Effect of Continuous Care Model on Healthy Lifestyle among Patients Post Total Knee Arthroplasty

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Abstract:

Backdrop: A continuous care model is beneficial in enhancing healthy lifestyle and self-care practices for patients post total knee arthroplasty. **Aim:** This study was designed to evaluate the effect of the continuous care model on healthy lifestyle among patients post total knee arthroplasty. **Research design:** A quasi-experimental design was carried out in this research. **Setting:** This study was implemented at Orthopedic Out patient Clinic at Benha Health Insurance Hospital and the studied patients` homes. **Sample:** A purposive sample of 64 patients post total knee arthroplasty was included in this study. **Tools for data collection:** Three tools were applied, **I:** A structured interview questionnaire which covered socio demographic characteristics of the patients, medical history, and knowledge regarding total knee arthroplasty, **II:** Healthy lifestyle post total knee arthroplasty and **III:** Quality of life scale of patients post total knee arthroplasty. **Results:** 20.3% of the studied patients had good knowledge level regarding total knee arthroplasty pre continuous care model implementation which raised to 76.6% post continuous care model implementation, 29.7% of the studied patients had satisfactory level regarding total healthy lifestyle post total knee arthroplasty pre continuous care model implementation which enhanced to 79.7% post continuous care model implementation, and 28.1% of the studied patients had good level of total quality of life post total knee arthroplasty pre continuous care model implementation which improved to 76.6% post continuous care model implementation. **Conclusion:** The continuous care model had a positive outcome in enhancing knowledge, promoting healthy lifestyle and quality of life of patients post total knee arthroplasty. **Recommendations:** Continuous care model needed to be incorporated into routine postoperative protocols for total knee arthroplasty patients to motivate long-lasting improvements in patients' lifestyle and quality of life.

Keywords: Continuous Care Model, Healthy Lifestyle, Patients, Post Total Knee Arthroplasty

Introduction:

Total Knee Arthroplasty (TKA) is a widespread operation for end-stage Knee Osteo Arthritis (KOA), that has demonstrated notable advances in function and Quality of Life (QoL). KOA is a common persistent joint degeneration, which clinically is marked by limited mobility, resulting in considerable morbidity and disability. In 2020, around 317 million individuals globally were affected by KOA, with forecasts indicating a 74.9% rise in prevalence by 2050, eventually affecting 642 million people **(Almatari et al., 2025; Chen et al., 2025).**

Total knee arthroplasty is a commonly recommended surgical technique with a long recovery period for sever pain and impairment and when nonsurgical treatment is unsuccessful. TKA entails a total substitution of surfaces of the joints, certainly the femoral condyles and tibial plateau, of the knee joint with soft metal components and highly cross-linked polyethylene plastic **(Drainville, 2025; Güllü & Tosun, 2024).**

Total knee arthroplasty is more commonly demonstrated on adults, particularly those over 55. Despite being one

of the procedures with the highest patients` satisfaction rates, TKA surgery has a 1.65% to 11.3% chance of developing complications. Delays in wound healing, infection, injury to the peroneal nerve, stress fractures of the patella, femur, and tibia, instability of the prosthesis, subluxation and dislocation are some of these complications **(Durmaz & Kural, 2022).**

An essential aspect in the rehabilitation plan of patients post total knee arthroplasty is lifestyle adjustments programs, that consist of a mix of education, exercise, and diet. Despite tremendous progress in the field of TKA, standardized lifestyle modification programs post TKA are still unavailable. Patients post TKA should be alerted to the negative traits associated with an unhealthy lifestyle and the benefits of maintaining a healthy lifestyle. Lifestyle modification programs reinforce exercises for at least 60 minutes on a regular basis and healthy and balanced diet with low-calorie. A preliminary assessment is required to assess the physical activity level that each patient is currently experiencing. Also, patients post TKA should maintain regular follow up **(Sadiq et al., 2025).**

Continuous Care Model (CCM) usually pertains to the smooth transfer of care from hospitals to the patient's home using a variety of strategies, including home visits, specialized outpatient services, digital platforms, and telephone follow-ups. CCM seeks to build an efficient, interactive, and ongoing relationship among the patients and the nurse as a healthcare provider. CCM effectively reacts to patients' adjusting needs post TKA while improving patients` self-care capacity. Evidence has proven that the CCM has been shown to guarantee patient safety, adopt healthy lifestyle and considerably enhance quality of life in a variety of medical specialties **(Dai et al., 2025; Savcı & Bilik, 2023).**

Community Health Nurses (CHNs) provide continuity of care within the continuous care model to help patients post TKA to adjust to everyday life by evaluating patients' level of commitment. CHNs explain necessary postoperative activity restrictions, teach patients how to change positions, perform moving techniques and reinforce on postoperative exercises specific to the affected knee joint which are more effective in the postoperative period **(Abozead et al., 2022).**

Community health nurses should assess the needs of the patients post TKA and share with patients what to anticipate throughout the hospitalization and recovery process, that will facilitate the patients' quick and safe recovery. CHNs should instruct patients about ways of controlling postoperative pain, the importance of starting mobilization and following instructions to avoid complications post operation. Also, the education of the patients post TKA includes treatment options to achieve the best possible surgical outcomes, a healthy balanced diet and the importance of regular follow-up which help in enhancing healthy lifestyle of patients and improving the quality of life **(Ibraheem et al., 2023; Franzoni et al., 2023).**

