

Quality of Life among Patients with Knee Replacement

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Abstract

Background: Knee Replacement (KR) results in improved pain symptoms and quality of life, therefore, is one of the most commonly performed orthopedic procedures. **The aim** of this study was to assess the quality of life among patients with knee replacement. **Research design:** A descriptive research design was utilized in this study. **Setting:** This study was conducted at Orthopedic Outpatient Clinic at Benha University Hospital in Benha City. **Sample:** A convenience sample of patients attended to previously mentioned setting; the total sample included 100 patients. **Two tools were used I):** A structured interviewing questionnaire which consists of three parts to assess **a):** Demographic characteristics of patients with knee replacement. **b):** Medical history of patients with knee replacement **2):** Knowledge of patients with knee replacement and **3):** Reported practices of patients with KR, **II):** Quality of life scale to assess the effect KR operation on quality of life among the patients. **Results:** 52 % of patients with KR aged from 50 years old or more with mean and standard deviation was 50.98 ± 16.55 , 64% of the patients had total knee replacement, 26% of the patients had good knowledge about KR, 58% of patients with KR had satisfactory total reported practices scores, and 72% of patients with knee replacement had good total quality of life score. **Conclusion:** More than one quarter of the patients with KR had good knowledge about KR operation, while more than half of them had satisfactory practices regarding KR and less than three quarters of patients with KR had a good total quality of life scores. **Recommendations:** Regular follow up for patient with KR to ensure effectiveness of operation, avoiding complication and revision of KR.

Key words: Knee replacement, Quality of life and patients

Introduction:

Knee replacement is a surgical procedure undertaken to replace the weight-bearing surfaces of the knee joint. KR can be performed as a partial, also called unicompartmental, which replaces only the damaged surfaces of the knee or a total KR which involves replacement of all three compartments of the knee, known as the medial compartment (inside aspect of the knee), the lateral compartment (outside of the knee), and the patellofemoral compartment

(the joint between the patella and the femur) (Lei et al., 2019).

Knee replacement has become a successful procedure for treating end stage OsteoArthritis (OA), with approximately 94-97% of knee replacements performed for primary or post-traumatic osteoarthritis because of its effectiveness in relieving pain, correcting deformities, and restoring function. KR is performed in patients who have degenerative changes with pain and

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limitation of function in the knee that has failed with conservative and non-operative measures. Other underlying diagnoses that may be treatable with a knee replacement include Rheumatoid Arthritis (RA), peri-articular fractures, or malignancy of the knee. The continued success of KR is due to improvement in surgical technique, bearing surfaces and implant design (Khalil et al., 2020).

The role of KR in improving Quality Of Life (QOL) is examined, with a view to assess "physical, mental and social wellbeing" of patients undergoing KR procedure. Pain and functional ability, perceptions of physical and mental health, and quality of life in a global sense, are increasingly used to assess the impact of knee replacement surgery. Improvements in pain and function following KR have been well established (Siviero et al., 2020).

Community Health Nurse (CHN) has an important role and clear responsibilities when dealing with patients with KR to prevent complication and enhance health status. CHN also plays a significant role in disseminating important health information by offering education and counseling about instructions after KR. CHN provides information about importance of physical therapy, regular follow up, taking medication regularly, exercises after KR to be used in combination with healthcare professionals and nutritional regimen. CHN provides ongoing support and encouragement for patients with KR to speed up the recovery process (Greengard & Dermott, 2020).

Aim of the study:

This study aimed to assess the quality of life among patients with knee replacement.

Research questions:

- 1- What is knee replacement patients' knowledge?
- 2- What are knee replacement patients' reported practices?
- 3- What is knee replacement patients' quality of life?

Subjects and Method

Research design:

A descriptive research design was utilized to conduct this study.

Setting:

This study was conducted at Orthopedic Outpatient Clinic at Benha University Hospital in Benha City because this place receives large attendance of patients with knee replacement.

Sample:

A convenience sample used in this study and involved patients with knee replacement at Orthopedic Outpatient Clinic at Benha University Hospital for four months with the following criteria.: Free from any communication problem, handicap and also accepted to participate on the study.

Tools for data collection:

Two tools were used to collect the data

Tool I: A structured interviewing questionnaire: It was developed by the investigator based on reviewing related literature. It was written in simple clear Arabic language and composed of three parts to assess the following:

First part a: It was concerned with demographic characteristics of patients with knee replacement involved in the study. It included 8 questions age, sex, marital status, level of education, occupation, residence, monthly income and type of family.

