Effect of Implementing Intervention protocol on Self Efficacy of Patient's Post Knee Joint Replacement

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ABSTRACT

Intervention protocol for patients' post knee joint replacement is considered a strategy for promoting their knowledge and self-efficacy at home and in the community. **Aim:** The study aimed to determine the effect of intervention protocol implementation on self-efficacy of patients' post knee joint replacement through: 1) Assessing knowledge and self-efficacy of patients' post -knee joint replacement. 2) Designing and implementing intervention protocol post knee joint replacement. 3) Evaluating the effect of implementing intervention protocol on self-efficacy of patients' post knee joint replacement. **Study design:** A quasi-experimental (pre/post tset) design was utilized to conduct this study. **Setting:** This study was conducted in joint orthopedic outpatient clinics at El-Demerdash Surgical Hospital which is affiliated to Ain Shams University Hospitals. **Subject: A** purposive sample of 193 adult patients from both genders was recruited for conducting this study. **Data collection**: 1) Patients' interviewing questionnaire. 2) Patients' self-efficacy scale. **Results**: The present study revealed a significant difference between the studied patients regarding their knowledge and self-efficacy before and after intervention protocol implementation. **Conclusion:** The implementing intervention protocol had a positive effect on improving knowledge and self-efficacy of patients' post knee joint replacement. **Recommendations:** Setup a training program for patients post knee joint replacement that aims to improve patients' self-care. Replication of the current study on a larger sample and different hospitals and community settings in order to generalize the results

Keywords: Intervention protocol, self-efficacy, knee joint replacement

Introduction

Osteoarthritis is a condition associated with adult and older age people and it is considered one of the most common indications of knee joint replacement. **(Batarfi,et al ,2018)**. Osteoarthritis treatment typically starts with conservative choices such as physiotherapy, drugs, and modifications in lifestyles. Conservative management typically postpones surgery for a few years **(Abdelaleema and Rizk, 2018).**

Knee Joint Replacement Constitute carries out a large proportion of joint replacement operations performed throughout worldwide. Incidence rates per 100,000 inhabitants were 113 for knee replacement patients in the countries of the Organization for Economic Cooperation and Development during 2014. In (OECD) countries and among hospitals and regions in the same country, disparities in knee replacement rate may be attributable to discrepancies in the healthcare system, different indication requirements or population age structure. **(Organization for Economic Cooperation and Development, 2014).**

According to **American Academy of Orthopaedic Surgeons, 2016)** in the United Stated, the rate of knee joint replacement increased by more than 600,000 annually. Therefore, patient education is linked to and supports the healing process and, after elective knee replacement, it may enhance the result. It is important that awareness and requirements come together to enable individuals to become motivated during the recovery period **(Gallagher et al., 2018).**

The process of healing begins immediately after surgery and changes take place during the entire recovery period, patient factors may affect the procedures, such as rising patient and surgeon acceptance

of knee replacement and also survivorship, such as longer life expectancy, higher physical activity of those receiving a replacement **(Hamilton et al. 2015)**.

Knee replacement takes several weeks for elderly patients with serious osteoarthritis to recover. For patients who heal easily and others who have a more problematic healing, the recovery process following hip replacement has been shown to be similar **(Jones and Jerabek 2018).**

Patients undergoing knee replacement operation need health care information to participate actively in and assume responsibility for self-care. Health education can help those patients adapt to their condition, prevent complication, carry out prescribed therapy, and solve problems when confronted with new situation and reduce the potential for hospitalization resulting from inadequate information about self- care. The goal of health education is to teach patients to live life to its healthiest that is, to strive toward achieving their maximum health potential **(Urden et al, 2014).**

For patients of post knee joint replacement, there are a variety of physiological issues such as loss of function, postoperative braking, malnutrition, knee joint pain, and so on. This series of complications has significantly hampered patients' rehabilitation. It is also one of the essential tasks for nurses to help patients regain their physiological function as quickly as possible. There are necessary steps should be taken to solve various problems. The most significant phase in the recovery process was rehabilitation training, but one principle to be upheld by rehabilitation training is to proceed in an orderly and structured manner. Before and after the procedure, the nurse should give the patient a sequence of rehabilitative training: beginning with passive motion, continuous passive movement (CMP) for tissue healing is especially helpful in reducing the oedema **(Mohammad et al, 2017).**

The nurse will then enable the patient to do some more challenging training in recovery, such as ascending stairs, walking, sitting, and then encouraging patients to do some even more difficult training in resistance. For dressing, nurses should prescribe Jubilee dressing to patients because it can not only effectively minimise blistering, leakage, but also it is more economical. Patients can still suffer from malnutrition after orthopaedic knee surgery, which is not ideal for wound healing. Thus, nurses may also recommend that patients should have a high protein diet to enhance nutrition, speed up wound healing and improve recovery, in sync with assisting patients in rehabilitation training **(YANG et al. 2016).**

