Effect of Pre and Post Hospital Discharge Instructions on Functional Abilities of Patients with Hip Fractures

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Abstract

Background: Hip fracture represents one of the commonest causes of disability and hospitalization in the patient population, resulting in increased morbidity and mortality and impaired functional capacity, particularly for basic and instrumental activities of daily living (IADLs). **The aim of this study** was to evaluate the effect of pre and post hospital discharge instructions on functional abilities of patients with hip fractures. **Design:** A quasi experimental research design was used in this study. **Setting:** The study was conducted in the orthopedic department and orthopedic outpatient clinic at El-Demerdash University Hospital. **Subjects:** A purposive sample of 60 patients with hip fractures divided into two equal groups (study and control) where each group consists of 30 patients. The experimental group received the discharge instructions beside routine care in hospital, whereas, control group received only the routine hospital care according to inclusion and exclusion criteria. **Tools:** Five tools were used for data collection I. Patients` Structured Interview Questionnaire. II. Short Portable Mental Status Scale (SPMSS). III. Barthel Index of Activities of Daily Living. IV. Lawton and Brody Instrumental Activities of Daily Living Scale Lawton and Brody Instrumental Activities of Daily Living Scale .V. Self-care practices of patients with hip fracture checklist. **Results:** The total activities of daily living (ADLs) score were higher at three months following discharge from the hospital in the study group compared with those in the control group. Although applying the discharge instructions lead to significant increase in postoperative ADLs score than those in the control group, yet more than half of the subjects in the study group could not recover their pre- fracture level of ADLs. **Conclusion:** Applying the discharge instructions on patients with hip fracture was effective in enhancing recovery rate for performing ADLs. Positive but insignificant recovery rate was found in some IADLs. **Recommendation:** Stress the importance of applying the discharge instructions for patients with hip fracture in order to accelerate their recovery and prevent complications.

Keywords: hip fracture, functional abilities, patients, discharge instructions.

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Introduction

Hip fracture is any fracture that occurs somewhere between the femoral head edge and 5 cm below the lesser trochanter in the proximal femur. Hip fracture is a dangerous and costly public health problem that can have dramatic effect on the independence and quality of life of patients .Osteoporosis and falls are the most dominant causes of hip fracture among patients (**Kangau, 2011and Leland, et al., 2015).**

Hip fractures occur after falls are a global public health problem. The total number of hip fracture every year is

projected to reach more than 36,000 in 2020 and 65,000 in 2050. The majority (90.0-95.0%) of hip fracture is surgically treated **(Dyer, et al. 2016)**. Hip fractures were associated with a high prevalence of prolonged disability, large health care costs, poor quality of life, and increased mortality. Despite advances in surgical and anesthetic techniques over time, morbidity and mortality after hip fracture surgery remain high **(Huang, et al., 2020)**.

Patient with hip fracture surgery consider increase in mobility and functions to be the preferred outcomes when asked about their recovery expectations following hip fracture surgery. Still, some patients do not regain their pre fracture basic mobility level in the acute orthopedic ward; and some do not return directly to their previous residence own home. Patients who lose basic mobility, the ability to walk, to get in and out of bed, and to sit down in and get up from a chair also lose essential aspects of their quality of life and potentially need more health care support than those who do not lose their basic mobility **(Hassaan, et al., 2017)**.

Postoperative complications of this procedure are still relevant, and may affect around 20% of patients with hip fracture. Cognitive and neurological alterations, cardiopulmonary affections alone or combined, venous thromboembolism, gastrointestinal tract bleeding, urinary tract complications, per operative anemia, electrolytic and metabolic disorders, and pressure scars are the most important medical complications after hip surgery in terms of frequency, increase of length of stay and per operative mortality. Pressure scars result from an imbalance between extrinsic mechanical forces acting on skin and soft tissue, and the intrinsic susceptibility to tissue to collapse **(Pedro, et al., 2014)**.

Mobility is an important factor in the rehabilitation phase for hip fracture patients. Among many factors affecting postoperative mobility, stability of the stem following hemiarthroplasty is considered crucial for early mobility **(Kim and Lee, 2016)**. Early discharge from hospital should be the aim of the treatment in patients with hip fracture surgery **(Espen, et al., 2017)**. There are many causes of prolonged hospital stay in these patients; poor mobility is one of the major factors. Patients with poor mobility also need extended support at discharge **(Beaupre, et al., 2016 and Pioli, et al., 2017)**. Several possible factors affecting poor recovery of walking have been reported, including age, co-morbidities, pre fracture mobility, cognitive impairment, length of stay before/after surgery, dependence on activities of daily living, partial weight-bearing after surgery, prolonged catheterization, and living arrangements **(Buecking, et al., 2015)**.

