants' sample showed a considerable improvement in patient information at the post-test compared to the pre-test, with a highly statistically significant result ($P < 0.001$).

Conclusion: According to the study's findings, patients' knowledge in the study sample at the post-test after the program was considerably enhanced by the instructional program.

Key-words: Evaluating; Program; ADLs (activities of daily living).

Introduction

World-wide, life expectancy is rising, resulting in a greater percentage of elderly individuals in the population, whereas the health of bones, muscles, and joints often declines with age, As people age, their bone mineral density, muscle mass, and strength decline, and their chance of falling and suffering injuries from it rises.(1) hip fractures are seen as a tipping point in an older person's life. The1-year mortality is about 25% and, of those surviving, another 20% is permanently institutionalized (2). proximal femur fractures (PFFs) will present an increasing socioeconomic problem in the near future. this is a result of the demographic change (3) also medical complications as a infections (4) the majority of bone fractures are caused by falls and auto accidents, although other diseases, such as osteoporosis and tumors, can also play a risk of fracture. (5,6) after suffering a hip fracture, many patients are unable to regain the degree of autonomy they had before the injury (7). age, comorbid conditions, lack of independence before the fracture, and extended bed rest (frequent usage of an air pressure mattress, more days spent confused, difficulty recovering, long-term risk factors include the use of a urinary catheter and the provision of short-term care (8). Prolonged immobility can decrease functionality and raise the risk of hospital-related problems like falls and pressure ulcers. In contrast, early movement tends to decrease functional decline and

bed rest comorbidities. (4) These fractures can be managed with a variety of internal fixing techniques, which typically fall into one of two categories: intramedullary fixation or plating. In addition to indirect fracture reduction, proximal femoral nailing is a load-bearing device with rotational stability (9) Newer models of the proximal femoral nail (PFN), which was created to treat trochanteric and subtrochanteric femur fractures, offer stable fixation. After fixing intertrochanteric femoral fractures, the intramedullary device has a low chance of collapsing, shares more loading force, and provides greater stability (10) Restoring a patient to their prior level of functioning is the main objective of the surgical and rehabilitation. (11)

Subjects and Methods:

Study design:

The current study uses a quasi-experimental design with a pre-test and post-test strategy for both the study and control groups. Two data collection sessions were held: the first took place after the study group's instructional program was put into place, and the second involved setting up baseline data.

Sample and Sampling:

Between 9 April 2024 and 26 November 2024, the study was carried out. Furthermore, the investigator created and manufactured useful instruments for the intervention program's design. A review of the scientific literature and prior research revealed gaps in patient information, so a non-probability (purposive) sample of 60 patients was chosen at random from teaching hospitals in Mosul that were directly exposed to the intervention program.

Inclusion Criteria: Patients with intertrochanteric fractures, those who have had proximal femoral nailing, and those who consented to be included in the study sample are the inclusion criteria.

Exclusion criteria include patients with bone plates and external fixations, patients under the age of eighteen with different kinds of fractures, and patients who declined to participate in the study.

Study instruments and data collection:

The questionnaire pertains to the evaluation information of patients receiving proximal femoral nailing for intertrochanteric fractures, particularly with relation to daily living activities. Every patient is interviewed under the researcher's guidance, and it takes them 20 to 30 minutes to react. There are two sections to the questionnaire. The first part contains the demographic information, and the second part deals with patient data and includes fifty items (I know, I do not know) that are divided into four main categories. With ten elements, the first axis provides patient information about proximal femoral nailing. The second axis concerns everyday activities after surgery. PFN, consisting of thirty items, such as clothing, toileting, getting in and out of bed, getting in and out of a car, and housework. Five items make up the third axis, which shows the patients' knowledge regarding fall prevention. The fifth axis, which includes five elements, informs patients about improper postures that should be avoided to avoid difficulties after PFN surgery. These objects are scored using the Likers' scale: I am know of (1); I am not know of (0).

Statistical Analysis:

Two statistical methods were used to analyze the data from this investigation. Descriptive statistics employ frequency, proportion, and arithmetic mean (x), while inferential statistics use the Fisher's exact test to compare related samples. $P>0.05$ indicated non-significant results, $P<0.05$ indicated significant results, and $P<0.01$ indicated highly significant results.

Ethical consideration: Participants were allowed to withdraw from the study at any time, and it was a harmless one. Ensure that all medical records and patient information are kept private, discreet, and used exclusively for investigations.

