Effectiveness of an Instructional Program on Activity of Daily Living for Patients undergo Proximal Femoral Nailing

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ABSTRACT

Background: Among the primary causes of mortality and morbidity among the elderly is intertrochanteric femur fractures, and early surgical repair is recommended to minimize the risk of pneumonia, pressure ulcers from prolonged bed rest. This study aims to evaluate the effectiveness of an instructional program on the activity of daily living for patients with proximal femoral nailing regarding intertrochanteric fracture.

Methods and Material: A quasi-experimental design is using in the present study by carry out of a pre and post-test approach for both study and control group at Mosul teaching hospital between 3rd of April 2024 until 16th of November 2024. The researcher's created and produced program and tools (questionnaires) for measuring the study's goal. 60 patients were non-probability (purposive) sample, and they were separated into two groups: 30 study group were presented with the instructional program, and 30 control group were not exposure to instructional program. Statistical analysis used (SPSS) version 26, in which descriptive and inferential statistical Fisher Exact Probability test and descriptive statistics (frequency, percentages, mean of score, Mann-Whitney U Test) were applied to the data analysis

Result: Of the study group participants were strongly improvement for patient's information with highly statistically significant at ($P \leq 0.001$). while the control group remain at same level for pretest as a non-significant at ($P > 0.05$).

Conclusion: The study concludes that the effectiveness of an instructional program there was a high significant improvement on patients' information for study group compare with control group at post-test after instructional program.

***Keywords: proximal femoral nailing, activities of daily living, Instructional Program*.**

INTRODUCTION

One of the many types of musculoskeletal injuries is bone fracture [(1)]. that resulting in the skin and soft tissue surrounding the fracture damage that leading to entry of microorganisms[(2)]. infection effect life-changing[(3)]. fractures of the lower extremity are very common [(4)]Falls and car accidents account for the majority of bone fractures, certain illnesses including osteoporosis and tumors can also be the cause. microstructural bone and low bone mineral density (BMD) degradation are the hallmarks of osteoporosis, a disorder that weakens bones and raises the risk of osteoporotic fractures [(5)]. As people age, osteoporosis's clinical endpoint rises. It is linked to a decline in activity of daily living, difficulty carrying out everyday tasks, elevated rates of sickness and mortality, and significant socioeconomic expenses [(6)]. Osteoporosis frequently results in proximal femur fractures, which we collectively refer to as "hip fractures." Since there were 1.31 million hip fractures in 1990, they pose a global burden to healthcare systems as well as to patients and their families [(7)], Elderly people frequently sustain intertrochanteric fractures that affects both the lesser and greater femoral trochanters [(8)]. the goal of the surgical and rehabilitation team is focused on returning a patient to their previous level of functioning[(9)]. Intramedullary nail fixation is the gold standard treatment [(10)]. for the treatment of trochanteric and subtrochanteric femur fractures, the proximal femoral nail (PFN) was created, and the latest version of PFN offers stable fixation, after fixation of intertrochanteric femoral fractures, the intramedullary device has a low chance of collapsing and provides higher stability[(11)]. While pin fixation device leading to Pin track infection[(12)], PFN less complication than another immobilization device such as cast causes compartment syndrome[(13)]. Hip fractures necessitate long-term care and are linked to a decrease in activities of daily living (ADL). Daily living activities are used as a catch-all word for self-care[(14)]. Many patients with hip fractures become more and more dependent and unable to return to their prior levels of mobility and activity[(15)]. Additionally, between 10% and 20% of patients who have hip fractures need to go to a more dependent residential setting[(16)]. An individual's physical independence within their own surroundings is demonstrated by their capacity to carry out self-care tasks, which include basic and moderate activities of daily life[(17)]. Physical activity is important for maintaining good health [(18)] .

SUBJECTS AND METHODS

Study design:

A quasi-experimental design is using in the present study by carry out of a pre-test and post-test approach for both study and control group, the data collection is done a twice: the first one was formulating a baseline information and the second one was done after applying the instructional program (for study group).

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Sample and Sampling:

The study has been done from 3rd of April 2024 until 16th of November 2024. the instructional program design additionally, the researcher built and developed instrument tools. to meet the outcome of assessment the gap of patient's information which are relies on scientific literature review and previous studies, non-probability (purposive) sample of (60) patients were selected randomly from Mosul teaching hospitals, two groups comprise the study sample for this research. the first one ware (30) patients for the study group, who are directly exposed to an instructional program, the other (30) patients which ware a control group were not exposed to an instructional program,

Inclusion criteria:

Patients with intertrochanteric fracture, patients undergone a proximal femoral nailing and patients who agreed and willing to participate as a study sample.