The nurses are responsible to help patients to get professional nursing care. According to International Council of Nurse, nurses should respect human rights, traditions, beliefs, and patients who are concerned about their illness while providing treatment for patients. We should ensure that they receive reliable, appropriate and timely information relevant to their own care in order to minimize the physiological burden. In addition, nurses should consider their health and social needs when providing care for patients, particularly vulnerable patients; since they may lack the capacity to take risks when taking care of their basic needs. Patients can heal better with all this skilled nursing care and pay less money for their hospitalization and treatment **(Causey-Upton, et al 2019).**

Patients may experience pain and physical impairment immediately after knee joint replacement. Thus, perceived self-efficacy is characterized as people's assumptions about their ability to achieve established levels of performance that influence events that affect their lives. Self-efficacy principles decide how individuals feel, think, encourage themselves and act. Via four main processes, such beliefs generate these diverse results. They include processes of perception, inspiration, affection and selection. **(Ahmad, and Safaria, 2013).**

Self-efficacy reflects the personal confidence of a patient in completing particular tasks and it brings about a sense of achievement as well. There were important associations among self-efficacy, walking distance, and lower limb activity frequency post knee joint replacement **(Wu et al., 2018).**

Significance of the study

Knee joint replacement is a common and usually successful procedure, and most of the patients who subjected to this procedure have less pain and greater functional capacity **(Lewis, et al., 2020b).**

In many aspects, a good sense of efficacy has been increased by human achievement and personal well-being. People with high faith in their abilities approach daunting tasks as obstacles to be met rather than as risks to be avoided. Such an effective outlook fosters innate curiosity and profound engagement in activities **(Hiraga et al, 2019).**

In Egypt, according to statistics from the information center at El Demerdash Surgical hospital, it was recorded that, the number of cases admitted to El-Demerdash Surgical hospital for knee replacement operation in the year 2017 was 270 patients **(Statistical records of El- Demerdash Surgical Hospital, Orthopedic Departments, 2018)**.

Aim of the study:

To determine the Effect of Implementing Intervention protocol on Self Efficacy of Patients' Post Knee Joint Replacement through:

1) Assessing knowledge and self-efficacy of Patients' post -knee joint replacement.
2) Designing and implementing intervention protocol post knee joint replacement.
3) Evaluating the effect of implementing intervention protocol on self-efficacy of Patients' post knee joint replacement.

Research hypothesis:

The current study hypothesized that the implementation of intervention protocol will have significant positive improvement in knowledge and self-efficacy of patients' post knee joint replacement.

Subjects and Methods

Research design: A quasi-experimental research design (pre/post-test) was used to test the study hypothesis. Quasi-experimental research involves the manipulation of an independent variable without the random assignment of participants to conditions or orders of conditions. Among the important types are nonequivalent groups designs, pretest-posttest, and interrupted time-series designs **(Rogers and Révész 2020).**

Setting: The study was conducted at Joint out-patient clinic, in Al Demerdash hospital at Ain Shams University Hospitals, Cairo governorate, Egypt, this joint out-patient clinic worked only one day per weekly (Saturday) the total average number of attendance per day from 12 to 15 cases for follow up.

Subject:

Purposive sample technique of (193) patients' post knee joint replacement (this represents 30% from the total number of cases according to the following equation:

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

The standard normal deviate for $\alpha = Z\alpha = 1.960$. The standard normal deviate for $\beta = Z_\beta = 1.2816$. Sample size will be 186 patients to achieve a power of 80% and a level of significance of 5% (two sided), assuming the standard deviation of the differences to be 2.100 between pairs **(Rosner,2016)**. For conducting this study from the above-mentioned setting. The sample size assumed to be 186 but the researchers recruited 193 to avoid low response rate or withdrawal. They were selected according to the sensitive or power analysis in relation to the number of patients who underwent knee joint replacement within the previous year (2018) in Al Demerdash hospital at Ain Shams University. 886 patients according to the statistical department affiliated to the setting with type I had error with significant level alpha $\alpha = 0.05$ (significance 95/ and type II error ß =90. Patients were included in the study according to the following criteria:

Inclusions Criteria: older adults aged 50 years to above 60 years of age, both genders who underwent one week of surgery,

uncomplicated post knee joint replacement was able to comprehend instructions and agreed to participate in the study.

Exclusions Criteria: patients with complications, critically or mentally ill patients and who did not agree to participate in the study.

Tools of data collection: two tools were used after reviewing the related literature, for collecting the necessary data.