The main indicator of functional recovery after hip fracture surgery is restoration of walking status to pre fracture levels. Recovery of walking status is an essential prerequisite for patient living in a community-dwelling environment. In addition, patient recognizes functional ability in daily life as a health indicator **(Vergara, et al., 2014)**.Therefore, walking status as a metric of physical recovery following hip fracture surgery is worth to investigate **(Pajulammi, et al.,2015)**. Although patients usually receive home exercise guidance before discharge, follow-ups for walking recovery are rarely conducted. Thus, understanding post-hip fracture surgery walking status and its associated factors can provide healthcare providers with valuable information for facilitating mobility and independence to the patient. The catastrophic impact after hip fracture surgery is likely to be explained by the

percentage of immobile patients **(Salpakoski, et al., 2014)**.

Although hip fracture mortality rate might be on the decline, the numbers of reported co-morbidities have increased over the same period, with evidence growing to suggest that the presence of co-morbidities influence both the occurrence and the outcome from fall-related injury. Approximately 50% of patients will have greater permanent functional disability than that before fracture **(Hoogeboom, et al. ,2014)**.

In general, patients with lower baseline function seem to experience greater pain and worse function compared with those with higher baseline function. This is called the "better in, better out" concept; that is, the better condition of the patient coming into the hospital, the better and more quickly patient leaves the hospital. Therefore, improving each patient's health status before surgery should produce better outcomes at an individual level. Unfit patients might be advised to postpone surgery to optimize preoperative functional status, whereas other patients might benefit from undergoing surgery earlier in the course of functional decline **(Pioli, et al., 2017)**.

Mobilization is a major component of post-operative care and rehabilitation. Various mobilization strategies are in use. These aim to get people out of bed, back on their feet, weight-bearing, moving and walking. Other strategies for mobilization relate to the nature of the physiotherapy or exercise regimens used. Other complications of fracture healing that may occur are non-union of the fracture that is failure of the fracture to heal and avascular necrosis of the femoral head also termed segmental collapse or aseptic necrosis **(Khan, et al., 2014)**.

The disability, reduced functional status, and poor mental health caused by hip fracture can have a profound impact on the quality of the individual's life. Also, hip fracture is a major cause of the need for long-term nursing home care and a major contributor to healthcare costs. The nurse helps patient with hip fracture surgery to prevent or reduce complications through improved assessment and interventions. Nurses needed to understand the multiple factor such as age, gender, type of fracture repair, general medical condition, confessional state, depression and iatrogenic complications that also affect **(Mizrahi, et al., 2013).**

Significance of study

Hip fracture represents one of the commonest causes of disability and hospitalization in the patient population. Because of high residual disability, and high morbidity and mortality rates, overall prognosis for patient who experience hip fracture is far from being accurate **(Neuhaus, et al., 2013).** Three or more co-morbidities could serve as indicators in predicting a high risk of development of complications in these patients **(Shah, et al., 2018)**.

Discharge instructions are the process by which the patients are assisted to develop a plan of care for ongoing maintenance and improvement of health conditions, even after their discharge from the acute care hospital. In other words, it is referred to as continuity of care. A discharge instruction seeks to provide services that enable patient to enhance or restore independency. It may include cognitive screening, functional assessment, provision of counseling and education, coordination of an interdisciplinary team, activation of community services, follow-up and evaluation **(Sibai, 2014).** The discharge instructions concerning patients with hip

fracture could significantly improve the treatment' outcome, reduce readmission, and achieve a successful rehabilitation. This will lead to prevent deteriorating in functional status and accelerate restoring of independence of persons **(Crotty, et al.,2020).**

Aim of the study:

The aim of this study was to evaluate the effect of pre and post hospital discharge instructions on functional abilities of patients with hip fractures.

Research hypothesis: Applying the pre and post hospital discharge instructions on patients with hip fracture would have a positive effect on enhancing functional abilities and recovery rate for performing ADLs.

Subjects and methods

Design: A quasi experimental research design was used in this study.

Setting: The study was conducted in the orthopedic department and orthopedic outpatient clinic at El-Demerdash University Hospital.

Subjects: A purposive sample of 60 patients with hip fractures attending the previous setting. The subjects were divided into two equal groups (study and control) where each group consists of 30 patients. Selection of the subjects was based on the following eligible criteria:

Inclusion criteria:

1. Age range between 18 to > 65 years.

2. Adult patients from both gender.

3. Any type of hip fracture regardless of the cause.

4. Patients with normal cognitive functions or mild cognitive impairment i.e. scoring of (0-2) and (3-4) respectively by using the Short Portable Mental Status Questionnaire.

Exclusion criteria:

1.Patients with hip fractures admitted to the ICU. This is because those who are admitted to ICU are usually fragile and frail, treated under specialized protocols, and may stay long period unconscious. All these factors hinder the application of the discharge instruction.

2.Patients with moderate or severe cognitive impairment are excluded from the study because they are usually disoriented to time, place, and persons, have lost their learning ability due to severe memory deficit, and have difficulty following directions. Therefore, those patients might require different protocols for the rehabilitation intervention after hip fracture.

3.Subjects refuse participation in the study.

Sample size:

The sample size was calculated using Epi info7 program, the output numbers was 54, then 10% of the number was added in order to overcome issues of mortality and withdrawal from the study, the total subjects' amounted 60 patients.