Exclusion Criteria:

Patients younger than eighteen who have various kinds of fractures Patients who refused to take part in the study, as well as those who have bone plates and external fixations.

Study instruments and data collection:

The questionnaires which is related to the assessment information of patients with a proximal femoral nailing for intertrochanteric fracture about information concerning ADLs. Under supervision of the researcher, all patients are interviewed, and each patient was consuming between (20-30) minutes to answer the questions, questionnaire consists of two sections. The demographic data is included in the first section, and the second half relates to patients information that contain of a (50) items (I know, I do not know) and divided into (4) main axis which are first axis- information of patients regarding proximal femoral nailing, which consists of (10) items. second axis- regarding activities of daily living after surgical PFN which consist of (30) items include (getting in and out of bed, toileting using, showring, dressing, getting in and out a car, household activities) third axis- patients' information about avoiding falls consists of (5) items. Furth axis- patients' information about wrong positions that must be avoid it to prevent complication after surgery of PFN consists of (5) items. these items are rated according to the Likers' scale; I know (1); I do not know (0)

Statistical Analysis:

Statistical approaches. Frequency, percentage, Mean (x) are all used in descriptive statistics, and the Fisher Exact Probability test (F.E.P.T.), McNemar test, and Mann-Whitney U test are used in inferential statistics to test two category nominal scale variables. The findings were classified as non-significant at $P>0.05$, significant at $P<0.05$, and high significant at $P<0.01$.

Ethical consideration:

All of the patients in the study sample gave their verbal consent, and participation was kept private. voluntary, and the data was used exclusively for study.

RESULTS

Table 1. Distribution of the study and control groups' sociodemographic characteristics (n =60). Study group=30, Control group=30

P-value	%	No.	Groups	Categories	Variables
0.44	60	18	Control	Male	Gender
	47	14	Study		
0.44	40	12	Control	Female	
	53	16	Study		
1.00	10	3	Control	20-29	Age
	10	3	Study		
1.00	17	5	Control	30-39	
	13	4	Study		
0.38	20	6	Control	40-49	
	30	9	Study		
1.00	33	10	Control	50-59	
	33	10	Study		
0.73	20	6	Control	≥60	
	13	4	Study		
0.748	77	23	Control	Married	Marital status
	83	25	Study		
1.000	3	1	Control	Single	
	3	1	Study		
1.000	3	1	Control	Divorced	
	0	0	Study		
1.000	17	5	Control	Widow	
	13	4	Study		
0.42	17	5	Control	Reads and writes	level of education
	7	2	Study		
1.00	27	8	Control	Primary Graduate	
	27	8	Study		
0.33	13	4	Control	Intermediate graduate	
	23	7	Study		
1.000	17	5	Control	High school graduate	
	17	5	Study		
0.76	20	6	Control	Graduate college or institute	
	27	8	Study		
0.49	7	2	Control	Post graduate	
	0	0	Study		
0.78	67	20	Control	Urban	resident
	73	22	Study		
0.78	33	10	Control	Countryside	
	27	8	Study		
0.79	30	9	Control	government employee	occupational status
	33	10	Study		
0.28	43	13	Control	freelance	
	37	11	Study		
1.000	3	1	Control	Retired	
	3	1	Study		
0.57	23	7	Control	Housewife	
	27	8	Study		

Table 2. Significant Differences in Patients' Information About Activity Of Daily Living For Intertrochanteric Fracture Undergoing PFN related Pre, Post-test among Control and Study Group