First tool: An Interviewing Questionnaire was developed by the researchers for patients' post knee joint replacement, to assess knowledge and self-efficacy of Patients' post -knee joint replacement. based on the relevant recent literature and translated into Arabic language. It included the following three parts:

Part I. This part was concerned with demographic characteristics of patients' post knee joint replacement, including five questions (age, gender, educational level, occupation & marital status) .

Part II. It assessed medical history of patients' post knee joint replacement, including five questions (medical diagnosis, type of knee replacement, presence of chronic disease, cortisone intake (history of cortisone intake or current cortisone intake), and family history).

Part III. This part assessed knowledge of the studied patients regarding knee joint replacement surgery, including 13 closed ended question, distributed as following: patient's knowledge regarding knee Joint Replacement including

(meaning, indications, diagnostic measures, complications and management and patients knowledge regarding precautions followed post knee joint replacement including (leaving bed, walking, during sleeping, using stairs, practicing exercise, general measures, the life span of the artificial joint and causes of less efficient knee prostheses after several years of use).

Scoring system:

This part consisted of (13 questions) each correct answer was scored one and each incorrect answer scored zero, the questions were summed up, the total score (13 degree) for patients' knowledge that was calculated and categorized into satisfactory or unsatisfactory as follows:

- ≥ 60 % was considered satisfactory ≥ 6.5 degree.
- < 60 % was considered unsatisfactory < 6.5 degree.

Then the total knowledge score level was presented in the form of total mean score.

Second tool: Self-efficacy scale of patients' post knee joint replacement, it was adopted by **(Schwarzer, & Jerusalem 1995)** and modified by the researchers**.** It included 55 statements classified into eight subtitles as follows: (**General self-efficacy scale** (10 statements), **Bodily pain** (10 statements), **Stability** (2 statements), **Motion** (2 statements), **Satisfaction** (6 statements), **Physical functioning** (16 statements), **Mental health** (3 statements) **and Social functioning** (6 statements).

Scoring system:

The scale had three point likert scale, ranged from one to three, distributed as follows: Not at all (1), Moderately (2), Exactly (3). the total score was (165). The sub-total scores for every subscale was calculated by summing the patients' responses and then the total scores of all items were calculated.

The total scores for patients' self-efficacy were (165) the total score categorized into the following:

75% and above considered high self-efficacy, 50% - 47% considered moderate self-efficacy and less than 50% considered low self-efficacy.

Tools Validity: The tools were revised for validity of the content by a panel of five experts, from medical surgical nursing and community health nursing field to ascertain relevance and comprehensiveness.

Tools Reliability

Cronbach's Alpha coefficient test was used to test reliability which displayed the

tools that involved homogenous items as showed by the moderate to high reliability of each tool. The internal consistency for patients' knowledge was (α =.85), and for Self-efficacy was (0.77).

Pilot study:

10% of the sample, (19) patients, were used for pilot study and were included in the study sample. The main purposes to assess the tools clarity, objectivity and estimation of the time required to fill the tools of data collection.

Field work:

A written approval to conduct this study after clarifying its purpose was taken from responsible authorities at the Faculty of Nursing at Ain Shams University. The written approval letter was given to the directors of the chosen clinic named, joint out-patient clinic administrator in Al Demerdash at Ain Shams University hospital. The study was carried out through four main phases: assessment, planning, implementation, and evaluation.

These phases were carried out from the beginning of July 2019 to the end of December 2019, covering along a period of 6 months. The previous setting was visited by the researchers one day/week (Saturday) which is the workday of the clinic, from 9.00 am to 1.00 pm. The time needed to complete interviewing questionnaires was (20-30 minutes). The average number of the interviewed patients were about (12) patients/ visit.

Intervention protocol development phases:

Intervention is defined as the specific way in which a variable is measured in a particular study

It was conducted on four consecutive phases, assessing, developing, implementing, and evaluating.

Phase I: Assessment phase:

Through using the pre-program assessment tools, the researchers interviewed the patients during the visits at joint out-patient clinic. Upon consent to participate, patients were interviewed to assess demographic data, knowledge and self-efficacy post knee joint replacement surgery. The data attained during this phase was considered the baseline for further comparisons to evaluate the effect of intervention on patients. additionally it was a guide for the intervention.

Phase II: Development phase:

Developing the intervention protocol by the researchers in a form of printed Arabic booklet to satisfy the patients' deficit of knowledge and skills according to the self-efficacy of patients' post knee joint replacement surgery, it was based on patients' needs and reviewing recent, related literature. The general objective of the intervention protocol was for improving knowledge and self-efficacy of patients' post knee joint replacement. The content of the intervention protocol was covering the following content related to knee joint replacement meaning, indications, complications, diagnostic measures, management, as well as, the precautions that must follow post knee joint replacement such as (leaving bed, walking, during sleeping, using stairs, practicing exercise, general precautions etc..).