B: It was concerned with the medical history of patients with knee replacement, this part included 3 questions; duration of knee replacement operation, type of knee replacement operation, causes of performing knee replacement operation.

Second part: It was concerned with the knowledge of patients with knee replacement which included 8 questions.

Scoring system of the studied patients knowledge was adapted as following:

The scoring system of knowledge for patients with KR was calculated as follows two score for correct and complete answer, while one score for correct and incomplete answer, and don't know was scored zero. For each area of knowledge the score of items was summed-up and the total divided by the number of items giving the mean score for the part. These score were converted into a percent score.

The total knowledge score was considered good if the score of the total knowledge >75 % (12) point, while considered average if it equals 50-75 % (8-12) point and considered poor if it is <50% (8) point.

Third part: It was concerned with reported practices of patients with KR which included four sections that divided into **1) Nutrition** which included (9) items.

2) Exercise which included (3) items.

3) Compliance of medication and follow-up which included (4) items.

4) Precautions after operation of knee replacement which included (7) items.

Scoring system of the reported practices:

The scoring system is graded according to the items of questionnaire. The scoring

system for patients with KR reported practices was calculated as follows two score for always, while one score for sometimes and zero for never practicing. For each area of reported practice the score of items was summed-up and the total divided by the number of items giving the mean score for the part. These score were converted into a percent score

The total reported practices scores was considered satisfactory if the score of the total reported practice $\geq 60\%$ equal and more (14) point, while considered unsatisfactory if it is < 60% less (14) point.

Tool (II): Quality of life scale of patient with KR which a Short-Form 36 score adapted from (Batarfi et al., 2018). The scale was measured on a Likert type scale of (always, sometimes and never) which included three domains physical, psychological and social domain of patient with KR.

1- Physical domain which included (11) items.

2- Psychological domain which included (10) items

3- Social domain which included (7) items.

Scoring system of quality of Life adapted as following:

The scoring system is graded according to the items of questionnaire. The scoring system of quality of life for patients with knee replacement scale score was calculated as zero scores for always, one scores for sometimes and two scores for never. For each area of quality of life the score of items was summed-up and the total divided by the number of items giving the mean score for

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the part. These score were converted into apercent score.

The total quality of life score was considered good if the score >75% (42) points while considered average if its 50- 75% equal (28-42) points equals and considered poor if it <50% (28) points.

Content validity:

The tools validity was done by three of Faculty's Staff Nursing experts from the Community Health Nursing Specialties who reviewed the tool for clarity, relevance, comprehensiveness, and applicability and easiness for administration, implementation and according to their opinion minor modifications were required.

Reliability:

The reliability of tools was applied by the investigator for testing the internal consistency of the tools reliability was measured by using structured interviewing questionnaire. The reliability proved to be high based on the values of cronbach alpha co-efficients. The reliability for knowledge of patients with knee replacement was 0.59, the reliability for reported practice of patients with KR was 0.75 and the reliability for quality of life of patients with KR was 0.90.

Ethical considerations:

All ethical issues were assured, oral consent was being obtained from each patient before conducting the interview and given them a brief orientation to the purpose of the study. Patients with knee replacement were also reassured that all information gathered would be treated confidentially and used only for the purpose of the study. The patients had right to withdraw from the study at any time without giving any reasons. No names were required on the forms to ensure anonymity and confidentiality.

Pilot study

The pilot study was carried out on 10% (10) patients of the sample size, to test the tool clarity, time needed to fill each sheet and applicability of the study tool. Completing the sheet consumed about 30 minutes. No modifications were done, so the pilot study sample was included in the total sample.

Field work:

This study was conducted at Orthopedic Outpatient Clinic at Benha University Hospital in Benha City. The process of data collection was during 4 months started at the beginning of June 2020 to the end of Septemper 2020. The process of data collection was two days per week (Saturday and Thursday) from 9 am to 1 pm to collect data from patients with knee replacement. The average time needed for the sheet was around 30/minutes for each patient, the average number interviewed at the outpatient clinics were 3-5 KR patients/day depending on their responses of the interviewers.

Statistical analysis:

All data collected were organized, tabulated and analyzed by using the Statistical Package for Social Science (SPSS version 20), which was used frequencies and percentages for qualitative descriptive data and was used for quantitative data, spearmean correlation test (r) was used for correlation analysis and degree of significance was identified.