Tools of data collection:

Tool I: Patients` Structured Interview Questionnaire:

The tool was developed by the researcher and included two parts as the

following:

Part 1: Demographic characteristics: It was designed to assess patients` demographic data of the patients under the study such as age, gender, social status, occupation and level of education.

Part 2: Patient`s medical data: the researcher designed it after reviewing the related literature. It was consist of pre-fracture comorbidities, sensory status, and use of any assistive devices.

Tool II: Short Portable Mental Status Scale (SPMSS)

The short portable mental status questionnaire was developed by **Pfeiffer (1975).** The scale is widely used to detect the presence of mental impairment and to determine its degree. It is quick and easy to administer. It consists of 10 items. Scoring is based on 10 total points. Patients scoring from 0-2 are considered to have NO cognitive impairment; the scoring 3-4 indicates mild cognitive impairment, from 5-7 moderate cognitive impairment and from 8-10 severe cognitive impairment. This scale was translated into Arabic language and tested for its validity and reliability by **Mahrous (2012)**, reliability value was (r = 0.89).

Tool III: Barthel Index of Activities of Daily Living:

This scale was developed by **Barthel (1965)** and consists of 10 items that measure the ability of patient to perform basic activities of daily living. The items include feeding, moving from chair to bed and return, grooming, transferring to and from a toilet, bathing, walking on level surface, going up and down stairs, dressing, and continence of bowels and bladder. The responses of each item are two to four with corresponding values (0, 5, 10, 15) depending on the item, an increased value indicates more independency in performing related tasks. These responses are then summed to a total score that ranges between 0 and 100 with higher scores indicating better functioning in performing ADLs, The Arabic version of this scale was used in this study, it was translated by **Hallaj (2007)** and tested for validity and reliability (r = 0.97).

IV: Lawton and Brody Instrumental Activities of Daily Living Scale:

This Scale was developed by **Lawton and Brody in 1969** to assess the ability of patients to perform instrumental activities of daily living. The scale includes eight items: telephoning, shopping, food preparation, housekeeping, laundering, use of transportation, use of medicine, and financial behavior. The eight different functions are measured and scored according to the self-report of individual actual performance of these activities. Women are scored on all 8 areas of function, but, for men, the areas of food preparation, housekeeping, laundering are excluded. Each item was scored from one to three values indicating levels of dependency, where three indicates performing the activity independently “without any assistance”. Two indicates activity performed with some help “with partial assistance”, and one indicates that patient cannot perform the activity at all. A sum score ranges from 8 (totally dependent) to 24 (totally independent) for women and from 5 to 15 for men. It was translated into Arabic language and validated on Egyptian population by **Shehatta(1997)** and tested for reliability in a study carried out at Alexandria by **Elsayed (2007),** reliability was 0.83.

Tool (V): Self-care practices of

patients with hip fracture checklist:

This checklist was developed by the researchers based on thorough review of relevant literature, it comprised statements to evaluate subjects' adherence to self-care and rehabilitative activities after hip fracture repair surgery. These include activities related to nutritional habits, preventing complication of immobility, recommended exercise, and proper use of assistive devices. Every activity adopted by the patient was scored one point.

Procedures:

Preparatory phase:

During this phase the researcher was obtained official permission from the head of orthopedic department and out-patient clinics to collect the necessary data. Collecting the review materials and preparing the tools for data collection through reviewing the related literatures using books, articles, periodicals and magazines. The discharge instruction booklet was prepared in simple Arabic language with simple photo illustrations (this was revised by 5 health professionals).

Informed consent was obtained from each participant fulfilling the study criteria after they were informed about the purpose and methods of the study and that they were free to withdraw from study any time without penalties.

A pilot study was carried out on 6 patients diagnosed with hip fractures at the study setting. Those patients were included in the study subjects. The data collection covered a period of 6 months from the beginning of September 2019 to the end of February 2020.

Implementation phase

1) Baseline assessment was conducted in the preoperative period. Every subject meeting the eligible criteria was interviewed in order to complete the baseline information using tool II. The telephone number and address of every patient was taken. Clinical data such as type of fracture, planned operative procedure was obtained from patient's file. The pre-fracture functional abilities that concerning basic and instrumental activities of daily living were assessed using tools III and IV.

2) The proposed discharge instructions were developed by the researchers after review of literature. The discharge instructions covered the following topics:

- Instructions related to general Knowledge about hip fractures such as Definition, causes, symptoms, treatment and types of surgical treatment.

- Instructions related to preoperative period such as position in bed, managing pain, dealing with memory problems, after hospital admission time that wait for surgery and when I will be able to get out of bed and start physiotherapy after surgery.

- Measures to avoid post-operative complications such as deep vein thrombosis, immobility and reduce risk of falling.

- Rehabilitative interventions which aim to improve functional abilities such as, safe exercise, adaptive techniques for performing activities of daily living, and nutritional recommendations.

3) The activities of the discharge instructions were written in printed

booklets. The discharge instruction was a summarized booklet that contains concise and precise instruction given to patients to guide them during in-home rehabilitation. The booklet was written in Arabic language, and entails mainly pictures for more clarity and to overcome prevalence of illiteracy among patients population.