Phase III: Implementation of the intervention protocol:

Implementation of the intervention protocol was carried out at Joint out-patient clinic, in Al Demerdash hospital throughout applying health education sessions. At the beginning of the first session, an orientation to the intervention protocol and its purpose was presented. Each session started with a summary about what had been given through the previous sessions and the objectives of the new session, taking into consideration the use of simple language to suit the level of patients.

The theoretical part of the intervention protocol was presented in two sessions including (definition and anatomy of the knee , causes of knee joint replacement, definition of knee joint replacement , procedures of knee joint replacement surgery, the life span of the artificial joint, complications of knee joint replacement and precautions after knee joint replacement surgery) in the form of lectures/discussions followed by the practical part which consisted of one session including (exercises to be followed immediately after surgery) in the form of demonstration and re-demonstration by using a video and real

situations, one day/week (Saturday), from (9.00 am. to 1.00 pm.). The time of each session ranged between 30 to 45 minutes, the implementation of the intervention protocol started immediately based on the assessment of patients' needs, using illustrative media for conveying information such as laptop, posters, and brochures. An illustrated booklet was developed by the researchers for patients as a reference after intervention protocol implementation.

Evaluation phase

The evaluation phase was done immediately after the implementation of the intervention protocol, by using the same pre-program tools to compare changes in knowledge and self-efficacy of patients' Post Knee Joint Replacement.

Administrative Design:

An official Permission for conducting the study was obtained from the Faculty of Nursing, Ain Shams University to the director of the Joint out-patient clinic, in Al Demerdash hospital at Ain Shams University Hospitals, Cairo governorate, Egypt. Then an informed consent to participate in the current study was taken after the purpose of the study was clearly explained to each patient.

Ethical considerations:

Before data collection, the participants were knowledgeable about the purpose of the study. They were given a chance to reject or to join in the study. Moreover, they were informed that their collected information would be confidential and used only for the purpose of the study and their right to withdraw from the study at any time was guaranteed.

Statistical analysis:

Descriptive statistics were used to summarize demographic characteristics of the patients. Data was revised, coded, cleaned, analyzed and tabulated using number and percentage distribution and was carried out using the Statistical Package for Social Sciences (SPSS) version 20. Appropriate statistical methods were applied (percentage, mean and standard deviation, chi square, and Pearson correlation). Regarding P value, it was considered non-significant (NS) if P> 0.05, Significant (S) if P ≤0.05, Highly Significant (HS) if P ≤0.01.

Table (1): Frequency and percentage distribution of patients' post Knee joint replacement regarding their demographic data (N=193)

items	N	%
Age		
50 to 60	100	51.8
≥ 60	93	48.2
Mean ± SD	71±37.2	
Gender		
Male	93	48.2
Female	100	51.8
Educational level		
Not read and write	30	14.7
Pre university education	93	48.7
University education	70	36.6
Occupation		
Working	153	79.1
Not working	40	20.9
Marital status		
Married	120	66.3
Not married	73	33.7

Table (1): Demonstrates that 48.2% of the studied sample aged ≥ 60 years, 51.8% were females. Regarding the educational level, 48.7% received pre-university education.79.1% work. Moreover, 66.3% of them were married.

Table (2): Frequency and percentage distribution of Patients' medical history post Knee joint Replacement (N=193)

Items	Patients' medical history	
	No.	%
▪ **Medical diagnosis**		
Chronic osteoarthritis	93	**48.7**
Rheumatoid arthritis	30	14.7
A vascular necrosis	70	36.6
▪ **Type of knee replacement**		
Total	73	33.7
Partial	120	**66.3**
▪ **Presence of chronic diseases**		
Yes	153	**79.1**
No	40	20.9
▪ **Cortisone intake (previous or current)**		
Yes	100	**51.8**
No	93	48.2
▪ **History of same surgery for a family member**		
Yes		
No	40	20.9
	153	**79.1**

Table (2): Demonstrates that 48.7% of the studied sample had chronic osteoarthritis, 66.3% subjected to partial knee replacement also, 79.1% were suffering from chronic diseases and had no family history, 51.8% were on cortisone intake.

Table (3): Comparison of patient's knowledge regarding knee Joint Replacement pre and post intervention protocol implementation (N=193).

