

## Assessment of Daily Living Activities for Older Adults Post Hip Joint Replacement

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### Abstract

**Background:** Hip joint replacement is the replacement of a critically injured hip with an artificial joint. It is an orthopedic procedure which aims to improve the management of diseases of the hip joint that have not responded well to conventional medical treatment or lifestyle changes. **Aim of study:** To assess daily living activities for older adults post hip joint replacement. **Research Design:** A descriptive analytical design was utilized in this study. **Setting:** The study was conducted at outpatient orthopedic clinics in El Helal hospital. **Study sample:** A purposive sample was collected; it consisted of 126 older adults with HJR attending orthopedic out-patient clinic, both genders, from one to three months after surgery. **Tool:** one tool was used in this study. Structured Interviewing Questionnaire included five parts **I)-** Demographic characteristic of the patient, **II)** Subjects medical history(Past medical history, current medical history). **III:** Patient's knowledge about factors leading to hip joint replacement **IV)** Patients reported practices. **V)** Katz Index of Independence in Activities of Daily Living. **Results:** The age of older adults with hip joint replacement ranged between 60 - < 65 and 58.7% of them were males. 57.1% of them were unable to mobile,88.9% diagnosed their disease through medical examination.78.6% of the studied older adults had unsatisfactory level of total knowledge&21.4 of older adults had satisfactory level of total knowledge,73.8% of the studied older adults had inadequate level of practices post hip joint replacement while 26.2% of them had adequate level regarding to total score level of reported practices. **Conclusion:** Hip replacement surgery is most common among the older adults between rang 60-<65 years. It is more prevalent among males more than female, there was a statistically significant relation between socio -demographic characteristics of the older adults and their knowledge after hip joint replacement. Also, there was a statistically significant relation between socio-demographic characteristics of the older adults and their practice after hip joint replacement. Moreover, there was highly statistically significant relation between knowledge of the older adults and their activities of daily living after hip joint replacement. Also between practices of the older adults and their activities of daily living after hip joint replacement. **Recommendation:** Educational program for older adults to raise their awareness about hip joint replacement related factors should be apriority to ensure early diagnosis of disease.

**Keywords:** Elderly, hip replacement, Activity of Daily Living

### Introduction:

Worldwide people in the world will be aged 60 years or over at this time the share of the population aged 60 years and over will increase from 1 billion in 2020 to 1.4 billion. By 2050, the world's population of people aged 60 years and older will double (2.1 billion).The number of persons aged 80 years or older is expected to triple between 2020 and 2050 to reach 426 million (*World Health Organization (WHO), 2022*).

Globally, aged 60 years or more will double, while those aged 80 years or more will

number 400 million persons by 2050 (*WHO, 2019*).

Hip joint replacement surgery is usually necessary when the hip joint is worn or damaged to the extent that your activities of daily life will be difficult to perform due to experience pain even while resting. The most common reason for hip replacement surgery is osteoarthritis. Other conditions that can cause hip joint damage include; rheumatoid arthritis, a hip fracture, and disorders that cause unusual bone growth (*American Academy of Orthopedic Surgeons, 2020*).

Hip joint replacement is a procedure in which a doctor surgically removes a painful hip joint with arthritis and replaces it with an artificial joint often made from metal and plastic components. It usually is done when all other treatment options have failed to provide adequate pain relief. The procedure should relieve a painful hip joint, making walking easier (*Johansson & al., 2019*).

Hip joint replacement may suitable for elderly people with osteoarthritis. Osteoarthritis is one of the ten most disabling diseases in developed countries. Worldwide, estimates show that 10% of men and 18% of women aged over 60 years have symptomatic osteoarthritis, including moderate and severe forms. Age is the strongest predictor of the development and progression of osteoarthritis. It is more common in women, increasing after the age of 50. Other risk factors include obesity, physical inactivity, smoking, excessive alcohol consumption and injuries. While joint replacement surgery is mainly carried out among people aged 60 and over (*WHO, 2021*).