4) The period of implementing the discharge instructions extended from hospital admission through three months after the operation.

a. Experimental group: This group received the discharge instruction beside the routine care followed in the hospital. The discharge instruction was delivered by the researchers through individual sessions with the patient and their relatives at orthopedic ward in the study setting. Two sessions were conducted preoperatively, and other three sessions were held post operatively till patient discharge from the hospital. Each session took 15- 30 minutes.

b. Control group: Patients in the control group received the routine hospital care provided for all patients with hip fractures regardless of their age or type of hip fractures.

5) The researchers met the patients during the follow up three appointments in the outpatient clinic, but some patients were given additional appointments especially in case of delayed wound healing. Telephone calls were conducted regularly (every two weeks) with subjects from both experimental and control groups and the researchers were available for patients by telephone seven days a week.

Evaluation phase:

After 3 months from the operation date, the researchers interviewed patients in the experimental and control groups to evaluate their functional abilities by using the study tools III and IV.

Ethical considerations:

The research was approved by the ethics committee in faculty of nursing, a written consent was obtained from patients participating in the work after explaining the nature and purpose of the study. Patients were assured data confidentiality, and the researchers initially introduced themselves to the study subjects and patients were informed that their participation is voluntary and they can withdraw at any time from the work.

Statistical analysis:

Data entry and statistical analysis were done using SPSS ver.23 statistical software packages. Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean and standard deviations for the quantitative variables. The level of significance was set at ($p = .05$) to detect any indication of differences found in the data available.

Results

Table I shows that the mean age of the study group was71.70±10.01 years, and the mean age for the control group was 72.17±7.896. The majority of the subjects in both study and control groups (76.7% and 83.3% respectively) were read &write. (63.3%) of the study group and (76.7) of the control group were not working. No statistical significant difference was found between both groups in relation to demographic characteristics.

Fig. 1 illustrate that females were dominant among the studied subjects and constituted 60.0% of the study group and 56.7% of the control group.

Table II shows the distribution of patients with hip fracture among the study and control groups according to their pre-fracture cognitive and physical status. Based on the eligible criteria, only patients with intact cognitive functions or mild cognitive impairment were included in this study. Those with mild cognitive impairment were more prevalent in both study and control groups, 63.3% and 53.3% respectively. Regarding visual status, the majority of patients in both study and control groups reported no visual problems (60.0% and 53.3% respectively). In relation to hearing status, about three quarters of the study subjects (73.3%) and the majority of the control group (86.7%) reported having no hearing problems. Concerning the ambulation status of the subjects before the occurrence of fracture, the majority of the patients in the study and control groups were able to ambulate independently (80.0% and 86.7 % respectively). No statistical significant difference was found between both groups in relation to cognitive, visual, hearing or ambulation capacity before the occurrence of fracture.

Table (III) shows the comparison between patients with hip fracture among the study and control groups according to the recovering of their pre fracture level of ADLs 3 months postoperatively. All patients (100%) in the study and control groups recovered their pre fracture level in feeding and bowel continence.96.6% of the study group compared to 100% of the control group recover pre fracture level in bladder continence with no statistically significant difference. All except two patients in the study group recover pre fracture level in grooming. Whereas 76.6 in the control group recover pre fracture level in grooming, the difference is not statistically significant p=0.053. Concerning ability to dressing, 83.3% of the study group compared to 60.0% of the control group recovers their pre fracture level, with no statistical significant difference p=0.052.Recovering the ability to transfer from bed to chair and return was reported by 83.3% of the study group compared to 46.7% of the control group, with statistical significant difference p=0.006.(76.7%) from study group recover pre fracture ability of toileting. However, among control group 53.3% recovers pre fracture ability. The difference isn't statistically significant p=0.061. (70.0%) of the study group recovers their pre fracture ability of walking compared to 33.3% of the control group with statistically significant difference p=0.017. In relation to bathing 70.0% of the study group recovers the pre fracture level. While among control group, 40.0% recover pre fracture ability, the difference is not statistically significant p=0.063.The most difficult task was climbing stairs; 58.6 % of the study group recovers their pre fracture level and 41.4% became more dependent. 37.0 % of the control group recovers their pre fracture level and 63.0% became more dependent, yet the difference is not statistically significant p=0.106. Consequently, (46.7%) of the study group recover their pre fracture ability of performing ADLs and (53.3%) became more dependent. On the other hand, 23.3% of the control group recovers their pre fracture level of ADLs and 76.7% became more dependent, the difference is statistically significant p=0.042.

Table (IV) shows the comparison between study and control groups of patients with hip fracture according to the recovering of their pre fracture level of IADLs 3 months postoperatively. Ability to use telephone was recovered among all subjects (100%) in both study and control

groups. The second recovered task was handling finance, followed by taking medications, laundry, shopping, with no statistical significant difference between both groups in relation to these tasks. Concerning food preparation, 63.2% compared to 26.3% of the females in the study and control groups respectively recover pre fracture level with statistical significant difference p=0.034. This was followed by housekeeping, and transportation, but no detected statistical significant difference between study and control group. Overall 23.3% of the study group recovers their pre fracture level of the study group and 76.7% became more dependent. Whereas 3.3% of the control group recover their pre fracture level of independence and (96.7%) became more dependent, yet the difference isn't statistically significant p=0.062.