Parameter	Pre Intervention		Post intervention		X^2	P Value
	No	%	No	%		
meaning of knee joint replacement						
Correct	90	46.63	135	69.95	21.578	0.000
Incorrect	103	53.37	58	30.05		
indications						
Correct	60	31.09	138	71.50	63.089	0.000
Incorrect	133	68.91	55	28.50		
Complications						
Correct	76	39.38	133	68.91	33.901	0.000
Incorrect	117	60.62	60	31.09		
diagnostic measures						
Correct	60	31.09	138	71.50	63.089	0.000
Incorrect	133	68.91	55	28.50		
Management						
Correct	71	36.79	133	68.91	39.964	0.000
Incorrect	122	63.21	60	31.09		
Total knowledge						
Satisfactory	88	46.3	130	67.7	18.592	0.000
Unsatisfactory	105	54.4	63	32.6		

Table (3): Illustrates a significant difference in all items of patients' knowledge and the total knowledge regarding knee joint replacement post intervention protocol implementation compared to pre intervention protocol whereas (P value = 0.000).

Table (4): Comparison of patients' knowledge regarding precautions followed post knee joint replacement pre and post intervention protocol implementation (N=193).

Precuations	Pre Intervention		Post intervention		X^2	P Value
	No	%	No	%		
Leaving the bed						
Correct	60	31.09	116	60.10	32.752	0.000
Incorrect	133	68.91	77	39.90		
Start Walking						
Correct	65	33.68	130	67.36	46.242	0.000
Incorrect	128	66.32	60	31.09		
Position during Sleep						
Correct	82	42.49	139	72.02	34.392	0.000
Incorrect	111	57.51	54	27.98		
When using Stairs						
Correct	90	46.63	128	66.32	15.219	0.000
Incorrect	103	53.37	65	33.68		
Practicing Exercise						
Correct	85	44.04	133	68.91	24.283	0.000
Incorrect	108	55.96	60	31.09		
General Measures						
Correct	71	36.79	138	71.50	46.840	0.000
Incorrect	122	63.21	55	28.50		
The life Span of the Artificial Joint						
Correct	65	33.68	111	57.51	22.099	0.000
Incorrect	128	66.32	82	42.49		
Causes of less Efficient Knee prostheses after Several Years of Use						
Correct	55	28.50	116	60.10	39.067	0.000
Incorrect	138	71.50	77	39.90		
Total Measures following Knee Joint Replacement Knowledge						
Satisfactory	88	46.3	162	83.9	62.169	0.000
Unsatisfactory	105	54.4	31	16.1		

Table (4): Explains a significant difference in all knowledge regarding the precautions that must follow post knee joint replacement, post intervention protocol implementation compared to pre intervention protocol whereas (P value = 0.000).

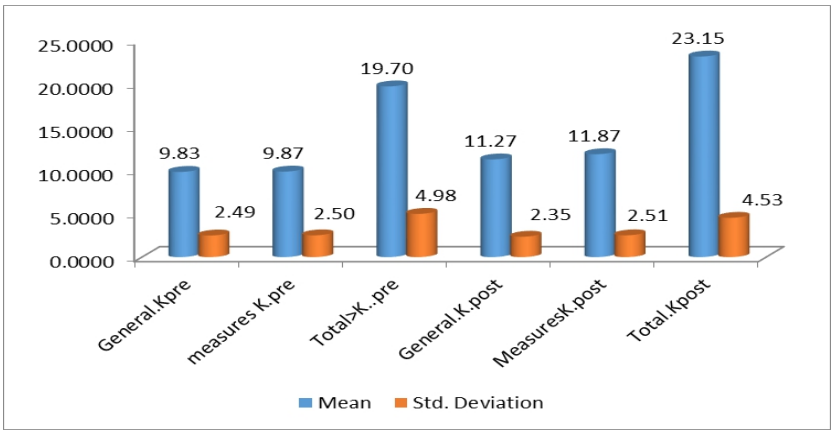

Figure (1): Difference between total mean score of patients' knowledge regarding knee joint replacement and its precautions and measures pre and post intervention protocol implementation (N=193).

Figure (1): reveals that the mean score of total knowledge pre intervention is 19.7±4.98, while the mean score of total knowledge post intervention is 23.15±4.53

Table (5): Comparison of the studied patients' self-efficacy post knee joint replacement pre and post intervention protocol (N=193).

