Relation between Patients' Compliance and Their Outcomes Post Total Hip Replacement Surgery

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Abstract

Background: Total hip replacement is one of the most cost-effective and consistently successful surgeries performed in orthopedics. It provides reliable outcomes specifically pain relief, functional restoration, and overall improved patient's health status. **Aim of the study:** Assessment of relation between patients' compliance and their outcomes post total hip replacement surgery. **Research design:** Descriptive correlation study was utilized. **Setting:** The study was conducted at orthopedic surgery departments (2, 3) and joint outpatient clinic in El Demerdash hospital affiliated to Ain Shams University Hospitals. **Subjects:** A purposive sample of (50) patients post total hip replacement. **Tools:** Four tools were used in the current study: 1) Patient structured interview questionnaire, 2) Patients' knowledge regarding joint replacement tool, 3) Patients' compliance assessment tool. And 4) Western Ontario and Mac Master Universities Arthritis Questionnaire **Results:** (68.0%) of the studied patients have unsatisfactory total level of knowledge regarding the joint replacement, (80.0%) of them were non-compliant regarding post total hip replacement surgery, Also, (46%) of them had mild total outcomes post total hip replacement. Also, there was a highly statistically significant relation between total patient's level of knowledge, level of compliance and total outcomes post total hip replacement surgery. **Conclusion:** It can be concluded that, there were positive correlation between total level of knowledge score and total compliance score regarding post total hip replacement surgery among the studied patients. Meanwhile, there was a negative correlation between total outcomes score and total level of knowledge and compliance score regarding post total hip replacement surgery. **Recommendations:** A simplified and comprehensive guidelines booklet or pamphlet illustrating all instructions the patient may need post total hip replacement surgery.

Keywords: Total hip replacement surgery, patients' compliance, outcomes.

Introduction:

Total Hip Replacement (THR), Also called Total Hip Arthroplasty (THA) has been described as "the operation of the 20th century" for the high satisfaction of the patients and the improvement of the quality-of-life following surgery. The clinical outcome and the prostheses functioning are excellent over time with greater than 95% survivorship at ten years as reported by data from National registries and more than 80% of the prostheses survive at 25 years follow-up. **(Ayers et al., 2022).**

Osteoarthritis (OA) is the most common form of arthritis and is the result of cartilage breaking down within the joint. OA has no cure but has multiple treatment options. The first line of treatment includes physical therapy, weight loss and activity modification, followed by pain medications aimed to reduce pain and improve mobility and physical function When these therapies no longer sufficiently relieve arthritis pain and function is impaired, total joint replacement (TJR) surgery is the most common treatment **(Lavallee, et al., 2023).**

The rising demand for THR procedures is projected to persist over time, in parallel with an ageing population and increasing prevalence of obesity and other risk factors for hip arthritis. Although THR has evolved to become a highly cost-effective procedure with reliable functional outcomes, it has several potential serious complications, including: dislocation, infection, deep-vein thrombosis, pulmonary embolism, and fracture. **(Pirruccio, et al., 2021).**

Patient compliance with recommended strategies for recovery after total hip replacement surgery is crucial for achieving optimal outcomes. Patient non-compliance with therapeutic regimens and instructions can limit the effectiveness of surgery and negatively impact outcomes. Patient education and participation is a central foundation in patient centered care pathways. Preoperative compliance might lead to better outcomes in patient safety, care, and overall clinical outcomes of total hip replacement. **(Anghel, et al., 2019).**

Factors that may contribute to therapeutic regimen compliance and lead to complication as, patient's beliefs, psychological, and social aspects. Factors relating to demographics, healthcare providers, the medical system, and diseases and treatments. Compliance is influenced by both the patient and the healthcare provider, therapy-related factors, economic factors, health education, and disease factors also play significant roles. So, the role of nurse to help patients continually maintain and improve their compliance regarding medical instructions is necessary. **(Badge, et al., 2021).**

Significance of the study:

The number of total hip replacement is being increased gradually. Nowadays, 0.83% of the population, equivalent to 2.5 million people (1.4 million women and 1.1 million men) are undergone THA in the United States. It is currently estimated that 400,000 THR are annually performed worldwide **(Moarrefzadeh, et al., 2022).**

As a result of the rising incidence of hip replacement and its effects on daily activities and quality of life, there was a need to conduct this study to assess patients' level of knowledge, level of compliance and relation between them and their outcomes post total hip replacement, because a lack

of knowledge lead to non-compliance and affect negatively on patient's outcome.

Aim Of The Study:

This study aimed to:

Assess the relation between patients' compliance and their outcomes post total hip replacement surgery through:

1-Assess level of patients' compliance post total hip replacement surgery.

2-Assess patients' outcomes post total hip replacement surgery.

Research questions:

The study was conducted to answer the following questions:-

1-What is the relation between patients' compliance and their outcomes post total hip replacement surgery?