Table (V): shows the relations between demographic characteristics of patients with hip fracture among the study and control groups of and ADLs score 3 months of the operation. There is a gradual decline in ADLs with increasing age of the subjects in both the study and control groups, these differences are statistically significant in the study group only p=0.034. Both male and female patients reported higher mean in ADLs among the study group than the control group. This difference in ADLs mean score between males and females is statistically significant in the study group p=0.039 and NOT statistically significant in the control group p=0.391.Concerning living status, patients living alone reported the highest ADLs mean score in the study and control groups followed by those living with relatives, then those who living with a spouse whereas those who live with their children reported the lowest ADLs mean score, no statistical significant difference found in either study or control group according to social status p=0.578 and p=0.482 respectively.

Table (VI) shows the relations between chronic diseases, cognition status, and physical status of patients among the study and control groups with hip fracture and ADL score after 3 months of operation. Although there was a gradual decrease in ADLs score with increasing number of suffered chronic diseases in both groups. Yet, this difference is not statistically significant in both groups p=0.088 and p=0.234 respectively. Concerning cognitive status, the table shows that patients with intact cognitive functions have higher ADLs score than those with mild cognitive impairment in the study and control groups, yet this difference is not statistically significant p=0.125.In relation to visual status, the table shows that having visual problems affect inversely recovering ADLs among patients from study and control groups but this effect is statistically significant among control groups only p=0.032. Hearing problems also leads to lower ADLs score in the study and control groups after 3 months but the difference is not statistically significant in neither study group p=0.146 nor control group p=0.068.With regard to the ambulation status, independent patient have higher ADLs score in both study and control group, followed by those who use cane, and then by those who use walker. The differences in ADLs score according to ambulation capacity is statistically significant in the study group p=0.000 but not statistically significant in the control group p=0.291.

Table (I): Distribution of demographic characteristics of the studied patients.

Items	Study group n (30)	%	Control group n (30)	%	χ^2	P-value
Age (in years)						
45 - < 60 years	19	63.3	21	70.0		
60 - < 75 years	6	20.0	5	20.0	0.200	0.842
75 and above	5	16.7	3	10.0		
Mean ± SD	71.70±10.01		72.17±7.896			
Occupation						
Not working	19	63.3	23	76.7	2.733	0.26
Working	11	36.7	7	23.3		
Educational level						
Illiterate	5	16.7	4	13.3		
Read &write only	23	76.7	25	83.3	1.581	0.664
Secondary	1	3.3	1	3.3		
University	1	3.3	0	0.0		

Fig. (1) Number and percentage distribution of the patients in the study and control groups according to their gender.

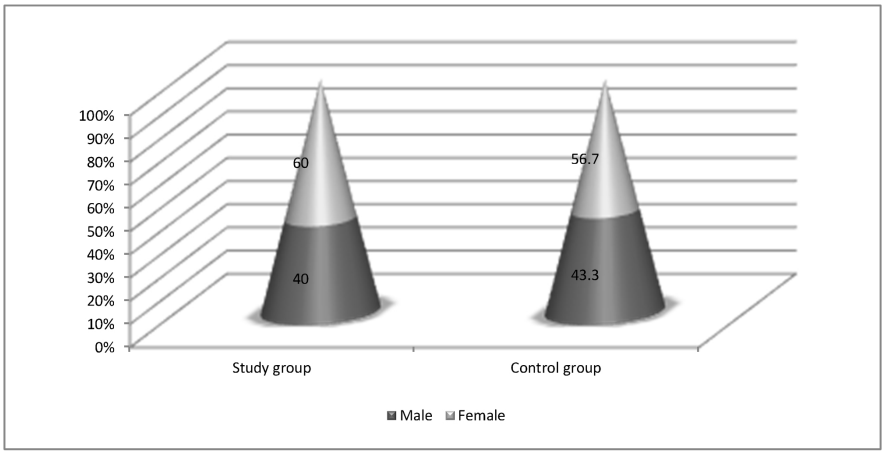

Table (II): Distribution of patients with hip fracture among the study and control groups according to their pre-fracture cognitive and physical status.

Items	Study group n (30)	%	Control group n (30)	%	χ^2	P-value
Cognitive status						
Intact cognitive functions	11	36.7	14	46.7	0.617	0.432
Mild cognitive impairment	19	63.3	16	53.3		
Visual status						
No visual problem	18	60.0	16	53.3		
Use eye glasses	4	13.3	9	30.0	2.733	0.255
Visual problem and not using eye glasses	8	26.7	5	16.7		
Hearing status						
No hearing problem	22	73.3	26	86.7		
Use a hearing aid	1	3.4	0	0.0	2.549	0.280
Hearing problem and not using hearing aid	7	23.3	4	13.3		
Ambulation capacity						
Independent	24	80.0	26	86.7		
Use cane	4	13.3	3	10.0	2.405	0.301
Use walker	2	6.7	1	3.3		

* Significance at $p \leq 0.05$

Table (III): Comparison between patients with hip fracture among the study and control groups according to the recovering of their pre fracture level of ADLs 3 months postoperatively.