items	Pre intervention						Post intervention					
	Low level		Moderate level		High level		Low level		Moderate level		High level	
	No	%	No	%	No	%	No	%	No	%	No	%
General Self-Efficacy	102	52.85	60	31.09	31	16.06	22	11.40	68	35.23	103	53.37
X^2 and P value	**90.799 (0.000)**											
Bodily pain	98	50.78	70	36.27	25	12.95	30	15.54	62	32.12	101	52.33
X^2 and P value	**82.451(0.000)**											
Stability	110	56.99	53	27.46	30	15.54	28	14.51	53	27.46	112	58.03
X^2 and P value	**96.077(0.000)**											
Motion	85	44.04	68	35.23	40	20.73	25	12.95	58	30.05	110	56.99
X^2 and P value	**66.188(0.000)**											
Satisfaction	111	57.51	60	31.09	22	11.40	23	11.92	58	30.05	112	58.03
X^2 and P value	**118.273(0.000)**											
Physical Functioning	98	50.78	65	33.68	30	15.54	24	12.44	60	31.09	109	56.48
X^2 and P value	**89.985(0.000)**											
Mental Health	94	48.70	68	35.23	31	16.06	23	11.92	56	29.02	114	59.07
X^2 and P value	**91.757(0.000)**											
Social Functioning	91	47.15	58	30.05	44	22.80	24	12.44	55	28.50	114	59.07
X^2 and P value	**70.127(0.000)**											
Total Self Efficacy	124	64.2	62	32.1	7	3.6	5	2.6	73	38.2	113	59.2
X^2 and P value	**204.300(0.000)**											

Table (5): Shows a significant difference between pre and post interventions self-efficacy in all self-efficacy component and the total post knee joint replacement (P value = 0.000).

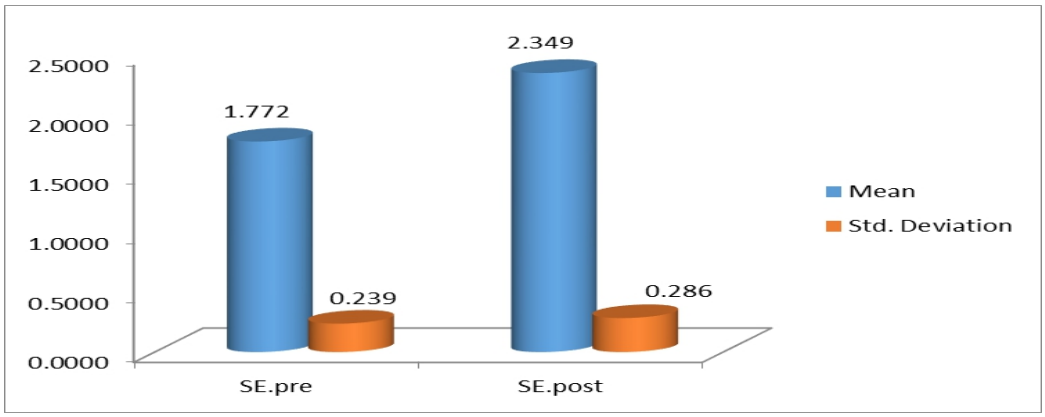

Figure (2): Difference between total mean score of the studied patients' self-efficacy post knee joint replacement pre and post intervention protocol implementation (N=193).

Figure (2): Shows the total mean score of self-efficacy post knee joint replacement of the studied sample pre 1.772±0.239 and improved to 2.349±0.286 post intervention protocol implementation.

Table (6): Relation between demographic data and total knowledge of studied patients pre and post intervention protocol implementation (N= 193).

Parameter	Pre		Post	
	F	p value	F	p value
Age	4.260	0.015	4.210	0.016
Gender	0.417	0.677	0.635	0.526
Educational level	242.285	0.000	173.718	0.000
Occupation	3.977	0.020	3.565	0.030
Marital status	10.594	0.000	8.690	0.000

Table (6): Shows a statistically significant relations between demographic data including (age, educational level and marital status) and total Knowledge of the studied patients' pre and post intervention protocol implementation.

Table (7): Relation between demographic data and total self- efficacy of the studied patients pre and post intervention protocol implementation (N= 193).

Parameter	Pre		Post	
	F	sig	F	sig
Age	0.173	0.501	0.607	0.790
Gender	0.227	0.820	0.807	0.421
Education	0.172	0.842	8.407	0.000
Occupation	0.584	0.559	1.868	0.157
Marital status	0.683	0.563	0.136	0.173

Table (7): Shows no statistically significant relations between demographic data and total self-efficacy of the studied patients' pre and post intervention. Except for the occupation which has a statistically significant difference.

Table (8): Correlation between total knowledge and total self-efficacy of studied patients post intervention protocol implementation (N= 193).

Parameters	total Self-efficacy post	
	r	P
total Knowledge post	0.004	0.952

Table (8): Illustrates that there was no correlation between total knowledge and total self-efficacy of the studied patients post intervention protocol implementation.

Discussion

Knee replacement surgery is a treatment for pain and disability in the knee. The most common condition that results in the need for knee replacement surgery is osteoarthritis which is characterized by the breakdown of joint cartilage. Damage to the cartilage and bones limits movement and may cause pain. People with severe degenerative joint disease may be unable to do normal activities that involve bending at the knee, such as walking or climbing stairs, because they are painful. Therefor if medical treatments are not satisfactory, knee replacement surgery may be an effective treatment **(Zelman, 2020).**

So the study aimed to determine the Effect of Implementing Intervention protocol on Self Efficacy of Patients' Post Knee Joint Replacement.