Operational definition:

Patients' Compliance: the degree to which a patient correctly follows medical advice, it refers to medication or drug compliance, pain management, joint protection, physical exercises, follow up, nutrition and management of stress. **Patients' Outcomes:** it refers to patient clinical outcomes as pain, stiffness and physical function post total hip replacement surgery**.**

Subjects and Methods:
I-Technical Design:

The technical design includes research design, setting, subjects and tools for data collection.

Research design*:* The current study was conducted through using a descriptive correlation study.

This design used in research studies that summarizing and organizing characteristics of a data set of situations as well as establish the

relationship between different variables and develop a better understanding of problem **(IvyPanda. 2022).**

Setting: The study was conducted at orthopedic surgery departments (2&3) and joint outpatient clinic in El-Demerdash Hospital affiliated to Ain Shams University Hospitals.

Subjects: A purposive sample of 50 patients post total hip replacement was included in this study. The sample size was calculated based on power analysis, which recruited from 138 patients to achieve confidence level 90%, this equation choosed based on research design. **(Thompson, 2012)**.

$$n= \frac{N \times p(1-p)}{[N-1 \times (d^2 \div z^2)] + p(1-p)]}$$

While:

N= Total of population   n=Sample size   Z: Standard score   d: Standard error

p :Property availability and neutral ratio p=0.05

This calculation was done according to number of patients at last two year (2019/2020) the number of patients was (150-125) respectively according to (**Statistical records of ElDemerdash Surgical Hospital, Orthopedic Departments, 2020).**

Inclusion criteria:

Patient was selected according to the following criteria:

1. Adult patients from both genders,
2. Patients after 1 month to 1 year post primary total hip replacement surgery,
3. Total hip replacement related to arthritis or accident,
4. Able to communicate and agree to participate in the study.

Exclusions Criteria:

1. Patients with multi-compartment disease as (hemochromatosis, hemophilia),
2. Critical or mental ill patients and other neurological conditions affecting joint function.

Tools for data collection: Four tools were used in data collections as following:-

I- Patient structured interview questionnaire.

It was developed by investigator in an Arabic language based on reviewing related literatures **(Ibrahiem et al., 2021; Amarilla-Donoso et al., 2020 and Matharu et al., 2019)** and it contains two parts:

*Part I: **Socio- demographic characteristics**. It was used to assess socio - demographic characteristics of patients under study, It composed of (12) MCQ questions; it included(age, gender, marital status, educational level, residence, living status, work, income, housing space, floors and life style that included regular sports and smoking). ***Part II: patients' medical history data sheet:** It was used to assess medical history for patients under study, it contains of three sub groups. a) Anthropometric measurements. It included three questions regarding weight, height and body mass index (kg/M2). b) patient's present history (post-surgery). It was used to assess patient's present history (post- surgery) it included five questions regarding reason for the surgery, time of surgery, chief complain post-surgery, factors that elevate pain and factors that decrease pain in the affected hip. c) Patient's past history.it was used to assess patient's past medical history, it included six questions regarding Suffering from any chronic diseases, past significant injuries, previous surgeries, family history, Allergy, and long term medications.

II: Patients' knowledge assessment questionnaire tool:

It was developed by the investigator and write in an Arabic language based on relevant, recent and related literatures. ((**Jones et al., 2022; Alokozai et al., 2021; Saunders et al., 2021; Ali et al., 2020, and Tay et al., 2019).** It used to assess patient's knowledge regarding total hip replacement surgery. It included (15) questions in the form of MCQ which classified:

(A)-Patients' knowledge regarding total hip replacement surgery:

It was concerned with meaning of surgery, aim of surgery, indication of surgery, types of surgery, complication of surgery; also signs of an infection, and signs of peripheral circulatory insufficiency. It included seven questions.

(B) Patients' knowledge regarding Post-surgery instructions:

It was concerned with allowed exercises after surgery, appropriate nutrition, medications post-surgery, time for removing sutures, and follow up schedule. It included five questions.

(C)Patients' knowledge about precautions to be followed post total hip replacement surgery:

It was concerned with patient position when changing the body in bed, sitting position, walking and climbing stairs post-surgery. It included three questions.

❖ **Scoring system:**

The rating scale was graded as follows: the correct answer was given one mark and zero for incorrect answer. The total score ranging from 0-15 scoring.
-The total score were summed, percentage was calculated for the participants as the following:
- Satisfactory level of knowledge ≥ 80% (≥12 marks).
 -Unsatisfactory level of knowledge <80`% (<12marks). According statistical reports.

III. Patients' compliance assessment tool: It is used to assess Patients' compliance post total hip replacement surgery, it consisted of two part:-

Part I: Morisky Medication Adherence Scale (MMAS-8), this scale adapted from **Morisky, et al., (2008)**. With minor modification. To assess patients' compliance regarding medications post total hip replacement surgery. It contained (8) questions.