ADLs	Study group (n=30) Recover to the pre-fracture level				Control group (n=30) Recover to the pre-fracture level				χ^2 \ p- value	
	Yes		No		Yes		No			
	N	(%)	N	(%)	N	(%)	N	(%)		
Feeding	30	100	0	0.0	30	100	0	0.0	FET	1.000
Bowels continence	30	100	0	0.0	30	100	0	0.0	FET	1.000
Bladder continence	29	96.6	1	3.4	30	100	0	0.0	FET	1.000
Grooming	28	93.1	2	6.9	23	76.6	7	23.4	3.754	0.053
Dressing	25	83.3	5	16.7	18	60.0	12	40.0	3.783	0.052
Transferring Chair/bed	25	83.3	5	16.7	14	46.7	16	53.3	7.472	0.006*
Toileting	23	76.7	7	23.3	16	53.3	14	46.7	3.511	0.061
Walking	21	69.0	9	30.0	10	33.3	20	66.7	5.731	0.017*
Bathing	21	70.0	9	30.0	12	40.0	18	60.0	3.451	0.063
Climbing stairs	18	58.6	12	41.4	11	37.0	19	63.0	2.690	0.106
Total ADL	14	46.7	16	53.3	7	23.3	23	76.7	4.134	0.042*

* Significance at $p \leq 0.05$

Table (IV): Comparison between study and control groups of patients with hip fracture according to the recovering of their pre fracture level of IADLs 3 months postoperatively.

IADLs	Study group (n=30) Male=11Female=19 Recover to the pre-fracture level				Control group (n=30) Male=11Female=19 Recover to the pre-fracture level				χ^2 \ P value	
	Yes		No		Yes		No			
	n	(%)	n	(%)	n	(%)	n	(%)		
Telephoning	30	100	0	0.0	30	100	0	0.0	-	-
Handling finance	27	90.0	3	10.0	20	66.7	10	33.3	4.389	0.036*
Medication	24	80.0	6	20.0	20	66.7	10	33.3	1.140	0.286
Laundry (Female only)	13	68.4	6	31.6	6	31.6	13	68.4	2.892	0.089
Shopping	13	43.3	17	56.7	13	43.3	17	56.7	0.054	0.817
Food preparation (Female only)	12	63.2	7	36.8	5	26.3	14	73.7	4.480	0.034*
Housekeeping (Female only)	8	42.0	11	58.0	6	31.5	13	68.5	0.216	0.642
Transportation	10	33.3	20	66.7	13	43.3	17	51.7	0.582	0.446
Total IADL	7	23.3	23	76.7	1	3.3	29	96.7	FET	0.062

* Significance at $p \leq 0.05$

Table (V): Relations between demographic characteristics of patients with hip fracture among the study and control groups and ADLs score 3 months postoperatively.

Demographic characteristics	Study group (n=30) ADLs score (*After 3 months)* Mean±SD		Control group (n=30) ADLs score (*After 3 months)* Mean±SD	
Age (in years)				
45 - < 60 years	87.89±17.26		70.7 ±24.45	
60 - < 75 years	70.83±24.78		63.00±28.41	
75 and above	62.50±20.61		61.67±30.13	
ANOVA test	F= 3.871	p=0.034*	F=0.296	p=0.746
Gender				
Male	85.00±16.12		78.89±24.04	
Female	63.18±27.95		71.88±22.94	
t-test	t=2.242	p=0.039*	t=0.867	p=0.391
Living status (residency)				
Alone	100.00		100.00	
With relatives	92.50±10.60		85.00±0.00	
With spouse	83.33±12.24		72.50±27.64	
With children	77.06±25.43		64.41±24.86	
ANOVA test	F=0.670	p=0.578	F=0.752	p=0.482

* Significance at $p \leq 0.05$

Table (VI): Relations between chronic diseases, cognition status, and physical status of the patients with hip fracture among the study and control groups and ADL score after 3 months ofoperation

ITEM	Study group (n=30) ADLs score (*After 3 months)* Mean ±SD		Control group (n=30) ADLs score (*After 3 months)* Mean ±SD	
Chronic diseases:				
No	88.00 ± 26.83		87.50 ± 8.66	
1or 2	85.00 ± 12.50		66.05 ± 25.68	
3-5	65.71 ± 29.07		60.00 ± 27.38	
ANOVA test	F= 2.677	p=0.088	F= 1.543	p=0.234
Cognitive status				
Intact cognitive functions	92.27±11.69		77.27±26.11	
Mild cognitive impairment	73.89±22.91		62.19±22.94	
t-test	t = 2.850	p=0.008*	t = 1.587	p=0.125
Visual status				
No visual problem	82.94±19.28		69.33±26.31	
Use eye glasses	81.25±37.50		80.00±17.72	
Visual problem and not using eye glass	76.25±17.67		41.25±9.46	
ANOVA test	F=0.257	p=0.775	F=3.984	p=0.032*
Hearing status				
No hearing problem	85.00±20.41		72.50±24.23	
Hearing problem and not using hearing aid	65.83±20.59		50.00±21.21	
t-test	t = 2.072	p=0.146	t = 3.647	p=0.068
Ambulation capacity				
Independent	89.13±11.74		71.09±23.35	
Use cane	46.25±21.74		58.33±36.17	
Use walker	55.00±21.21		35.00	
ANOVA test	F=20.428	p=0.000*	F=1.302	p=0.291