Concerning the knee replacement patients' demographic data, the current study reveals that less than half of the studied sample were aged ≥60 years, about half of them were females. This finding may be due to several factors including the higher incidence of knee osteoarthritis among females, as well as the longer life expectancy

experienced by females. Regarding the educational level, less than half had pre-university education, while more than half of them were working. Moreover, nearly two thirds of them were married. Regarding Educational level less than half were in secondary education. This may be due to conducting the study in governmental hospital with high percentage of low social class patients who aren't interested in education.

These results disagree with **Lewis, et al., (2014)** in a study about, Development of a Scale to Assess Performance Following Primary Total Knee Arthroplasty, conducted in the United States, Northern Ireland and Australia, they found that the participants ranged in age from 53 to 74 years, and more than one third had high educational level, while the results related to gender agreed with this study that reported half of the participants were females.

The previous results also were in the same line with **Lashgarizad, et al., (2018)** in a study about Investigating Knowledge of Patients Undergoing Total Knee Replacement, conducted in Iran, and indicated that (59.3%) was females, (89.3%) married and with sufficient income as well as (43%) had secondary education level and were illiterate.

Furthermore, the present study reveals that about half of patients included in the study were medically diagnosed as chronic osteoarthritis. This may be due to that the highest percentage of the patient under study was females who experience high percent of osteoarthritis. And near half of them were more than 60 years of age. This result was in accordance with **Center of Disease Control. (2010),** who reported that osteoarthritis (OA) of the knee is the most frequent disease among the middle age and older people.

American Academy of Orthopedic Surgeons (2016) reported that the majority of patients had partial knee replacement. Because the partial knee replacement is done through a smaller, less invasive incision, hospitalization is shorter, rehabilitation and return to the normal activities is faster. This is congruent with the current study that revealed that the majority of patients had previous partial knee replacement.

Considering the knowledge of patients' post Knee joint replacement, the present study illustrates that through preprogram intervention more than half of patients respectively had incorrect knowledge related to definition of knee joint replacement, causes, complications, investigation and treatment, which had Improved to more than two thirds respectively post program implementation, With a highly statistically significant difference between pre and post program implementation with a statistically significant difference in all items of patients' knowledge regarding knee joint replacement post intervention protocol implementation compared to pre intervention protocol whereas (P value = 0.000). This might be attributed to the fact that patients were anxious, fearful and often have many unanswered questions pre intervention.

The previous results disagree with the results of **Billon L., (2017**) in a study about Prospective Assessment of patients' knowledge and Informational Needs and of Surgeon-to-Patient Information Transfer Before and After Knee or Hip Arthroplasty in France, who found that levels of knowledge varied across items. From 63 patients, the expected benefits and potential risks and complications were known only in part by 59% and 67% of patients, respectively. The most often cited complication was deep vein thrombosis (39 patients), followed by infection (36 patients) and stiffness (13 patients).

While the previous results came in the same line in the same study of **Billon L., (2017)** with that there were changes in knowledge scores during management process during and after hospitalization as The mean overall knowledge score was significantly higher at discharge after education ($P < 0.0001$).

The current results explain that Related to the Difference Knowledge of Studied Sample regarding measures to be followed after knee joint replacement pre and post intervention (less than one third, one third, less than half, one third and less than one

third) respectively of studied sample only had correct knowledge related to mobility after surgery, The life span of the artificial joint and Causes of less efficient knee prostheses after several years of use preprogram implementation, reflecting poor knowledge about the care after surgery the results also reported a statistically significant difference in all items of patients' knowledge regarding the precautions that must follow post knee joint replacement post intervention protocol implementation compared to pre intervention protocol whereas (P value = 0.000). This finding may be due to patients' had satisfactory level of knowledge post intervention protocol and trust in the outcomes of the operation and that they will be improved and can carry out any physical activities.

This finding is supporting the research hypothesis. The previous results were in accordance with a study by

Cheung et al., (2013), who stated that 87% of participants realized that total joint replacement surgery could improve their mobility after surgery. Patients did not have a realistic idea regarding the survival of the prosthesis; 41% thought the prosthesis might last for less than 10 years and 34% had no idea about its longevity.

In addition, the current study results find that the total knowledge pre intervention protocol scored less than half for satisfactory knowledge and more than half for unsatisfactory, which improved post intervention.

This results agree with **Hamad et al. (2017)** in a study about Assessment of Community Knowledge Toward Joint Replacement Therapy in Jeddah City, and reported that the level of knowledge about joint replacement surgery was adequate in only 30.9% of subjects and insufficient knowledge was found among 69.1% of subjects.