An activity of daily living (ADLs or Basic ADL) is a term used in healthcare to refer to people's daily self-care activities. Health professionals often use person's ability or inability to performed as measurement of their functional status, particularly in regard to people post injury, with disabilities and the elderly. Common ADLs include feeding ourselves, bathing, dressing, grooming, work, homemaking, cleaning oneself after defecating and leisure (*Singh et al., 2020*).

A community health nurse must improve the patient's walking ability and maintain their activity of daily living. However, there may be a greater emphasis on independent and confident ambulation, with the correct use of ambulatory aids and specific interventions programs, such as muscle strengthening exercises, aimed at minimizing or correcting impairments (*Huang & et al., 2021*).

### **Significance of the study:**

Egypt is one of the most populous countries in Africa and the Middle East. With a 2020 estimated population of 102.33 million, Egypt ranks 14th in the world. As estimates, this population age structure is now at 37.6%

25-54 years of age, 4.22% for 65 plus years of age, while elderly people represent 3.9% (*CAPMAS, 2019*).

In Egypt, incidence of hip joint replacement had increased with people over age of 65 reached 60% in the Arabian region, while this ratio is less than 20% in the U.S. and Europe (*Mahmoud, 2019*).

### **Aim of the study:**

This study aimed to assess daily living activities for older adults post hip joint replacement through:

- 1- Assessing knowledge of older adults related to hip joint replacement
- 2- Assessing practices of older adults related to hip joint replacement
- 3- Assessing Activities of daily living for older adults post hip joint replacement
- 4- Evaluate relations between knowledge & practice & activities of daily living for older adults post hip joint replacement

### **Research Questions:**

- 1- What are the knowledge of older adults about hip joint replacement?
- 2- What are the practices of older adults with hip joint replacement regarding activities of daily living?
- 3- Are there any relationship between the knowledge & practices of older adults with hip joint replacement and their activities of daily living?

### **Subjects and Method**

#### **Research design:**

A descriptive analytical design was used in this study.

#### **Setting:**

The study was conducted at outpatient orthopedic clinics in El Helal Orthopedic hospital, which affiliated to the Ministry of

Health and population. The hospital was selected because it is the one of only Government Specialized Hospital in the orthopedic surgeries. Moreover, the majority of the cases are mostly referred to it for follow up after surgery.

### Sampling:

Purposive sample, sample size was 126 patients to achieve power of 95% and a level of significance of 5% (two sided), assuming improvement 30% (Rosner, 2016).

$$n = \left( \frac{Z_{1-\alpha/2} + Z_{1-\beta}}{ES} \right)^2$$

$Z_{\alpha}$  = Standard normal deviate for  $\alpha = 1.9600$ .

$Z_{\beta}$  = Standard normal deviate for  $\beta = 0.8416$ .

$B = (Z_{\alpha} + Z_{\beta})^2 = 7.8489$ .

$C = (E/S_{\Delta})^2 = 0.0625$ .

$N = B/C = 125.5820$ .

The N thus calculated is rounded up to the next highest integer to give the group size.

$n = \left( \frac{1.96+0.84}{0.0625} \right)^2 = 125.5820 = 126$   
patients

### Inclusion criteria:

1. Older adult 60 years old and more
2. Perform hip replacement surgery from 1 to 3 months period
3. Free from mental disorder and able to communicate

**Tools for Data Collection:** one tool was used for data collection.

- Structured Interviewing Questionnaire was developed by the investigator after reviewing the related literature in Arabic language. It was contain five main parts:

**Part I:** Socio demographic variables of the study subjects such as age, gender, residence, marital status, education level, occupation, daily work hours, income/month, family members,

rooms number, crowding index, caregiver, change occupation and responsible for treatment expense.

**Part II:** Subjects medical history (past & current history).

**Part III:** Older adults knowledge about hip joint replacement such as meaning, purpose, causes, complication after operation, signs of wound infection, signs indicated to deep venous thrombosis, instruction for rest and safety, incorrect position & correct position effect on hip joint, Pain relieve methods, medications after operation, benefits of medications, importance of follow up and benefits of exercise (15 Questions).