Mann-Whitney U Test

Patients information		Groups	Pre				Post			
			Mean rank	Z	P-value	Sig.	Mean rank	Z	P-value	Sig.
PFN Surgery		Control	28.60	0.865	0.387	N.S	15.50	6.731	0.000	H.S
		Study	32.40				45.50			
Activity of daily living	Transferring	Control	33.33	1.312	0.189	N.S	17.73	5.867	0.000	H.S
		Study	27.67				43.27			
	Toilet	Control	32.57	0.945	0.345	N.S	20.40	4.656	0.000	H.S
		Study	28.43				40.60			
	Shower	Control	30.15	0.160	0.873	N.S	17.08	6.090	0.000	H.S
		Study	30.85				43.92			
	Dressing	Control	33.82	1.538	0.124	N.S	20.02	4.839	0.000	H.S
		Study	27.18				40.98			
	Get in and out of car	Control	33.67	1.441	0.150	N.S	20.82	4.417	0.000	H.S
		Study	27.33				40.18			
	Climbing stairs	Control	27.75	1.255	0.210	N.S	18.78	5.357	0.000	H.S
		Study	33.25				42.22			
Avoidance falls		Control	32.65	0.971	0.332	N.S	20.50	4.574	0.000	H.S
		Study	28.35				40.50			
Positions that the patient should avoid		Control	29.38	0.511	0.610	N.S	16.19	6.149	0.000	H.S
		Study	31.62				44.10			
Over all		Control	32.57	0.918	0.359	N.S	15.50	6.657	0.000	H.S
		Study	28.43				45.50			

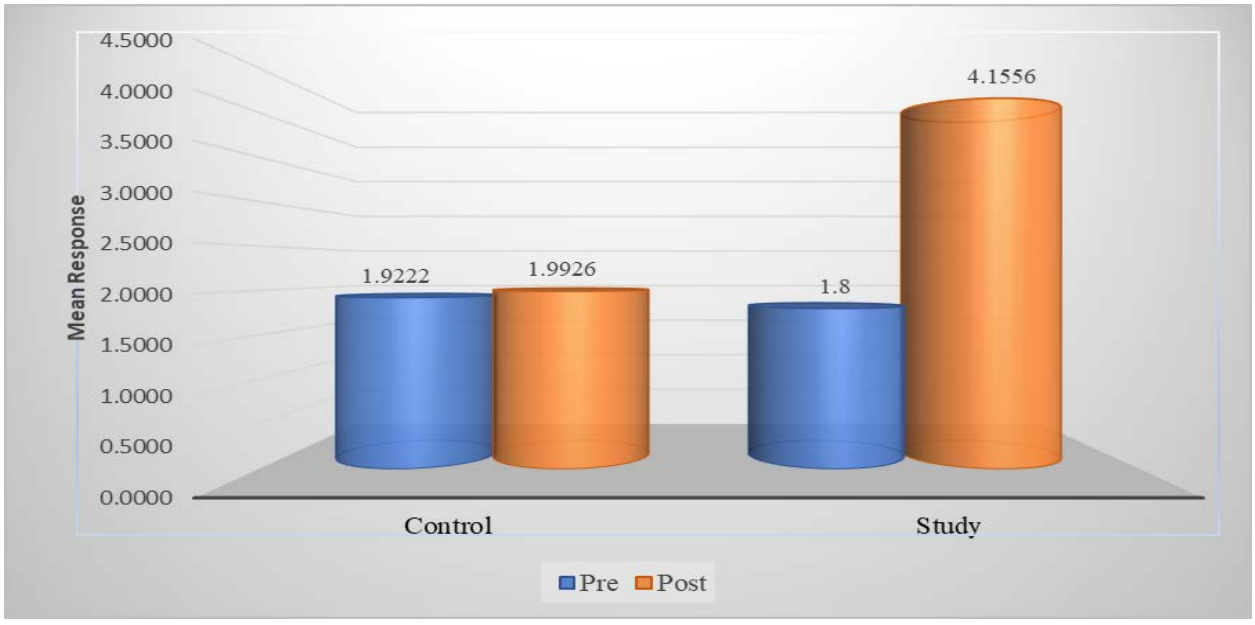

Figure 1. Pre &Post for Study &Control group

Table (1):Regarding gender; male is majority by 18(60%) control and 14(47%) study, more than aged groups between 50-59 years old with 10 (33%) for study and 10(33%) for control, marital status refers that over patients in both groups are married 25(83% in the study group and 23(77%) in the control group, primary graduate high percentage regarding to their educational level 8(27%) for study and 8(27%), control group. above degree related to resident was in urban area with 22(73%) study and 20(67%) control, concerning occupational status, a significant proportion of the study group 11(37%) and control group 13(43%)

Table (2): This table indicates that there are highly statistically significant differences in patients' information regarding to study group during the posttest at ($P < 0.001$) for overall domain and sub-domains score that clarify the improvement in patient' information among study group.