The present study reveals that the mean score of the total knowledge pre intervention protocol was 19.70 with SD= 4.98, while the mean score of the total knowledge post intervention protocol was 23.15 with SD= 4.53. The previous results were in accordance with **Lashgarizad et al., (2018)** in a study about Assessment Knowledge of Patients Undergoing Total Knee Replacement in Iran, and found that the mean score of total knowledge was (2.09) with SD=0.28. This score was higher than the average score (2) of knowledge, which indicated that the level of knowledge was unacceptable and suggested that patients needed to receive more information.

The present study results show a significant difference in all items of patients' self-efficacy scale post knee joint replacement post intervention protocol implementation compared to pre intervention protocol whereas (P value = 0.000).

This finding is supporting the research hypothesis.

The current results are in the same line with the results of **Barker et al., (2018)** in a study about What Are their Expectations about Time of Recovery after Surgery and How Long before they can do the Tasks they want to do? in Oxford, and found that the participants who underwent a knee arthroplasty returned to the most 6 popular valued physical activities (walking >1km, stair climbing, housework, driving, gardening, kneeling), 8%-33% more quickly. They were satisfied with how they were performing these activities slightly, sooner on average (4%-18%). 13% of UKA and 30% of the TKA patients were not satisfied with their recovery.

The previous stated study results also corresponded to **Abdullah et al., (2018)** in a study of Quality of Life of Patients after Total Knee Arthroplasty at King Abdulaziz University Hospital, Jeddah, Saudi Arabia and reported that the mean score of the physical functioning was 58.4 and it was 59.4 for role limitations due to physical health.

The present study shows a statistically difference in mean of self-efficacy post knee joint replacement of the studied sample pre 1.772±0.239 and 2.349±0.286 post intervention protocol implementation. The finding concluded that joint replacement intervention protocol implementation

improved participants' perceived self efficacy to manage symptoms and performing the recommended actions. The previous results agree with **Taniguchi et al., (2020)** in their study about Comparison of Recovery of Mobility and Self-efficacy after Total knee Arthroplasty based on Two Different Protocols: A prospective cohort study, in Japan, which revealed significant differences in Modified-Gait Efficacy Scale (MGES) for self-efficacy between the two protocols. The adjusted means mGES in the 28-day protocol were significantly greater than those in the 5-day protocol in all the postoperative assessments.

The results of the present study show statistically significant relations between demographic data including (age, educational level and marital status) and total knowledge of the studied sample pre and post intervention protocol implementation. These results may be due to the ability of the educated patients even pre university level to read by themselves and get the educational booklet at any time, also, they can read any instruction available anywhere The present study results were in the same line with **Al-Mohrej et al., (2018)** in his study about Knowledge and Attitude towards Total Knee Arthroplasty among the Public in Saudi Arabia: a nationwide population-based study, who found that regarding associating scores with the baseline characteristics, female individuals scored significantly higher than males ($P < 0.001$) in their effect when asked the questions related to the four aspects of knowledge, pain management, risk factors, indications, and the prognosis of TKA. Likewise, married individuals had a significantly higher total score in comparison to unmarried individuals ($P < 0.001$). Both the educational attainment and the monthly income participants affected the results. As expected, the more educated individuals scored significantly higher than the less educated people ($P < 0.001$). Age had a positive impact on the total knowledge score [($P= 0.016$ with OR of 0.47 and 95%CI (0.25–0.87)].

As regard relation between demographic data and total self efficacy of the studied patients pre and post intervention protocol implementation Showed that there were not statistically significant relations between demographic data and total self-efficacy of the studied patients' pre and post intervention the only significant difference is for education level post intervention. all the other variables had insignificant difference as $p>0.05$.

The current results agree with **Mahmoud (2014)** who studied Effect of Educational Program on Compliance and Self Efficacy of Patients Undergoing Knee Replacement Operation who stated that Regarding the relation between patients' levels of education and self-efficacy post educational program, revealed that there were significant differences between educated patients (basic and high education) and illiterate regarding their self-efficacy with physical, social and psychological domains. This finding may be due to the difference in mentality between educated and illiterate patients which affect their trust in performing the recommended actions.

On summary, the results of this study support the hypothesis stating that, the educational program will have positive effect on self-efficacy of patients undergoing knee replacement operation.

Conclusion

- Implementing intervention protocol has positive effect on improving knowledge and self-efficacy of patients' post knee joint replacement.

Recommendations

- Replication of the current study on a larger probability sample is recommended to achieve generalization of the results and wider utilization of the designed intervention.
- Setup a training program for patients post knee joint replacement that aims to improve patients' self-care
- Establishment of interdisciplinary approach in the management of patients subjected to knee joint replacement.

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