* Significance at p≤ 0.05

Discussion

Hip fractures are important causes for morbidity, mortality, and loss of functional abilities among people. Discharge instructions for patients with hip fracture are coordinated approach aiming to reduce disability and recover pre-fracture level of functional ability **Kristensen, et al., 2016)**. Discharge instructions coordinating patients' and caregivers' expectations into the care process which starts by patient assessment, development of an appropriate plan, provision of education to the patient and caregivers and follow-up and evaluation **(Neuburgar, et al., 2015).**

Demographic characteristics of patients in this study deserve attention. The greatest percent in both groups were female, not working with the mean age of the study group was71.70±10.01 years, and the mean age for the control group was 72.17±7.896. This is less than the mean age reported in other studies conducted by **Lin et al. (2018)**; **Deschodt et al. (2012)**, and **by Moyano et al. (2013)** where the mean age ranged

from 79±699to 82±703 years. This difference may be related to the increased risks of falling among studied subjects in the community due to increased environmental hazards whether in home or community. Prevalence of educational level among the study subjects were read &write only this may be related to the low social status of the subjects and the characteristics of the study setting as governmental non paid hospital.

The primary objective in this study is to determine how the implementation of the discharge instructions affected functional recovery after hip fracture. In the present study, the total ADLs score were higher at three months following discharge from the hospital in the study group compared with those in the control group. Many previous studies conducted by **Crotty et al. (2020); Huang et al. (2020) and Stenvall et al. (2010)** demonstrated that discharge instruction improved the ADLs of hospitalized people with hip fracture. **Zidén et al.(2010)** conducted two randomized controlled trials **in 2008 and 2010** to study the effect of rehabilitative intervention on functional abilities of adult with hip fracture and found a significant increase in ADLs score of the study group compared to the control group. In a study carried out in by **Tseng and Lin (2016)**, the researcher examined the effect of a 3-month interdisciplinary program that included patients consultation services, a continuous rehabilitation program, and discharge-planning services, the researcher found that the probabilities of poor or moderate recovery for participants who received the intervention were only 5% or 17% of the probability for those who received routine care. **Sipilä et al. (2014**) studied the effect of multi-component home-based rehabilitation program on functional abilities of patients with hip fractures over 3, 6 and 12 months. The program improved the mobility recovery of patients with hip fracture over routine care.

On the other hand, other studies conducted by **Tinetti et al. (2013); Vidan et al. (2011)** ; **Deschodt et al.(2012)**, and **Edgren, et al(2012)** reported that intervention and multi component rehabilitation program was no more effective in promoting recovery than usual care. **Orwig et al. (2011)** studied a six-month intervention, comprising an exercise module and a self-efficacy based motivational module, implemented by physiotherapists. None of these interventions had any significant advantage over standard care. Due to the differences in healthcare organization and rehabilitation routines and differing interventions provided in these studies, observation times and outcomes measures, this becomes difficult to compare studies from different countries. The improvement of the present study may come from the improved services given through proposed discharge instructions compared to the hospital routine care, the participants in the study group received exercise module, counseling about proper nutrition preventive measures of possible complications as well as personal communication through telephone. Participants of the control group did not receive any of these activities. Also absence of routine physical therapy in the study settings may make the effect of applying the discharge plan much obvious than other studies which demonstrated no effect of applying discharge instruction in settings where physical therapy was given as a routine care for all patients.

Although applying the discharge instructions lead to significant increase in postoperative ADLs score than those in the control group, yet more than half of the subjects in the study group could not recover their pre- fracture level of ADLs.

Our findings are consistent with a previous study by **Zidén et al. (2010)** which showed that approximately half of the patients did not regain their independence in performing ADLs, and within the range reported by other studies by **Young (1997),** and by **Shyu (2019)** where the percent of regaining pre-fracture level ranged from 44–60%.