### ❖ Scoring system:

The studied older adults' answered were compared with model key answers; where scored as complete correct answer had scored (2), incomplete correct answer had scored (1) and incorrect or don't know answer had scored (0). Total knowledge scores ranged from (0- 30) points. In this respect the level of older adults' knowledge was classified into two categories as the following:

- **Satisfactory level of knowledge** ( $\geq 50\%$ ) was ranged from (15-30) degrees.
- **Unsatisfactory level of knowledge** ( $< 50\%$ ) was ranged from (0-14) degrees.

**Part IV:** older adults reported practices, it will be adopted from *Cleveland Clinic (2008)* and adapted by the researcher; it consisted of 36 items which divided in to 7 items such as:

- **Daily living activity** (sitting, walking, using stairs and sleeping (12 items).
- **Healthy nutrition** (4 items).
- **Pain relieve methods** (4 items).
- **Drug administration precautions** (3 items).
- **Nature of exercise** (3 items).
- **Type of exercise** (4 items).
- **Hip joint protection** (6 items).

### ❖ Scoring system:

The studied older adults' reported practices scored as the following always scored (3), sometimes scored (2) and never scored (1). The total scores were ranged from (0 to 108) degrees. These scores were summed and were converted into a percent score and classified into 2 categories:

- **Adequate level** ( $\geq 60\%$ ) was ranged from (65-108) degrees.
- **Inadequate level** ( $< 60\%$ ) was ranged from (0-64) degrees.

**Part V: Katz Index of Independence in Activities of Daily Living (ADL) (1983)**, it consists of two parts:

- **Activities of Daily Living (ADLs):** It consisted of 28 items which divided into 8 parts as the following (bathing, dressing, toileting, transferring, continence, feeding, walking and climbing stairs).
- **Instrumental Activities of Daily Living (IADLs):** It consisted of 30 items which divided into 8 parts as the following ability to use telephone, shopping, food Preparation, housekeeping, laundry, mode of transportation, responsibility for own medications and ability to handle finances.

### ❖ Scoring system:

The studied older adults' activities of daily living scored as the following independent scored (1) and dependent scored (0). The total scores were ranged from (0 to 58) degrees. These scores were summed and were converted into a percent score and classified into 2 categories:

- **Independency** ( $\geq 70\%$ ) was ranged from (41-58) degrees.
- **Dependency** ( $< 70\%$ ) was ranged from (0-40) degrees.

**The Validity:** Jury of 5 experts in community health nursing was reviewed the tools for its content validity.

**The reliability** was done by Cronbach's Alpha coefficient test to assure homogeneity of tool as:

Tool	No of questions	Cronbach's Alpha
Knowledge	15	0.98
Reported practices	36	0.99
Activities of Daily Living	58	0.99

### Operation design

#### Pilot study:

The pilot study was carried out on 5 patients, who were chosen randomly from the previous mentioned setting. The purpose of this pilot was to test the eligibility of the field. Also to determine the approximate time needed for the data collection. So, the pilot study sample was excluded from the study sample and replaced by another subjects.

#### Ethical consideration:

An official permission was obtained from the Dean of faculty of Nursing Ain Shams University directed to manager of ELHELAL hospital using proper channels of communications. Before the initial interview, informed oral consent was obtained from every subject to be recruited in the study sample. The investigator was started by explaining the purpose of the study briefly to the participants. They were reassured about the confidentiality of any obtained information. They were also informed about their right to refuse to participate or withdrawal at any time. The study maneuvers didn't entail any harm to participants

#### Field work:

The collection of data took a period of 6 months started at January-2022 and ended at June-2022. The data collection tools were conducted in the orthopedic outpatient clinics in Al-Helal hospital. The interview with the clients was carried out within 2 days per week (Monday and Thursday) during morning shift (9 AM-2 PM) and afternoon shift (1 PM-4 PM) was done for every participant of the sample on an individualized

base. The researcher spent 30-1.30 minutes with each participant to fill the study tool.