Associations between items were considered as the following:

(p value)

P. value > 0.05

Not significant

P. value < 0.05 Statistically Significant

P. value < 0.001 Highly statistically significant .

Results:

Table (1) Shows that; 52.0 % of patients with KR their age were 50 years or more with mean was 50.98 ± 16.55 , 64.0% of them were females and 58% of them were married. Regarding the level of education, 54.0 % of patients had university education or more, 38% of them were employee, while 62% of them lived in rural areas, and 56% of them had enough income/ month and 74% of them lived in nuclear family.

Table (2): Shows that; 78% of patients with KR had complete of correct answer regarding importance of KR operation, while 60% of them didn't know the types of KR operation.

Figure (1): Illustrates that; 38% of the patients with knee replacement had average total knowledge score regarding KR operation, and only 26% of them had good total knowledge score regarding KR operation.

Figure (2): Reveals that; 64% of patients with KR had satisfactory total reported practices scores regarding precautions, while 56% of them had unsatisfactory total

reported practices scores regarding nutritional practices.

Figure (3): Reveals that; 58% of patients with KR had satisfactory total reported practices scores after KR. And 42% of them had unsatisfactory total reported practices scores.

Figure (4): Reveals that; 72% of patients with knee replacement had good total quality of life score and only 8.0% of the patients had poor quality of life.

Table (3): Reveals that; there were statistically positive correlations between total knowledge, total practices score and total quality of life of the patients with knee replacement. There were statistically positive correlations between total quality of life of the patients with knee replacement and their total knowledge score.

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Table (1): Distribution of the studied patients with knee replacement regarding their demographic characteristics (n=100).

Demographic characteristics	No.	%
Age/year		
<30	12	12.0
30-	12	12.0
40-	24	24.0
50 -	52	52.0
Mean 50.98±16.55		
Sex		
Male	36	36.0
Female	64	64.0
Marital status		
Single	10	10.0
Married	58	58.0
Widowed	24	24.0
Divorced	8	8.0
Level of education		
Can't read and write	10	10.0
Read and write	10	10.0
Basic education	14	14.0
Secondary education	12	12.0
University education or more	54	54.0
Occupation		
Employee	38	38.0
Free business	12	12.0
Retired	14	14.0
House wife	32	32.0
Not working	4	4.0
Residence		
Urban	38	38.0
Rural	62	62.0
Monthly income		
Enough and saving	16	16.0
Enough	56	56.0
Not enough	28	28.0
Type of family		
Individual	2	2.0
Nuclear	74	74.0
Extended	24	24.0

Table (2): Distribution of the studied patients with knee replacement according to medical history (n=100).

Medical history	No.	%
Duration of KR operation		
<6months	26	26.0
6months- one year	34	34.0
One year and more	40	40.0
Types of KR operation		
Total knee replacement	64	64.0
Partial knee replacement	22	22.0
Kneecap replacement	8	8.0
Revision knee replacement	6	6.0
*Causes of performing KR operation		
Severe pain in the knee joint	76	76.0
Stiffness in the joint	40	40.0
Having difficulty walking	42	42.0
Inability to carry out the usual daily activities	26	26.0

Table (3): Distribution of the studied patients' knowledge regarding knee replacement (n=100).

Knowledge	Complete correct Answer		Incomplete of correct answer		Don't know	
	No.	%	No.	%	No.	%
Meaning of KR.	26	26.0	38	38.0	36	36.0
Causes that leads to KR operation.	28	28.0	34	34.0	38	38.0
Risk factors that leads to KR operation.	32	32.0	40	40.0	28	28.0
Types of KR operation.	22	22.0	18	18.0	60	60.0
Importance of KR operation.	78	78.0	8	8.0	14	14.0
Measures for diagnosis the need of KR operation.	28	28.0	40	40.0	32	32.0
Instructions after operation of KR.	46	46.0	32	32.0	22	22.0
Complications of KR.	38	38.0	46	46.0	16	16.0

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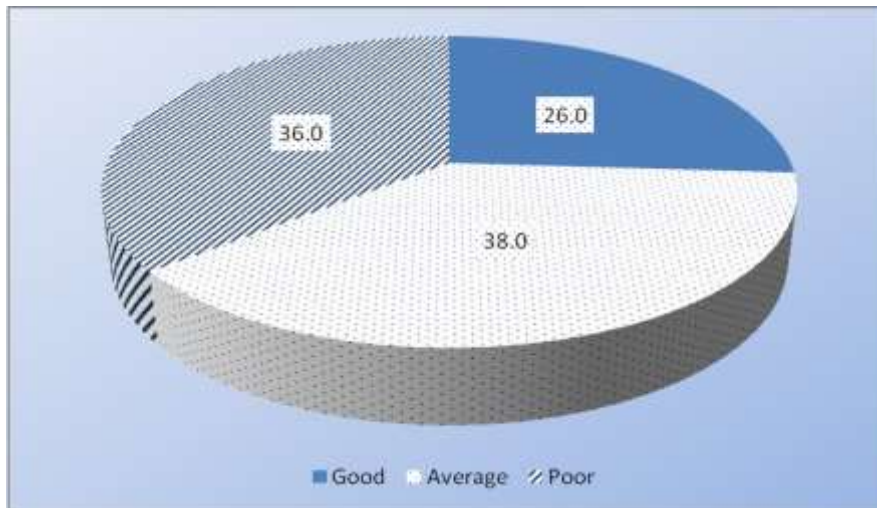