The present study revealed that ADLs that recovered to the pre-fracture level three months post discharge were feeding, bowel and bladder continence where almost all subjects in both the study and the control groups reached the pre-fracture level of these tasks. Moderate increase in dependency than pre-fracture level was seen in activities like grooming, dressing, and transferring, with a significant difference between both groups in favor of the study group. These were followed by activities of toileting, walking, bathing, and climbing stairs that showed more difficulty in recovering pre-fracture level. Difficulty of recovering activities like climbing stairs, walking and bathing is logic as these activities need more coordination in movement and high balance and self-confidence to be conducted. Also, these activities may trigger fear of falling more than other activities because of fear of slipping or tripping, which are the main causes of fall among subjects in this study. A study carried out by **Lin et al. (2018)** reported similar results where the majority of patients in intervention group had recovered the pre-fracture level in feeding, bowel and bladder continence, transferring, and grooming, whereas the rate of recovering pre-fracture level were more difficult in other tasks such as using toilet, dressing, bathing, and climbing stairs task. This is supported by a study carried out by **Stenvall et al. (2016)** who investigated the effect of intervention consisted of staff education, individualized care planning and rehabilitation, active prevention, detection and treatment of postoperative complications. They found a significant improvement in ADLs in the study group than the control group after 4 months of the operation, the most recovered tasks were feeding, following by transfer, toileting, continence, walking, dressing and bathing.

Concerning ability of performing IADLs, in this study the female patients were evaluated regarding eight activities, but for males the activities of laundry, food preparation, and housekeeping were excluded. This recommendation was put when designing the scale and used in many other studies in different areas, also it may be more suitable to eastern culture where it is uncommon to see subject males taking part in these activities especially when they are living with their spouses, relatives or siblings**.** After 3 months of the operation, the ability to use telephone was not affected by hip fracture where all subjects in both the study and control groups

had no problem in using the phone. This is understandable after the increase using of mobile telephone which do not need transferring or moving to the place of telephone to dial or answer calls. Handling finance and medication were the second most recovered tasks. The rate of increased dependency in activities of laundry, food preparation and housekeeping are less but not significant in the study group than the control group. The activities of shopping and transportation were the most difficult task where nobody either in the study or the control group was able to perform them during three months of follow up. These findings goes in line with other prospective cohort study of six months follow up carried out by **Vergara et al .(2014)** on 557 patients with hip fracture due to a fall found that only

24.9% of patients recover to the pre-fracture level of IADLs. On the other hand, a randomized controlled trial conducted in Taiwan by **Leland et al. (2015)** studied the effect of nutritional based intervention of functional recovery after hip fracture demonstrated better performance in IADLs among the study group than the control group. In present study, many people reported living with their sibling, spouse or relatives, which may rational the low mean score obtained in assessing the performance of IADLs even among female patients who are usually dependent on their relatives in helping in these tasks.

The positive relationship between better cognitive function and early functional recovery among patients after hip fracture has been reported in several studies **(Montalbán et al., 2012; Lee et al., 2014 and Ismael et al., 2016)**. The present study showed that an impaired cognitive function is negatively associated with recovering functional recovery. This is supported by a recent large retrospective study on 5053 patients with hip fracture conducted in **Korea (2014)** to investigate the prognostic factors predicting the recovery of pre-fracture functional mobility; it was found that the early recovery of functional mobility was associated with pre-injury cognitive function. However, this doesn't mean that cognitively impaired patients do not benefit from rehabilitation programs. In another study, being cognitively impaired had only a little influence on functional regain comparing to normal patients **Morghen et al.(2011)**. But those subjects who reported functional regain among cognitively intact subjects had a significantly better pre-fracture functional abilities and less comorbidity than their counterparts.

In the present study, presence of comorbidity was negatively rather not significantly associated with recovering to the pre-fracture level of functional abilities .This is supported by a study carried out by **Tseng and Lin (2018)** where the number of comorbidity at admission was not associated with rate of recovering ADLs. Findings from other studies conducted by **Koval et al. (1998)** ; **Sipilä et al. (2014) and Vergara et al.(2014),** and are in contrast with findings of the present study and suggest that patients whose functional status worsened had higher degree of comorbidity. The different findings may be due to the different number of chronic diseases in the studies, where those who reported negative relation between comorbidity and functional regain reported higher number of chronic diseases among their subjects than studies which reported no relation. In our study, the mean number of chronic diseases in the study and control groups was 1.83±1.41 and 1.50±1.16 respectively which is near to other reported by **Tseng and Lin (2018)** which reported 1.49 chronic diseases, but less than other reported from contraindicated study where number of comorbidity by **Sipilä et al. (2014)** was 3 ± 2 and subjects who suffered more 2 and more chronic diseases amounted to78% of total subjects by **Vergara et al .(2014).**

Concleusion

Based on the findings of the present study, it can be concluded that the discharge instructions that was implemented for the patients with hip fracture had a significant and positive effects on recovering patients to their pre fracture level in most of the activities of daily living. Whereas, a positive rather not significant effect was found in recovering pre fracture level of performing instrumental activities of daily living. Increasing age, being female, cognitively impaired, and lower of pre

fracture ambulation capacity, were negatively affected the rate of recovering functional ability after hip fracture.

The main recommendations were:

1) Stress the importance of applying the discharge instructions for patients with hip fracture in order to accelerate their recovery and prevent complications.

2) Handout of printed booklet to each patient with hip fracture admitted to the hospital. This will help in their understanding and follow the main instructions to avoid complications.

3) In service training for nurses about components of the discharge instructions and encourage them to apply its content to patients with hip fractures on admission to the hospital.

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