Each question of the scale had three responses as follow:

Each statement had three responses from 0 to 2 on a three likert scale ranging from (2) never, (1) sometimes and (0) all the times. The total score of the scale were ranging from 0 to 16 score.

Part II: patients' compliance post total hip replacement surgery questionnaire:

It was developed by the investigator and write in an Arabic language based on relevant, recent and related literatures. **(Majnik et al., 2022; El Sayed et al., 2021 and McNaught, et al., 2021).** It used to assess patient's compliance post total hip replacement surgery. It included six main subscales of patient' compliance which consisted of (67) items classified as following: pain management (6 items), joint protection: (30 items) physical exercises: (6 items), nutrition (12 items), stress management: (7 items) and follow up (6 items).

❖ **Scoring system:**

Each statement had three responses from 0 to 2 on a three likert scale ranging from (0) never, (1) sometimes and (2) all the times.

The total scoring for Patient's compliance (part I &II) scores Included 75 items regarding medication, pain management, and joint protection, physical exercises, nutrition, stress management and follow up were ranging between "0 to 150".
➢ Patient's compliance considered as ≥80% (121-150).
➢ Patient's non-compliance considered as <80% (0-120).

IV- Western Ontario and Mac Master Universities Arthritis Questionnaire (WOMAC). It was standardized tool adopted from **Bellamy, (1988).**It was used to assess patients' outcomes post total hip replacement surgery, it included three main sections which consisted of 24 items classified as following; a) Pain: it included (5) questions. b) Stiffness: it included (2) questions c) Difficulty performing daily activities: it included (17) questions

❖ **Scoring system:**

Each item had five responses from 0 to 4 on a five likert scale ranging from (0) none, (1) mild,(2) moderate, (3)severe, and (4) extreme. The scores are summed for items in each subscale, with possible ranges as follows: Pain=0-20, stiffness=0-8, difficulty performing daily activities =0-68.

A total WOMAC score is created by summing the items for all three subscales. (0-96).

II- Operational design:

The operational design includes preparatory phase, face, content validity, reliability, pilot study, ethical consideration and field work.

A- Preparatory Phase:

It included reviewing of related literature, and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop the theoretical part of the study and data collection tools.

Validity and reliability of the study tools:

Testing validity referred to how well as a scientific test actually measures what it is intended to measure of the proposed tools by using face and content validity. Face validity aimed at inspecting the tools to determine whether the tool measures what it supposed to measure. **(Soubra, et al., 2019).**

Content validity was conducted to test or assessment instrument evaluates all aspects of the topic, construct, or behavior that it is designed to measure **(Schaufeli, et al., 2020).**

Validity testing ascertained and tested by a jury of seven experts, two of them professors and five assistant professors from Medical-Surgical Nursing department at faculty of Nursing, Ain Shams University, to test it's face and content validity. The jury reviewed the tools for objectivity, clarity, relevance, comprehensiveness, and simplicity. Based on their opinion, some statements have been rearranged and rewritten to be clearer and more relevant.

Testing reliability:

It was tested to ensure that an assessment tool produces stable with consistent result overtimes. Testing the reliability of the tools was done by using Alpha Cronbach test. The reliability test for developed tools are r = (0.740) for Patients' knowledge questionnaire and (0.801) for Patients' compliance assessment tool.

The reliability test for total score of standard (WOMAC) tool was 0.92 , Internal consistency with Cronbach's alpha for the pain subscale, stiffness and difficulty performing daily activities subscales were 0.76, 0.76 and 0.90, respectively. **(Bellamy, 1988)**

C-Pilot Study:

It was carried out on 5 patients (10% of total study subjects). It was conducted to test feasibility, applicability as well as to estimate the time needed to answer it and find the possible obstacles and problems that might face investigator and interfere data collection. The patients who were included in the pilot study were added to the sample because no modification was done after conducting pilot study.

D-Field work:

Data collection was done at orthopedic surgery departments (2 & 3) and joint outpatient clinic in El-Demerdash Hospital at Ain shams university Hospital.

Data collection phase was started and finished through 6 months from the beginning of September 2022 to the end of February 2023.firstly the investigator introduced herself and explained the purpose of the study for the subjects included in the study to obtain their participation consent (oral & written consent).

The investigator visited the selected setting one day per week, Tuesday from 9.00 am to 1.00 pm in orthopedic department and

waiting area in outpatient clinics. The investigator met about two to three patients every visit.

Data collected from studied subjects after ensuring that they met the criteria for selection. The study tool was filled in and completed by the investigator. First tool took 10-15min, second tool took 10-15 min, third tool took10-15 min and fourth tool took 3-6 min. the time needed to fill and complete all tool took about 30-45 minutes to be filled and completed. Finally data entered and statistical analysis and calculated was conducted.

Ethical considerations:

-An ethical approval obtained from Scientific Ethical Committee in Faculty of Nursing at Ain Shams University before starting the study.