DISCUSSION

The majority of hip fractures occur in adults over 65, with the intertrochanteric region accounting for half of these fractures. Women are also more likely to have hip fractures. This kind of damage

typically arises from low-energy injuries, like simple falls in the elderly, and high-energy events, like falling from a height or traffic accidents, in younger age groups [19].(Table1) the findings of the present study's data analysis show that male make up over 50% of both control and study groups include 18 (60%) and 14 (47%), respectively. this finding agrees with the finding of study done by [20]. who found that most of patients were males 101 (50.5%), and female 99(49.5%). And also agree with study conducted by [21].who claim that the most of the study's participants are male. the majority of patients in both groups fall within the 50–59 age range, with 10 (33%) in the control group and 10 (33%) in the study group. A study by [22] . Supports these findings, showing that the mean age was 53.92 ±6.75 years, and that more than half of the groups under examination were between the ages of 50 and 60, and our findings concur with those of [23], who show the majority of patients were between the ages of 48 and 57.More than two-thirds of the study and control groups 25 (83%) and 23 (77%), respectively, were married, this finding was supported by [24] "Effect of compliance to the discharge instructions among patients with internal fixation for hip fracture", which indicating that most of the two groups under study were married. As regard to educational level A notable percentage of patients in both groups have low, with 8(27%) of the study group and 8(27%) of the control group being illiterate (Primary Graduate). this finding agrees with a study established by[25], A study entitled " Effect of an Educational Program on Satisfaction and Outcomes among Patients with Femoral Neck Fracture " who showed that, among the study group, less than half had only a basic education,16(47.1%) for study and 13(38.2%) for control, also agree with study by[26] , Who state that sample's educational attainment, 9 (30%) of the patients in the study group and 11 (36.7%) of the patients in the control group had completed primary school. Regarding place of residency, most patients in both groups live in urban areas 22(73%) in the study group and 20(67%) in the control group). This present study agrees with [26]. who found that all of studied groups in both groups lived in urban areas. Regarding occupation, almost one-third of study and control group individuals were independent contractors, This result is consistent with the study by [27] which found that the control sample (n=13; 43.3%) and the majority of the study subjects (n=10; 33.3%) were unemployed, also agree with [28], She shows that in the research titled "Impact of rehabilitation program for elderly patients with hip fracture" provided support for our study that over two-thirds of participants were working. Also, agreement with results by [29] indicated that 40.0% of patients in the study group and 33.3% of patients in the control group were self-employed.(Table2 and Figure1) in the present study, related patients' information about surgical of PFN for intertrochanteric fracture in post was high significant after instructional program from the pretest, this result relevance study by[11], who state that the effectiveness of the post-fracture rehabilitation program is demonstrated by the significant improvements in both physical functionality and overall wellbeing.Our finding due to all domain for ADLs score were higher at in the study group compared with those in the control group at posttest, this finding corresponding with study by[29] the research group preferred the ADLs that returned to their pre-fracture level three months after discharge, including feeding, bowel and bladder continence, grooming, dressing, and transporting, following these were activities that demonstrated greater difficulties in regaining the pre-fracture level, such as walking, showering, climbing stairs, and using the restroom. furthermore, this is backed up by research done by [30], Who investigated the effectiveness of intervention consisted of patients education, They found a high significant improvement in ADLs (dressing and grooming, eating, walking, reach and activity)in the study group than the control group. Regarding Get in and out of car we found that study group better than control group with high significant, this resulting agree with [13] , after the sixth week of a post-intervention rehabilitation program, they think it is appropriate to investigate the kind and frequency of exercise that should be done (vehicle driving).About Avoidance falls in our result patients shows highly information and oriented with high significant post program, this supported by [32-36], Who state that After HFS, a number of therapies have been researched to lessen the fear of falling. Functionally focused workouts, such as a balance exercise, improved the modified fall efficacy scale in one RCT with 160 patients who received HFS, The present study agree with[37-40], Also following HFS, state occupational therapy appears to enhance general function, including ambulation, dressing, bathing, toilet usage, chair/bed transfers, and stair climbing.

CONCLUSION

Patients undergo proximal femoral nailing for an intertrochanteric fracture had much better information, satisfaction, and results posttest the implementation of the instructional program compared to pretest, with a highly statistically significant difference at (P≤ 0.001). Furthermore, the study group's activities of daily living (ADLs) score and total information score showed a favorable link both immediately after three weeks later.

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