Results:

Table (1) Distribution of sociodemographic variables for the study sample. Control G= 30 patients; Study G =30 patients

Variable	Class	Group	f	Per.	Test	P
Gender	Male.	Control	18	60%	Fisher's exact test	**0.44**
		Study	14	47%		
	Female.	Control	12	40%		**0.44**
		Study	16	53%		
Age	(20-29)	Control	3	10%	Fisher's exact test	**1.00**
		Study	3	10%		
	(30-39)	Control	5	17%		**1.00**
		Study	4	13%		
	(40-49)	Control	6	20%		**0.38**
		Study	9	30%		
	(50-59)	Control	10	33%		**1.00**
		Study	10	33%		
	(≥60)	Control	6	20%		**0.73**
		Study	4	13%		
Marital Situation	Married.	Control	23	77%	Fisher's exact test	**0.748**
		Study	25	83%		
	Single.	Control	2	6%		**1.00**
		Study	1	3%		
	Widow.	Control	5	17%		**1.00**
		Study	4	13%		
Educational Background	literate	Control	5	17%	Fisher's exact test	**0.42**
		Study	2	7%		
	Primary school	Control	8	27%		**1.00**
		Study	8	27%		
	secondary school	Control	4	13%		**0.33**
		Study	7	23%		
	High school graduate	Control	5	17%		**1.000**
		Study	5	17%		
	Graduate college	Control	6	20%		**0.76**
		Study	8	27%		
	Postgraduate	Control	2	7%		**0.49**
		Study	0	0%		
Living Place	Urban	Control	20	67%	Fisher's exact test	**0.78**
		Study	22	73%		
	Countryside	Control	10	33%		**0.78**
		Study	8	27%		
	government employee	Control	9	30%	Fisher's exact test	**0.79**
		Study	10	33%		
		Control	13	43%		**0.28**

Job.	Free work	Study	11	37%		
		Control	1	3%		**1.000**
	Retiree	Study	1	3%		
		Control	7	23%		**0.57**
	Housewife	Study	8	27%		
Body Mass Index	(≤18)	Control	4	13%	Fisher's exact test	**1.000**
		Study	3	10%		
	(18-24.9)	Control	11	37%		**1.000**
		Study	11	37%		
	(25-29.9)	Control	12	40%		**1.000**
		Study	13	43%		
	(30-34.9)	Control	3	10%		**1.000**
		Study	3	10%		

P=P-value; Per=Percentage;

Table (1): In terms of gender, males constitute the majority, with 60% in the control group and 53% in the study group. The age group of 50-59 years is represented by 33% in both the study and control groups. Regarding marital status, the majority of patients in both groups are married, with 83% in the study group and 77% in the control group. The highest percentage of educational attainment is primary graduation, with 27% in the study group and 27%, The control group consisted of residents primarily from urban areas, with 73% in the study group and 67% in the control group. Regarding occupational status, a notable percentage was observed in the study group at 37% and in the control group at 43%.

Table (2): Assessment of Patients' Knowledge about Proximal Femoral Nailing, Avoid Falls, Correct Position.

Domains	**Control group**				**Study group**			
	Pre		**Post**		**Pre**		**Post**	
	M	**Assess**	**M**	**Assess**	**M**	**Assess**	**M**	**Assess**
P.F.N Information	1.567	Poor	2.000	Fair	1.850	Fair	7.000	**Good**
Avoidance falls, injury	2.900	Fair	2.467	Fair	2.534	Fair	4.133	**Good**
Correct Positions	1.700	Fair	1.667	Fair	1.833	Fair	4.067	**Good**

PFN=Proximal Femoral Nailing; M=Mean of score

The Table (2) shows that the study group demonstrated a significant improvement in patients' knowledge about Proximal Femoral Nailing, Avoid Falls, Correct Position from the pre-test to the post-test after applying instructional program for study group.

Table (3): Assessment of Patients' Knowledge about Activity of Daily Living After Femoral Nailing.

	Domains	Control group				Study group			
		Pre		Post		Pre		Post	
		M	Assess	M	Assess	M	Assess	M	Assess
Activity of daily living	(In and out of bed)	1.567	Poor	2.000	Fair	1.850	Fair	7.000	**Good**
	(Toilet)	1.367	Poor	1.533	Poor	0.967	Poor	3.500	**Good**
	(Shower)	1.833	Fair	2.167	Fair	1.433	Poor	3.600	**Good**
	(Dressing)	1.653	Poor	1.567	Poor	1.633	Poor	3.867	**Good**
	(Get in and out of car)	2.467	Fair	2.400	Fair	2.000	Fair	3.767	**Good**
	(House activity)	1.967	Fair	2.200	Fair	1.433	Poor	3.733	**Good**

M=Mean of score

The Table (3) shows that the study group demonstrated a significant improvement in patients' knowledge about activity of daily living from the pre-test to the post-test after applying instructional program for study group.