-The investigator clarified the objective and aim of the study to the patients included in the study. The investigator assured maintaining anonymity and confidentiality of the subject data.   -All Patients were informed that they allowed choosing to participate or not in the study and that they have the right to withdraw from the study at any time without giving any reasons. Patient Values, culture and their beliefs were respected.

III- Administrative design

To carry out this study, the necessary approval was obtained from the hospital director of orthopedic surgery department and the Joint out-patient clinic, El-Demerdash Hospital at Ain Shams University Hospitals. A letter was issued to them from the faculty of nursing, Ain Shams University explaining the aim of the study to obtain the permission for conducting this study. The patients included in the study were informed about aim of the study. An oral consent was obtained from them, and confidentiality was assured.

IV Statistical design

The statistical analysis of data was done by using the computer software of Microsoft Excel Program and Statistical Package for Social Science (SPSS) version 22. Data were presented using descriptive statistics in the form of frequencies and percentage for categorical data, the arithmetic mean ($\bar{x}$) and standard deviation (SD) for quantitative data. Qualitative variables were compared using chi square test (X^2), P-value to test association between two variables and Pearson correlation test (R- test) to the correlation between the study variables.

Degrees of significance of results were considered as follows:
- P-value > 0.05 Not significant (NS)
- P-value ≤ 0.05 Significant (S)
- P-value ≤ 0.01 Highly Significant (HS).

Results:

Table (1): shows that, 34.0% of the studied patients their age was ≥ 60 years, with Mean age 55.7 ±9.8 years. Also 60.0% of them were female and 76.0% were married. Regarding educational level of studied patient 34.0% of them had secondary education. Also, it was found that 52.0% of them lived in rural areas and 98.0% of them living with family. Moreover, 72.0% of them were not working. In addition, 68.0% of them reported that, the monthly income of the family sufficient to cover the costs of treatment. Also, 92.0% of them reported that, the housing space suitable for movement after surgery. 26.0% of them live in the higher floors, and 61.5% of them use stairs to climb. Furthermore, 84.0% and 76.0% of them did not practice any regular sport before hip replacement and did not smoke, respectively.

Table (2): this table demonstrates that, 90.0% of studied patients had unsatisfactory level of knowledge regarding the precautions to be followed post total hip replacement surgery. Also, 62.0% of them had unsatisfactory level of knowledge regarding post-surgery instructions. Finally, 68.0% of the studied patients had unsatisfactory total level of knowledge regarding the joint replacement. with mean ± SD 10.2 ± 2.78.

Figure (1): shows that, 80.0% of the studied patients were non-compliant regarding post total hip replacement surgery.

Figure (2): shows that (46%) of the studied patient's had mild outcomes. while (42%) of them had moderate total outcomes regard total hip replacement surgery.

Table (3): show that there were a highly statistically significant relation between total patients' knowledge and their age and education level at (P - Value = 0.001 and 0.004 respectively).also, there were a highly statistically significant relation between total patients' compliance and their age and education level at (**P -Value** = 0.000). Also, there was statistically significant relation with their marital status, residence and practice sports at (**P -Value** = 0.031, 0.024 and 0.021respectively).in addition, there was statistically significant relation with their age and floors at (P -Value =0.018 and 0.023 respectively).

Also, there were a highly statistically significant relation between total patients' outcomes and their education level and residence at (P -Value =0.002and 0.001 respectively).

 **Table (4):** illustrate that there were a positive correlation between total level of   knowledge and total level of   compliance regarding post total hip replacement surgery among the studied patients at (r= 0.621). meanwhile, there was a negative correlation between total outcomes score and total level of knowledge and compliance score regarding post total hip replacement surgery among the studied patients at r= -0.528-   and   r=-0.727-,   respectively.

 Table (1): Frequency and percentage distribution of studied patients regarding to socio demographic characteristics. (n=50).

Socio-demographic characteristics	No.	%
Age (years)		
20-<35	11	22.0
35-<45	9	18.0
45-<60	13	26.0
≥ 60	**17**	**34.0**
Mean ± SD 55.7 ±9.8		
Gender		
Male	20	40.0
Female	**30**	**60.0**
Marital status		
single	12	24.0
Married	**38**	**76.0**
Level of Education		
Illiterate	13	26.0
Read and write	15	30.0
secondary education	**17**	**34.0**
university education	5	10.0
Residence		
Urban	24	48.0
Rural	**26**	**52.0**
Living status		
Live alone	1	2.0
Living with Family	**49**	**98.0**
Work		
Working.	14	28.0
Not working	**36**	**72.0**
Monthly income of the family sufficient to cover the costs of treatment		
Enough	**34**	**68.0**
Not enough	16	32.0
Housing space suitable for movement after surgery		
Yes	**46**	**92.0**
No	4	8.0
Floors		
Ground	37	74.0
Higher floor. If yes,	**13**	**26.0**
Use Elevator	5	38.5
Use Stairs	**8**	**61.5**
Life style		
- **practicing sports**		
Yes	8	16.0
No	**42**	**84.0**
- **Smoking**		
Yes	12	24.0
No	**38**	**76.0**