#### Statistical design:

The collected data organized, tabulated and statistically analyzed using Statistical Package for Social Science (SPSS) version 25 for windows. Descriptive statistics were applied (numbers, percentages, mean and standard deviation). Test of significance, Chi-square test ( $\chi^2$ ) this test used to compared for qualitative variables and correlation coefficient (r) were done for assessment of inter relationship among quantitative variables that were normally distributed or when one of the variables is qualitative, A highly significant level value was considered p- value < 0.001, significant level value was considered when p- value < 0.05 and no statistical significance difference was considered when p- value > 0.5.

#### Result:

**Table (1):** Shows that, 47.6 % of the studied older adults were aged between 60 <65 years with Mean  $\pm$ SD= (64.98 $\pm$ 5.05), 58.7 % of them were male, 49.2 % of them were married, 31.7 % of them couldn't read or write and 52.4 % of them worked less than 8 hours daily.

**Table (2):** Clarifies that, 57.1% of the studied older adults were unable to mobile, 88.9 % of them diagnosed their disease through medical examination, 49.2% of them complained from Numbness & tingling of extremities, 50.8 % of them had wound infection as post-operative complication.

**Figure (1):** Shows that, 78.6% of the studied older adults had unsatisfactory level of total knowledge about hip joint replacement and 21.4% had satisfactory level of total knowledge.

**Figure (2):** Clarifies that, 73.8 % of the studied older adults had inadequate level regarding to total score level of reported practices toward post hip joint replacement while 26.2% of them had adequate level regarding to total score level of reported practices.

**Table (3):** Shows that, 80.2% & 74.6 % of the studied older adults had dependency regarding their total activity of daily living about bathing and toileting respectively, while 44.4%, 41.3% had independency regarding their total activity of daily living about walking and feeding respectively.

**Table (4):** Shows that, 74.6% & 73.8% of the studied older adults had dependency level regarding their total instrumental of daily living activity about laundry and responsibility for own medications respectively, while 51.6% & 41.4% of them, had independency level regarding to ability to use telephone & shopping, ability to handle finances respectively.

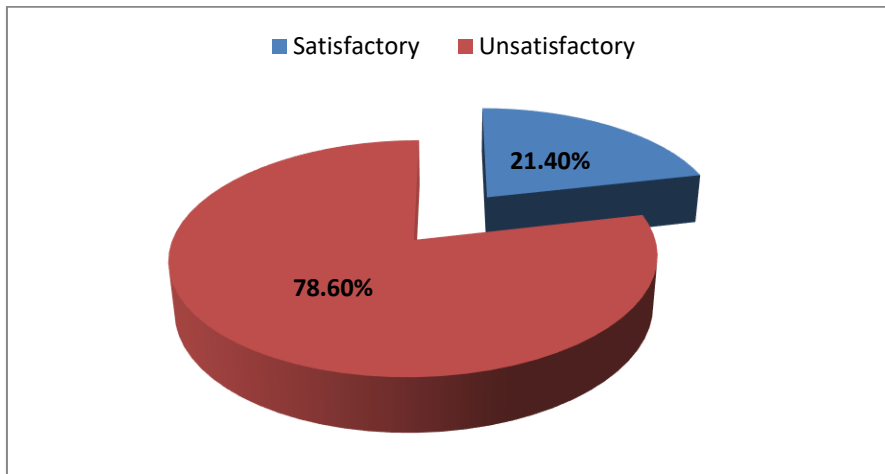
**Table (5):** Clarifies that, there were highly statistical positive correlation between total level of the studied older adults' knowledge, reported practices and total activity of daily living post hip replacement at p<0.001.