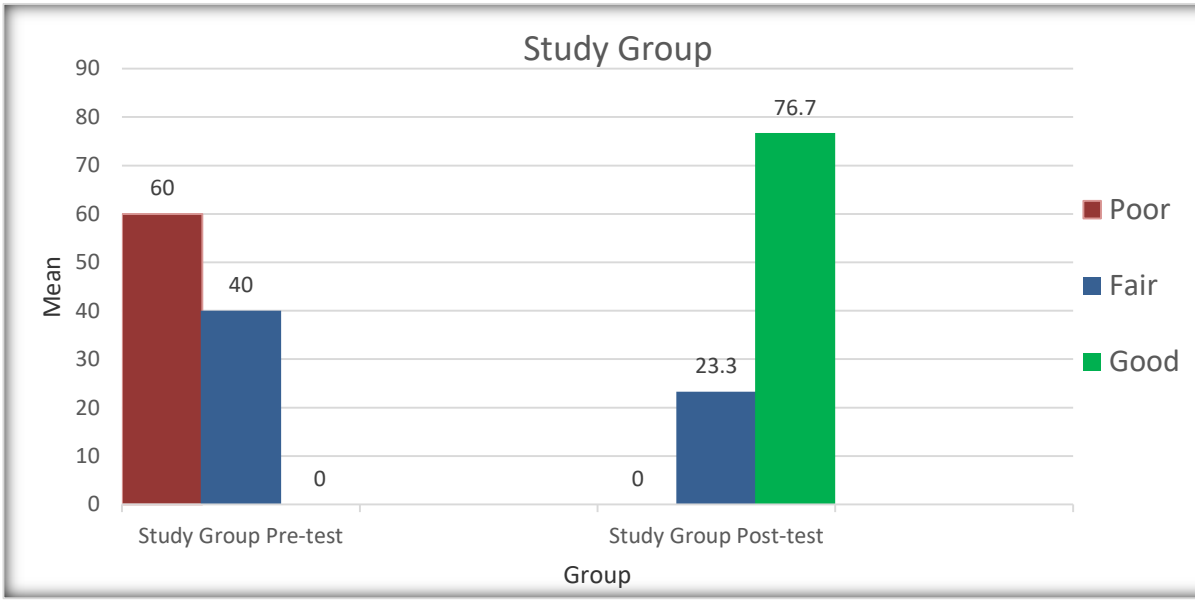

Figure (1) Level of patient's knowledge about ADLs after femoral nailing.

Figure (1) indicates that patients in the study sample exhibit a low to fair level of information during the pretest, with 60%, 40%, and zero percent respectively for good information. There is a remarkable change at post-test after intervention, with 76.7% of respondents now evaluating the situation as favorable, the poor ratings have significantly declined, with Fair ratings falling to 23.3%.

Discussion:

Hip fractures can result in a permanent loss of mobility and self-care skills. Patients often recover gradually from hip fracture surgery, even if there may be initial declines in functional capacity. Recovery, however, can differ; some people recover their skills rapidly, while others develop functional dependence (12)

(Table1) The findings of the current study demonstrated that demographic characteristic was the study group is composed of 53% female patients, whereas the control group is composed of 60% male patients. This conclusion is agree with a Mousa AM. (2020)