Table (2): Frequency and percentage distribution of studied patients' total   level of knowledge subscales regarding joint replacement surgery (n=50).

subscales	Satisfactory No.	%	Unsatisfactoy No.	%	Mean ± SD
- Patients' knowledge regarding total hip replacement	21	42.0	29	58.0	5.16 ± 1.43
-Patients' knowledge regarding post-surgery instructions	19	38.0	31	62.0	2.84 ± 1.33
-Patients' knowledge regarding precautions to be followed post total hip replacement surgery	3	10.0	47	90.0	2.02 ± 0.65
Total Knowledge	**16**	**32.0**	**34**	**68.0**	**10.2 ± 2.78**
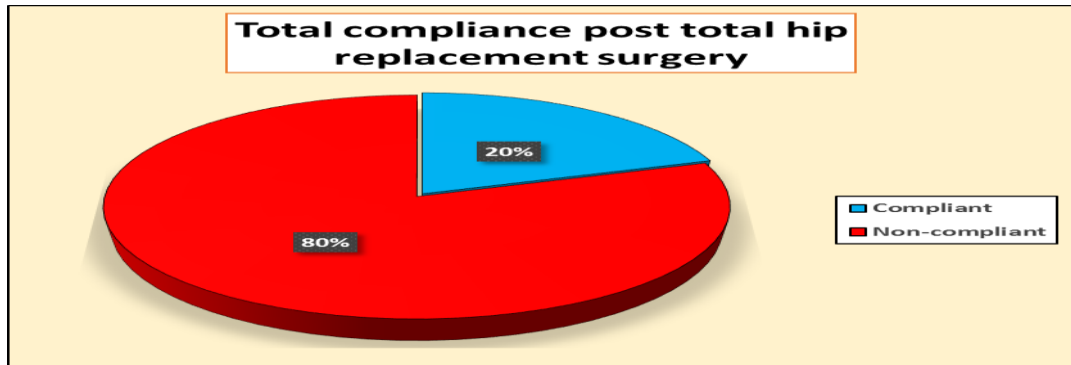
Figure (1): Percentage distribution of studied patient's total level of compliance regarding post total hip replacement surgery (n=50).
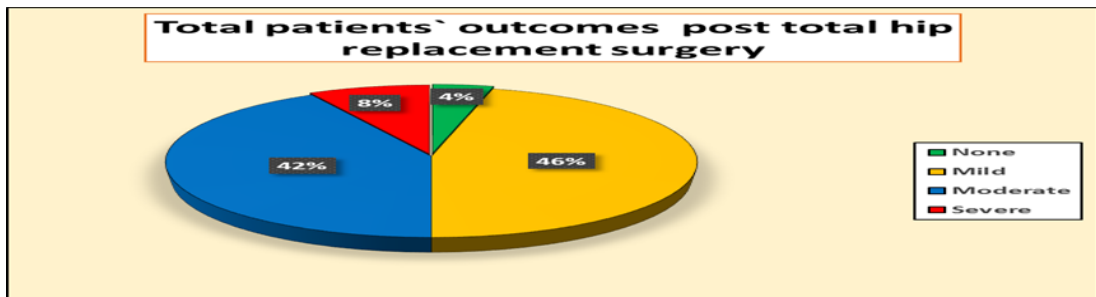
Figure (2): Percentage distribution of the studied patients according to their total outcomes post total hip replacement surgery (n=50).

Table (3): relation between socio-demographic characteristics and studied variable post total hip replacement surgery.

Variable	Age X^2	Age P-value	Marital status X^2	Marital status P-value	Level of education X^2	Level of education P-value	Residence X^2	Residence P-value	Floor X^2	Floor P-value	Sport X^2	Sport P-value
Total knowledge	17.40	0.001**			13.35	0.004**						
Total compliance	17.95	0.000**	4.633	0.031*	20.73	0.000**	5.128	0.024*			5.357	0.021*
Total outcomes	14.21	0.018*			25.74	0.002**	16.97	0.001**	9.518	0.023*		

Table (4): Correlation between total knowledge score, total compliance score and outcomes regarding patients post total hip replacement surgery (n=50).

Items	Total knowledge		Total compliance	
	r	P-Value	r	P-Value
Total knowledge			0.621	0.000**
Total outcomes	-0.528-	0.000**	-0.727-	0.000**

(r)= Pearson correlation test.   (-) = negative correlation.   **highly significant correlation at p ‹ 0.01.