**Table (1):** Distribution of the studied older adults according to their socio-demographic characteristic (n=126).

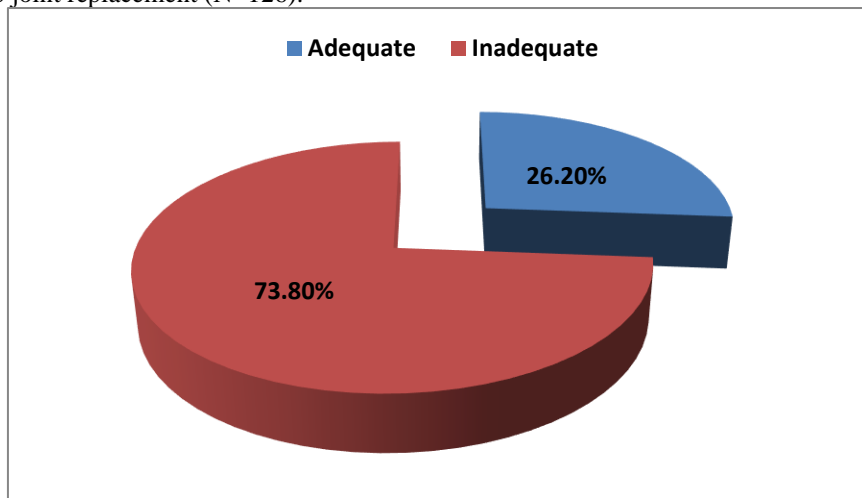
Socio-demographic characteristic	No.	%
<b>Age</b>		
60 <65 year	60	<b>47.6</b>
65 < 70 year	46	36.5
≥ 70 year	20	15.9
Mean ±SD	<b>64.98±5.05</b>	
<b>Gender</b>		
Male	74	<b>58.7</b>
Female	52	41.3
<b>Marital status</b>		
Single	4	3.2
Married	62	<b>49.2</b>
Divorced	50	39.7
Widow	10	7.9
<b>Educational level</b>		
Cannot read & write	40	<b>31.7</b>
Read & write	24	19.0
Intermediate education	30	23.8
University graduate	32	25.4
<b>Working hours / day</b>		
Less than 8 hours	66	<b>52.4</b>
≥ 8 hours	60	47.6

**Table (2):** Distribution of the studied older adults according to their current medical history of post hip joint replacement (N=126).

Current medical history	No.	%
<b>Current medical history*</b>		
Rheumatoid inflammation	50	39.7
Vessel hypertrophy	50	39.7
Malignant disease around hip	24	19.0
Fracture due to accident	60	47.6
Inability to mobile	72	<b>57.1</b>
Extremities numbness	62	49.2
Osteoporosis	60	47.6
<b>Disease diagnosis*</b>		
Lab investigation	66	52.4
X-ray	108	85.7
Medical examination	112	<b>88.9</b>
<b>Current complain after operation*</b>		
Inability to move	54	42.9
Muscle spasm	50	39.7
Numbness & tingling of extremities	62	<b>49.2</b>
<b>Post-operative complication*</b>		
Dislocation of the hip	40	31.7
Deep venous thrombosis (DVT)	30	23.8
Wound infection	64	<b>50.8</b>



**Figure (1):** Distribution of the Older Adults regarding their Total Score Level of Knowledge about hip joint replacement (N=126).



**Figure (2):** Distribution of the Older Adults post hip joint replacement regarding to their Total Score Level of Practices (N=126).

**Table (3):** Distribution of the studied older adults according to their total activities of daily living's parts (n=126).

Items	Independent		dependent	
	No.	%	No.	%
Total Bathing	25	19.8	101	<b>80.2</b>
Total Dressing	40	31.7	86	68.3
Total Toileting	32	25.4	94	<b>74.6</b>
Total Transferring	49	38.9	77	61.1
Total Continence	48	38.1	78	61.9
Total Feeding	52	41.3	74	58.7
Total Walking	56	44.4	70	55.6
Total Climbing stairs	44	34.9	82	65.4

**Table (4):** Distribution of studied older adults regarding their total instrumental of daily living activities parts (N=126).