Figure (1): Percentage distribution of studied patient with knee replacement regarding their total knowledge score about knee replacement (n=100).

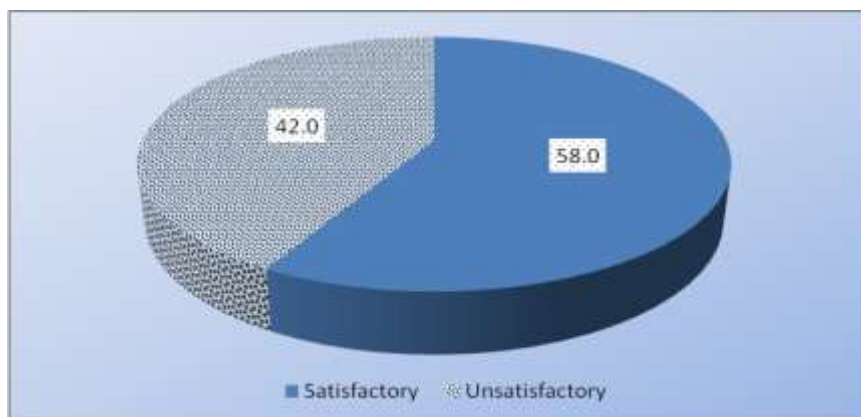


Figure (2): Percentage distribution of studied patients with knee replacement regarding their total reported practices scores regarding KR (n=100).

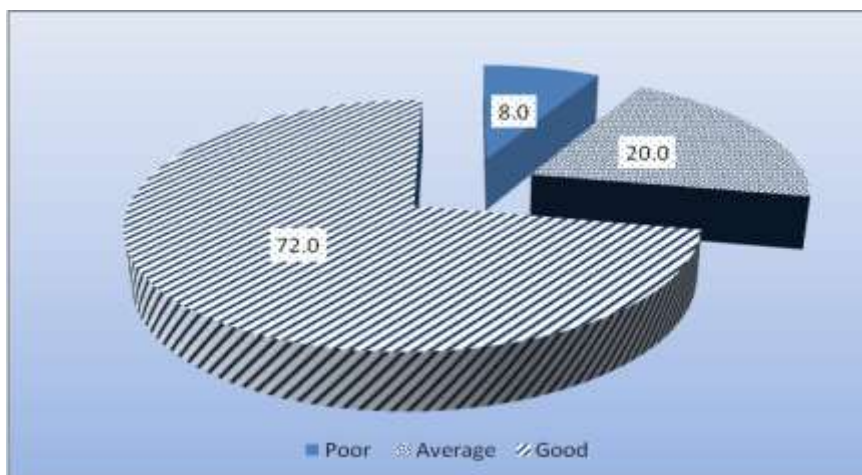


Figure (3): Percentage distribution of studied patients with knee replacement regarding their total quality of life domains scores (n=100).

Table (4): Correlation between studied patients with KR total knowledge scores, total reported practices scores and total quality of life scores (n=100).

		Total knowledge	Total practices	Total quality Of life
Total knowledge	R	1	0.266	0.392
	p-value		.007*	.000**
	N	100	100	100
Total practices	R	.266	1	0.152
	p-value	.007*		.130
	N	100	100	100
Total quality of life	R	0.392	0.152	1
	p-value	.000**	.130	
	N	100	100	100

Discussion:

According to demographic characteristic of the patients with KR, the finding of the present study showed that, about more than half of the patients with KR their age were from 50 years old or more with mean was 50.98 ± 16.55 and more than three fifths of the patients with KR were female. This might be due to the aging effect on the knee especially the hyaline cartilage that gives an extremely smooth surface for the knee function which more common in women than men. This finding agreed with **Michel et al. (2019)**, who conducted study on the "Knee replacement incidence and social deprivation, in France," (N=77), who reported that over 87% of patients with KR their age were 60 years old, and 62% of them were women.