Discussion:

Total hip replacement surgery is a common procedure that can significantly reduce pain, improve mobility and quality of life for those suffering from hip arthritis or injury. However, the success of the surgery depends not only on the surgical technique but also on proper postoperative rehabilitation and compliance with recommended strategies for recovery. Non-compliance can have adverse effects on patients, including increased pain, a prolonged hospital stay, and increased healthcare costs. Overall, patient compliance with recommended strategies for recovery is a critical component of achieving optimal outcomes post THR surgery **(Colibazzi, 2020).**

The discussion of the study findings covered five main parts; **Part I:** patients' Socio demographic characteristics and medical history of the studied patients. **Part II:** Patients' level of knowledge regarding joint replacement**. Part III:** Patients' level of compliance post joint replacement surgery. **Part IV:** patients' outcomes post total hip replacement surgery. **Part V:** relation and correlation between patients' the studied variable.

Part I: Regarding the socio-demographic characteristics of the studied patients. The result of the current study revealed that; slightly more than one third of studied patients' age was ≥ 60 years with mean 55.7 ±9.8. From the investigator point of view, this age group may be more susceptible to osteoporosis and osteoarthritis that is considered the common reasons for joint replacement which tend to get worse with age. This finding was in agreement with a study done by **Meng, et al., (2022)** which entitled "Effectiveness of self-efficacy-enhancing interventions on rehabilitation following total hip replacement: a randomized controlled trial with six-month

follow-up" they found that, the mean age of THR 58±10.32 and increasing among patients' over 60 years.

On the other hand, this finding was incongruent with the study done by **Luo, et al., (2019)** they applied study which entitled "Effect of nursing intervention via a chatting tool on the rehabilitation of patients after THA" they stated that, highly percentage of the studied patients with a mean age of 73.9 ± 12.9 years.

Regarding gender, the study result revealed that three fifths of the studied patients' were females. From the investigator point of view, this may be due to, that females are more risk for disturbed level of bone mineralization (calcium and vitamin D) especially with advanced age leading to decrease bone density and increase potential for THR. This result was in the same line with **Bahardoust, et al., (2019)** who applied study entitled "Evaluation of health related QoL after THA: a case-control study in the Iranian population" and they mentioned that, more than two thirds of them were females.

Regarding patients' marital status, the present study showed that, more than three quarters of the studied patients' were married. This result was in the same line with a study done by **Singh, et al., (2022)** in their study entitled "Effect of marital status on outcomes following total joint arthroplasty" they mentioned that, two thirds of the studied patients were married.

Regarding patients' level of education, the current study results indicated that, more than one third of studied patients had secondary level of education. This may be due to this study conducted at a government hospital with a large proportion of patients from low social classes who are uninterested in education. This result was disagree with **Mohamed Abdel**

Razeq, et al., (2022) in their study titled in "Relation between Discharge Instructions Compliance and Quality of Life among the Patients Post Hip Arthroplasty Surgery" they stated that, more than three quarters of the studied patients were having university education.

With respect to the patient's residence, more than half of the studied patients lived in a rural area. This may be due to unavailability of specialized hospitals affording major surgeries in different specialties as joint replacement surgeries in rural areas. This result was congruent with **Metz et al., (2021)** in their study entitled "Socio-demographic Factors Associated with Decreased Compliance to Prescribed Rehabilitation after Surgical Treatment of hip Injuries "They stated that, about most of the study sample were from rural areas**. As regards patients' living status,** the results of the present study revealed that nearly all of studied patients live with their family, this may be due to total hip arthroplasty required continuous care and observation after discharge from hospital.

This result was in the same line with **Frane et al. (2021)** in their recent study entitled "Patient Satisfaction after Lower Extremity Total Joint Arthroplasty: An Analysis of Medical Comorbidities and Patient Demographics" they found that, nearly three fifths of study live with their family.

In concern to patients' work, the study result illustrated that slightly less than three quarters of the studied patients were not working. This may be due to the mean age of studied patient were 55.7 ±9.8 and suffering from severe pain and decrease of mobility that associated with pervious arthritis which made them unable to work as well as there were house wives. This result was consistent with **El Sayed, et al., (2021)** they mentioned that, more than half of the study group were not working.

As regards patient income, the study result illustrated that more than two thirds of the studied patients had enough monthly income to cover the costs of treatment. This result may be due to they treated in government hospital through decisions at the expense of the state. This result was incongruent with **Tsiligiani, et al., (2021)** in their study entitled "Hip replacement in Central Greece: a critical view on patients' profile" they found that, the study had low source of income.

As regards housing space, the results of the present study revealed that the most of housing space suitable for movement after surgery. More than one quarter live in higher floors and more than three fifths of them climb on stairs. This result may be due to more than half of studied patients from rural area where most of the houses are not high and do not need an elevator. This result was in the same line with **Levi, et al., (2020)** in their study entitled "Intensive Inpatient vs. Home-Based Rehabilitation after Hip Fracture in the Elderly Population" they stated that, less than two fifths no elevator and climb on stairs.