Items	independent		dependent	
	No	%	No	%
Ability to use telephone	65	51.6	61	48.4
Shopping	52	41.3	74	58.7
Food Preparation	46	36.5	80	63.5
Housekeeping	48	38.1	78	61.9
Laundry	32	25.4	94	<b>74.6</b>
Mode of transportation	48	38.1	78	61.9
Responsibility for own medications	33	26.2	93	<b>73.8</b>
Ability to handle finances	52	41.3	74	58.7

**Table (5):** Correlation between total knowledge, reported practices and activity of daily living among the studied older adults post hip replacement.

Scale	Total activity daily living		Total knowledge
Total knowledge	r	0.724	-
	p- value	0.000**	-
Total reported practices	r	0.759	0.746
	p- value	0.000**	0.000**

\*\* Highly statistically significance  $p \leq 0.001$

## Discussion:

Concerning the age of studied older adults the results of the current study revealed that, nearly half of them were aged between 60 <65 years with Mean and more than half of them were male, The results of the current study was supported by *Saunders et al. (2021)* who studied “Comparing an e-health program (my hip journey) with standard care for total hip arthroplasty: Randomized controlled trial” and revealed that two thirds of studied participants were  $\leq 60$  with Mean and more than half of them were males. Conversely, the study was disagreed with *Fujita et al. (2022)* who studied “Analysis of factors influencing patient satisfaction after total hip arthroplasty in a Japanese cohort: the significant effect of postoperative physical activity” and revealed that the age of patients were ranged from (33–89) and the majority of them were females. This could be due to that advanced age is strongly correlates with the hip osteoarthritis and the largest proportion were male due to their working condition that require much movement and might be joint inflammation.

Regarding the educational level and working hours, the results of the current study revealed that, nearly one third of studied older

adults couldn't read or write and more than half of them worked less than 8 hours daily. The current study was supported by *Bassamat & Hosny (2018)* who studied “Discharge Needs of Patients after Total Hip Arthroplasty” and revealed that more than half of the studied patients can't read or write and nearly two thirds of them were working 6- 8 hours daily.

On the other hand, this finding was disagreed with *Johansson Stark et al. (2016)* who studied “The quality of recovery on discharge from hospital, a comparison between patients undergoing hip and knee replacement—a European study” and denoted that their hip arthroplasty patients had a high level of education. From the researcher point of view, this could be attributed to the fact that the majority of the participants were elderly, where the illiteracy is a common problem in early decades due to high cost of education and increased number of family members also, nearly two thirds were working less than 8 hrs., might be due to that the large proportion were retired and housewives in addition, this could be due to the undergoing major operation that resulted in limitation of physical activities and decrease in working hours.



The results of the current study also Clarified that more than half of the studied older adults were unable to mobile and the majority of them diagnosed their disease through medical examination. The study was congruent with *Pinskiy et al. (2021)* who studied “The effect of a preoperative physical therapy education program on short-term outcomes of patients undergoing elective total hip arthroplasty: A controlled prospective clinical trial” and revealed that more than one third of participants complained from immobility and can’t move without aid, this could be due to that total hip replacement surgery is major operation that done for severely complicated cases so that the patients complained from immobility and needing more help and assistance for movement.

The results of the current study also revealed that almost half of patients complained from Numbness & tingling of extremities and had wound infection as post-operative complication and more than half of them were taken antibiotic drug. The study was agreed with *Bakr (2018)* who studied “Effect of assessment on daily living activities for older adults post hip joint replacement” and revealed that nearly one third of participants had osteomyelitis and the majority of them were taking antibiotics. From the researcher point of view, this might be due to the effect of surgical procedure, hospitalization, bad sterilization technique and nosocomial infection and the antibiotic was used either as treatment of infection or as prophylactic for infection prevention.