Regarding medical history, the present study revealed that more than three quarters of the patients with KR performed knee replacement due to the feeling of severe pain in the knee joint. This might be due to pain that prevents them from participating in daily activities. People usually decide to undergo surgery when they feel they can no longer live with the pain. According to **Szabo (2018)**, who stated that one third of patients did KR because of unbearable pain.

The present study revealed that; more than one quarter of the patients with KR had correct and complete answer regarding the causes that leads to KR operation. This result agreed with **Cronström et al. (2020)**, who conducted study on the " On the waiting list for joint replacement for knee osteoarthritis: Are first-line treatment recommendations

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implemented, in Sweden", (N=229) who found that the 38% of the patients with KR know reasons of KR operation.

Regarding the total knowledge score of patients with KR the present study revealed that, only more than one third of the patients with KR had good total knowledge scores regarding KR operation. This might be due to decreased accessibility of health services in rural areas and they didn't see doctors unless there was problem. This result supported by **Mohrej et al. (201[^])**, who conducted study on the "Knowledge and attitude towards total knee arthroplasty among the public, in Saudi Arabia", (N=1540) who found that the studied sample knowledge was adequate in only 29.1%.

Regarding total reported practices items scores regarding knee replacement, the present study revealed that, more than three fifths of patients with KR had satisfactory total reported practices scores regarding precautions after KR. This might be due to that patients follow instructions of medical team to gain the functions of the knee rapidly and to avoid complications.

Regarding total quality of life score of the patients with KR the present study revealed that; less than three quarters of patients with KR had good quality of life scores. This finding agreed with **Lan et al. (2020)**, who conducted study on the "How we are measuring cost-effectiveness in total joint arthroplasty studies, in USA", (N=140), who reported that patients with KR had significantly good health-related quality of life than the general population. This finding also agreed with **Leem et al. (2019)**, who reported that 60.7% of studied sample had a good quality of life.

Regarding correlation between patient's total knowledge and total reported practices score with KR operation and their total quality of life score this study revealed that; there were statistically positive correlations between total knowledge, total practices score and total quality of life of the patients with KR. These findings might be due to knowledge play important role for a change of behavior leading to change of practices and affect on the quality of life. As when the patients have good and enough knowledge the patients will know everything about KR operation and perform good practice as taking medication, regularly follow up and following precautions to avoid complication after operation then patient will notice improvement in quality of life and will be satisfied.

Conclusions

More than one quarter of the patients with KR had good knowledge about KR operation, while more than half of them had satisfactory practices regarding KR and less than three quarters of patients with KR had a good total quality of life scores. There were statistically positive correlations between total knowledge, total practices score and total quality of life of the patients with knee replacement.

Recommendations

1- Health educational program should be developed and implemented for patients with KR to improve, and update them with the most current information about the operation and practices regarding KR operation to enhance their quality of life.

2- Regular follow up for patient with KR to ensure effectiveness of operation, avoiding complication and revision of KR.

3- Further studied need to be focusing on improving quality of life among patients with KR.

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جودة حياة مرضي استبدال مفصل الركبة

اماني عصمت عبدالحفيظ - هويدا صادق عبدالحميد- سماح سعيد صبري- تيسير حميدو ابوسريع

تعد عملية استبدال الركبة واحدة من أكثر العمليات الجراحية فعالية من حيث التكلفة والأكثر نجاحًا في جراحة العظام حيث ان المريض يتحسن بشكل كبير فيما يتعلق بتخفيف الآلام ، والاستعادة الوظيفية ، وتحسين جودة الحياة، لذلك هدفت هذه الدراسة الي تقييم جودة حياة مرضي استبدال مفصل الركبة، وقد تم إجراء هذه الدراسة في العيادة الخارجية للعظام في مستشفى بنها الجامعي في مدينة بنها على ١٠٠ مريض . حيث كشفت النتائج عن وجود علاقة ذات دلالة إحصائية بين الخصائص الديموغرافية لمرضى استبدال مفصل الركبة ومعلوماتهم عن استبدال مفصل الركبة وكانت هناك ارتباطات إيجابية إحصائية بين معلومات وممارسات المرضى وجودة حياتهم بعد عملية استبدال مفصل الركبة. لذلك اوصت الدراسة بضرورة وضع برنامج تثقيف صحي لتحسين معلومات وممارسات وجودة الحياة لمرضى استبدال مفصل الركبة والمتابعة المنتظمة لمرضى استبدال مفصل الركبة لضمان فعالية العملية وتجنب المضاعفات والحاجة الي عملية اخري.