Regarding patients' life style, the study results revealed that, the majority of the studied patients didn't practice exercise. From the investigator point of view, this result may be due to the rural culture and unhealthy life style. They didn't maintain a regular exercise habit nor an awareness about the benefits of practice exercise. This result was in agreement with This result is congruent with **Bieler et al., (2022)** who conducted a study entitled "Effectiveness of promotion and support for physical activity maintenance post total hip arthroplasty-study protocol for a pragmatic, assessor-blinded, randomized controlled trial " who found that, nearly three quarters of the studied patients didn't practice exercise**. In relation to smoking habits,** the study result revealed that, about more than three quarters of the studied patients' were not smoking. From the investigator point of view, this result may be attributed to three fifths of the study patients were females with unusual to be a habit of smoking among females in rural society. This result was in the same line with **Bojan, et al., (2020)** in their study entitled "Systematic Review and Meta-analysis of Tobacco Use as a Risk Factor for Prosthetic Joint Infection after Total Hip Replacement. Arthroplasty" who found that, the majority of the study patients were nonsmoker.

On the other hand, this finding was incongruent with the study done by **Ali, & Abo El-Fadl, (2021)** which entitled "Effect of Evidence Based Progressive Exercise Program on Functional Outcomes for Patients after Total Hip Replacement Surgery" they found that, more than half of studied patients were smoker.

Part II: Concerning the total score of patients' knowledge with total hip replacement, the present study results showed that, more than two thirds of the studied patients had unsatisfactory total level of knowledge regarding total hip replacement surgery. From the investigator point of view, this result may be due to the fact that more than one third of them had a secondary level of education and more than half of them lived in a rural area. Thus, they cannot seek to acquire knowledge as well as, shortage in the health services that provide health education and increase awareness about this surgery to help patients to improve their health and outcomes post-surgery. This results was in agreement with **Abd– Allah et al., (2020)** in their study entitled "Knowledge and concerns of elderly patients regarding the total joint replacement surgery" who illustrated most of the studied patients had unsatisfactory level of knowledge about total joint replacement surgery. **Part III: Regarding total compliance post total hip replacement,** As regards total compliance post total hip replacement, the result of the current study revealed that, the majority of the studied patients were non- compliant. From the investigator point of view, this result may be due to the fact that more than two thirds of them had unsatisfactory total level of knowledge and the patients post-surgery were bored of following instructions, or were not encouraged or helped by their healthcare providers. From the previous results, we are assured of patients' need for an awareness and guidance program to increase their level of knowledge about compliance to recommended recovery strategies about total hip replacement surgery.

This result was in the same line with **Mohamed Abdel Razeq et al., (2022)** who found that, slightly more than half of patients were non-compliant regarding total level of compliance. **Part IV: Concerning Patients'**

outcomes post total hip replacement, as regard to total outcomes post total hip replacement, the result of the current study revealed that slightly less than half of studied patient had mild level of total outcomes and more than two fifths had moderate level of total outcomes. From the investigator point of view, this result may be attributed to THR considers a major surgery which required multidisciplinary team working together to improve outcomes post-surgery, also may be related to most of studied patient were compliant with medication and majority of them were compliant with follow up . These findings of the current study disagree with **Neuprez, et al., (2020)** in their study which entitled "Total joint replacement improves pain, functional quality of life, and health utilities in patients with late-stage knee and hip osteoarthritis for up to 5 years" they mentioned that, more than three quarters of studied patients had good outcomes with mean 37.68 ± 22.75. **Part V: relation and correlation between studied variable,**

Regarding the relation between patients' total level of knowledge and their socio-demographic characteristics, the result of the current study revealed that, there was statistically significant relation between patients' total level of knowledge and their age, and level of education post total hip replacement surgery. From the investigator point of view, this result may be due to the fact that decrease cognitive level, attention span and concentration among old age patients' related to the aging process and vision, hearing, and memory problems. On the other side, Younger patients had higher levels of knowledge which may be due to their accessibility to information or health care provider communication through internet technology resources. Also, the Patients with higher education levels had higher health literacy levels and awareness about access to healthcare information which had a positive effect on patient level of knowledge regarding total hip replacement surgery. This finding was in agreement with a study done by **Joly et al., (2020)** entitled "Does age influence patient-reported outcomes in unilateral primary total hip and knee arthroplasty" they stated that, there was a significant relation between age and level

of patients' knowledge regarding total hip replacement surgery.

In addition, **Abd–Allah et al., (2020)** found that, there was a significant relation between the patient's level of knowledge and their level of education in their study entitled "Knowledge and concerns of elderly patients regarding the total joint replacement".

Regarding the relation between patients' total level of compliance and their socio-demographic characteristics, the result of the current study revealed that, there was statistically significant relation between patients' total level of compliance and their age, marital status, level of education, residence and sport practice post total hip replacement surgery. From the investigator point of view, this result may be due to the fact that more than one third of the studied patients' age was ≥ 60 and aging process associated with memory problems as Alzheimer's disease. And more than one third of them had secondary level of education and they hadn't enough knowledge about the importance of compliance. Practicing sports improve circulation, joint efficiency, reduce complication and improve post-surgery outcomes. However, more than three quarters of the studied patients were not interested in sport because there were married and lived in rural area. These factors affected negatively on total compliance.