(13), which found that men made up the majority of participants .It also supported research by Ju JB, et al. (2019) (14), which discovered that women made up the majority of patients (112, 66.7%) as opposed to men (56, 33.3%). furthermore, the most of patients in both groups are between the ages of 50 and 59, with 33% in the control group and 33% in the study group, study conducted by Huang et al. (2017) (15). supports these findings by demonstrating that over half of the groups under investigation were between the ages of 50 and 60, and the mean age was 53.92 ±6.75 years. and our results support those of Isam SR. (2023) (16), who found that most patients were in the 48–57 age range. Regarding marital status In both the study and control groups, over two-thirds were married (83% and 77%, respectively). this finding was supported by Hamdi, M.J., and Jasim, A.H (2022) (17). According to them, 53.3% of the sample was married. As regard to educational background with 27% of the study group and 27% of the control group being illiterate primary school, this finding agrees with a Yusif HK. (2014) (18) found that 9 (30%) of the patients in the study group and 11 (36.7%) of the patients in the control group had finished primary school. Our results are also consistent with those of the study "Effect of an Educational Programme on Satisfaction and Outcomes among Patients with Femoral Neck Fracture" by Abu El-Kass S, et al. (2022) (19). They revealed that, of the study group, fewer than half had only a basic education, with 13 (38.2%) for the control group and 16 (47.1%) for the study group. related to living place, majority of patients in both groups reside in urban areas 67% in the control group and 73% in the study group,

our study was agree with Shalash A, and Mousa AM. (2024) (20) noting that a large percentage (63%) of the patients in the sample were from urban areas. due to the job, almost one-third of study and control group individuals were free work, this outcome is in line with the research conducted by Sadiq MK and Hattab WA (2024) (21), which discovered that the majority of the study participants (n=10; 33.3%) and the control sample (n=13; 43.3%) were independent contractors. Additionally, also agree with 40.0% of patients in the research group and 33.3% of patients in the control

group were self-employed, which is consistent with findings by Najee AF and Hassan HS. (2019) (22). According to body mass index indications, 43% of the individuals in our study are categorized as overweight. Naser AA., et al. (2023) **(23)**, which seeks to determine the "Effectiveness of Instruction Program in Improving Balance Level among Seniors with Osteoporosis," support these findings.

(Table2 and Figure1) According to the current study, related patients' information about surgical of proximal femoral nailing for intertrochanteric fracture at post test was good after instructional program from the pretest, this finding agree with study by Lalwani SS et al.,(2022) (24) , who mention that the effectiveness of rehabilitation program at post-fracture is demonstrated by the significant improvements in both physical functionality and overall wellbeing.

Due to avoidance falls, our results indicate that patients are highly informed and have a high level of significance after the program. This is corroborated by Lee SY et al. (2019) (25), who note that several interventions have been studied to reduce the fear of falling after HFS. In one RCT with 160 patients receiving HFS, functionally focused exercises, like a balancing exercise, increased the modified fall efficacy scale. The current investigation supports the findings of Lee SY et al. (2019) (25). State occupational treatment seems to improve general function, such as walking, dressing, bathing, using the restroom, transferring from a chair or bed to a bed, and climbing stairs, after HFS.

Regarding the patient's correct position, the instructional program had a significant impact with a good result after its implementation, this result disagree with Rogmark C et al. (2019) (26), they state that instructions from hospital occupational therapists are largely ignored after being dismissed. Recommendations for assistive equipment should be based on the actual functional needs of the patient with a hip fracture, not on a routine basis or as a result of arthroplasty precautions.

According to our findings, the study group's post-test scores for all ADL domains were higher than those of the control group. This conclusion is consistent with a study by Al Khayya H et al. (2016) (27) titled "Effect of Implementing a Discharge Plan on Functional Abilities of According to the results of "Geriatric Patients with Hip Fractures," the research group favored activities of daily living (ADLs) that returned to their pre-fracture level three months after discharge, such as eating, dressing, grooming, bowel and bladder continence, and transporting. Activities that showed more difficulty regaining the pre-fracture level, such as walking, showering, climbing stairs, and using the restroom. Furthermore, research by Al-Kaabi HJ, Mansour KA., (2019) [28] supports this. They looked into the efficacy of an intervention that involved patient education and discovered that the study group significantly outperformed the control group in ADLs (dressing and grooming, eating, walking, reaching, and activity).

In terms of getting in and out of a car, we discovered that the study group performed significantly better than the control group. This finding is consistent with Colibazzi V, et al. (2020) (29), who believe that it is appropriate to look into the type and frequency of exercise that should be performed (vehicle driving) after the sixth week of a post-intervention rehabilitation program.

limitation of the study:

Only 60 patients were included in the study, which is a small sample size because some of the patients were excluded, they could not read or write and others had concurrent fractures or were illiterate.

Conclusion:

When compared to the pretest, patients who received proximal femoral nailing for an intertrochanteric fracture had significantly higher information, satisfaction, and outcomes after the instructional program was implemented ($P \leq 0.001$). Additionally, the study group's total information score and activities of daily

living (ADLs) score immediately after three weeks demonstrated a positive correlation.

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