Regarding total patients’ knowledge about total hip replacement, the current study showed that more than three quarters of the studied older adults had unsatisfactory level of total knowledge agreed with *Bakr (2018)* was incongruent with *Bassamat & Hosny (2018)* who illustrated that, all participants expressed their unsatisfactory level of information regarding total hip replacement, wound care; self-care, movement and postures; pain management; medications; physical therapy/ exercises; complications; follow-up; dietary; vocational; social; emotional and sexual and other needs which remain unchangeable and unsatisfactory after discharge instructions. The significant improvement in patients’ knowledge might be due to the effect of assessment,

illustrative and clear booklet also might be due to use of various teaching methods such as lectures and group discussion and the ability of the researcher to increase patients motivation to acquire and retain information.

Concerning studied older adults total practices the present study revealed that, there was highly statistically significant improvement in total practices The study was congruent with *Nicolau et al. (2022)* who studied “Educational Intervention in Rehabilitation to Improve Functional Capacity after Hip Arthroplasty” and revealed that Education in the perioperative increase post-operative adherence to practices, promotes training to perform rehabilitation exercises, improves the hospitalization experience, increases participation in the rehabilitation process, allows early mobilization, improve sleep and nutrition and increases the functional potential, thus enabling faster reintegration into society. In addition, the study was supported by *Bassamat & Hosny (2018)* who illustrated that there was highly significant improvement in total score of participants practices.

According to studied older adults total activity of daily living's parts, the current study revealed that there was a highly statistically significant difference in all parts of the studied older adults' activity of daily living pre and post intervention program, the study was congruent *Friedman et al. (2019)* who studied “ Impact of a comanaged Geriatric Fracture Center on short-term hip fracture outcomes” a study conducted in brazil and revealed that there was significant improvement in patients self-care regarding all arts of ADLs as they found that, the half of patient completely dependent regarding their instrumental activities.

Concerning studied older adults regarding their total instrumental of daily living activity's parts, the current study illustrated that there was a highly statistically significant difference in all parts of the studied older adults' instrumental of daily living activity and, there was a highly statistically significant difference in all parts of the studied older adults' instrumental of daily living activity. The study was supported by *Mahrous & Gendy (2020)* who revealed that, there was significant

improvement in all activities of daily living about laundry, food preparation, and housekeeping and the ability to use telephone in the study group compared with control groups.

Regarding the correlation between total knowledge, reported practices and activity of daily living among the studied older adults post hip replacement, the results of the present study illustrated that there were highly statistical positive correlation between total level of the studied older adults' knowledge, reported practice and total activity of daily living post hip replacement, from the researcher point of view, this could be due to that higher knowledge level is associated with more information about healthy practices that enhance recovery and promote good health condition and best outcomes so that increasing patients' ability to perform ADLs independently. The study was agreed with *Bakr (2018)* who revealed that there was highly statistically significant correlation between patients' knowledge, practices and ADLs. In addition, the study was supported by *Cetinkaya et al. (2022)* who revealed that there was significant association between patients' knowledge and their ADLs.

### **Conclusion:**

Hip replacement surgery is most common among the older adults between rang 60-<65 years. It is more prevalent among males more than female, there was a statistically significant relation between socio -demographic characteristics of the older adults and their knowledge after hip joint replacement. Also, there was a statistically significant relation between socio-demographic characteristics of the older adults and their practice after hip joint replacement. Moreover, there was highly statistically significant relation between knowledge of the older adults and their activities of daily living after hip joint replacement. Also between practices of the older adults and their activities of daily living after hip joint replacement.

### **Recommendations:**

**According to results of the current study, the following suggestions are recommended:**

- Regular follow up of patient with hip replacement to evaluate health related performance of activity of daily living to detect any health problems early.
- A simplified and comprehensive booklet should be available for all elderly with hip replacement which include a clear, brief and simple explanation about causes, complication about hip replacement and how to deal with these complications.
- Educational program for older adults to raise their awareness about hip replacement related factors should be a priority to ensure early diagnosis of the disease.
- Utilize the internet to present different educational programs to raise older adults awareness regarding different health issues such as accident prevention for falling and fractures, as well as, the precautions after THR surgery.
- Further research studies about activity daily living post hip joint replacement in older adults should be conducted at large sample for generalization of the results.

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