This result was in agreement with a study done by **Metz et al., (2021)** entitled "Socio-demographic Factors Associated with Decreased Compliance to Prescribed Rehabilitation after Surgical Treatment of hip Injuries" they mentioned that, there was a significant association between reduced rehabilitation compliance and patient-specific socio-demographic as age, level of education, sport and distance to rehabilitation site. Also, **Knapp et al., (2021)** in their study entitled "Quantifying patient engagement in total joint arthroplasty using digital application-based technology" they found that, there was a significant relation between patients' age and their compliance post total hip replacement surgery.

In addition , this result was in the same line with a study done by **Laiyemo et al., (2020)** entitled "S0190 Sex, Marital Status, and Compliance with colonoscopy" with Colonoscopy" who found that, more than half of the studied patient were Married women and more likely to be compliant with colonoscopy.

Regarding the relation between patients' total outcomes and their socio-demographic characteristics, the result of the current study revealed that, there were statistically significant relation between patients' total outcomes and their age, level of education, residence and floor post total hip replacement surgery. From the investigator point of view, this result may be attributed to the factors of the aging process, education and live in the rural area which affect the patient's compliance, and thus negatively affects the patient's post-surgery outcomes. It was noted that, less than three quarters of the studied patient live on the ground floor and did not need to take the stairs which help in rapid healing of hip and improve post-surgical outcomes.

This study was in agreement with a study done by **Gonzalez et al., (2022)** entitled " 1-year trajectories of patients undergoing primary total hip arthroplasty: Patient reported outcomes and resource needs according to education level" they stated that, there was a significant relation between education level and patient outcomes post total hip replacement surgery. Higher level of education was associated with better postoperative outcomes at 6 months and 3 years.

In addition, **Alvarez et al., (2022)** they conducted a study entitled "Socioeconomic factors affecting outcomes in total knee and hip arthroplasty" they found that, there was a significant relation between patients outcomes and their socio-demographic data post total joint replacement surgery.

This result was in disagreement with **Singh et al., (2022)** in their study entitled "The number of stairs into home do not impact discharge disposition and patient reported outcomes after total joint arthroplasty" they found that, there was no significant relation

between number of stairs and total patient's outcomes post total joint arthroplasty surgeries.

As regards correlation between studied variable, the study result revealed that there were highly significant positive correlation between total knowledge score and total compliance score regarding post total hip replacement surgery. while, there were highly significant negative correlation between total outcomes score and total level of knowledge and compliance score regarding post total hip replacement surgery among the studied patients.

These findings mean that the patients' lack of knowledge leads to non-compliance with a therapeutic regimen (Positive correlation). In spite of, the patients' low level of knowledge and compliance, their outcomes scaled mild and moderate according to the WOMAC scale (negative correlation). From the investigator point of view, this result may be due to the fact that most of the studied patients were compliant with their medication, which controlled their outcomes. Also, it may be affected by other factors such as the type of prosthesis or surgical technique. These results were inconsistency with a study done by **Al-Faouri et al., (2021)** in their study entitled "Knowledge and compliance with standard precautions among registered nurses" they found that, there was a significant positive correlation between total knowledge score and total compliance.

These results were disagree with a study done by **Ali & Abo El-Fadl, (2021)** found that, there was a significant positive correlation between patients' total knowledge and total outcomes.

In addition, **Mohamed Abdel Razeq et al., (2022)** stated that, there was a highly statistically significant positive correlation between patient's compliance with discharge instruction and QoL level post hip arthroplasty.

Conclusion:

Based on the result of the presented study and research questions, the study concluded that: More than two third of the studied patients had unsatisfactory total level of knowledge regarding total hip replacement surgery. And, the majority of the studied patients were non-compliant with therapeutic regimen. Also, nearly half of the studied patients had mild level of total outcomes and more than two fifths of them had moderate level of total outcomes post total hip replacement surgery. Moreover, there were a positive correlation between total knowledge score and total compliance score regarding post total hip replacement surgery among the studied patients. Meanwhile, there was a negative correlation between total outcomes score and total level of knowledge and compliance score regarding post total hip replacement surgery with highly statistical significant relation between the studied patients level of knowledge, level of compliance and total level of outcomes post total hip replacement surgery

Recommendation:

In the light of the result of the present study, the following recommendations are suggested:

1. A simplified and comprehensive Arabic guidelines booklet or pamphlet illustrating all instructions the patient may need post total hip replacement surgery.

2. Educational program for patients undergoing total hip replacement surgery should be applied in all orthopedic units periodically and regularly to enhance knowledge, compliance and improve patients' self-care skills after surgery.

3. Further studies for factors affecting patients' compliance with therapeutic regimen and patients outcomes post total hip replacement surgery.

4- Replication of the current study on a larger sample and anther setting.

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