Significance of the study

Patients suffering from severe osteoarthritis can benefit from total knee arthroplasty in terms of improved function and pain alleviation. Globally, 78.4 million individuals are expected to suffer from arthritis, with a lifelong rate of symptomatic knee arthritis anticipated at 44.7% by 2040, and the demand for TKA will continue to increase by 2030. In Egypt, approximately 5.5 million patients, accounts about 7% of the population suffer from osteoarthritis. TKA

became the second most prevalent surgery carried out globally in 2018, with a 134 percent expansion from 2005 **(Abdelall et al., 2024; Shalash & Zedan, 2023).**

In recent years, with the rapid progress of postoperative rehabilitation, the hospital stays following TKA have been reduced to three–five days, with an increasing trend for hospital discharge in the same day of surgery. The surgical success does not signify the end of treatment, as patients still require intensive postoperative rehabilitation to achieve functional recovery, therefore CCM is crucial for patients post TKA for increasing knowledge, maintaining knee function and adopting healthy lifestyle to improve quality of life **(Dai et al., 2025).**

Aim of the study:

Was to evaluate the effect of the continuous care model on healthy lifestyle among patients post total knee arthroplasty.

Research hypothesis

A continuous care model will increase knowledge, improve healthy lifestyle, and quality of life of patients post total knee arthroplasty.

Subjects and Method:

Research design:

This research employed a quasi-experimental design utilizing a one-group pre/post-test method.

Setting:

The research was implemented at Orthopedic Outpatient Clinic at Benha Health Insurance Hospital, Benha City, Egypt, and followed by home visits for studied patients.

Sampling:

Purposive sample of patients from the previously mentioned settings for 6 months, based on the following criteria: From two weeks to three months post total knee arthroplasty, and ability of patients to communicate. The total sample included 64 patients.

Tools of data collection: Three tools were applied:

Tool (I): Patients' structured interview questionnaire: Created by the researchers, and covered three parts:

Part I: Socio-demographic characteristics of the patients under study, covered age, sex, educational level, marital status, occupation, residence, and monthly income.

Part II: Concerned with patient's medical history which included 7 questions (When TKA had undergone, causes of TKA, wound healing, current complaint, suffering from chronic diseases, types of chronic disease and smoking).

Part III: Knowledge regarding total knee arthroplasty guided by **AbdElhafeez et al., (2022).** This part includes 7 questions to assess patients' knowledge regarding TKA (Meaning, types, purposes, risk factors, causes of knee disease, diagnosis and complications post TKA).

Knowledge scoring system: The calculation was as follows 2 scores for correct and complete answer, 1 score for correct and incomplete answer, while 0 score for don't know. The sum of questions showed the total score = 14 points.

Three levels were created from the total of all the questions' scores as follows:

Good: When the total score was ≥ 75% (≥10 points).

Average: The total score was between 50% -<75% (7-<10 points).

Poor: When the total score was <50% (<7 points).

Tool (II): Healthy lifestyle post total knee arthroplasty which guided by **Wu et al., (2024); Murakami et al., (2024); Mutsuzaki et al., (2017); Germano et al., (2024); Knee**

Replacement Patient Handbook, (2019), and involved 65 items regarding **nutrition** (10 items), **physical activity** (5 items), **treatment &follow up** (5 items), **sleep &rest** (4 items), **prevention of wound infection** (8 items), **reducing pain& swelling** (5 items), **range of motion exercises for lower extremities** (17 items), and **practices to reduce physical efforts and promote safety** which involved (prevention of falling (3 items), ascending and descending stairs in correct way (3 items), use body mechanics during carrying objects (2 items and toilet use (3 items)).

Healthy lifestyle scoring system: Was calculated as follows 1 score for done and 0 for not done. The total healthy lifestyle score = 65 points.

- Satisfactory if the total score was ≥60% (≥39 points).
- Unsatisfactory if it was <60% (<39 points).

Tool (III): Concerned with QoL of studied patients post total knee arthroplasty which adapted from **Batarfi et al., (2018),** and divided into 3 domains and contained 22 items concerning physical status (9 items), psychological status (8 items) and social status (5 items).

QoL scoring system: Was calculated as 2 scores for always, 1 score for sometimes and 0 score for never. The total QoL score= 44 points.

- **Good QoL**: If the total score was ≥ 75% (≥ 33 points).
- **Average QoL**: If the total score was 50- <75 % (22- <33 points).
- **Poor QoL**: If the total score was < 50% (<22 points).

Tools' Validity:

Five community health nursing specialists evaluated tools to verify the information's accuracy and make sure it was suitable, applicable, and comprehensive.

Tools' Reliability:

The tools` reliability was determined by Cronbach's Alpha coefficient test which guaranteed that the tools showed high reliability with included homogenous items. The internal consistency was shown by the knowledge questionnaire was 0.87, the healthy lifestyle was 0.89, and the QoL was 0.90.

Pilot Study:

A pilot study was done throughout two weeks and six patients (10%) of the study group were involved in the pilot. A pilot study was employed to guarantee that the research tools were applicable and easy to comprehend. In addition, for identifying any challenges or problems that the researchers may encounter during data collection. Patients who completed the pilot were also included because no changes were made.

Ethical consideration:

The study was authorized by the Scientific Research Ethical Committee of Benha Nursing Faculty with code **(REC.CHN. P.60)**. The researchers gave each patient a summary of the study's goals to get their informed consent to participate. Additionally, they stated that they were free to depart the study at any moment. The researchers also told the participants that all information was utilized only for study.

Continuous Care Model Implementation:

The implementation of CCM lasted six months, from the start of December 2024 to the end of May 2025. The CCM was carried out by means of 4 phases: Orientation, sensitization, control, and evaluation phase.

I: Orientation stage:

The orientation stage represented the initial stage of implementing the continuous care model for patients post total knee arthroplasty and carried out at Orthopedic Outpatient Clinic in Benha Model Hospital for Health Insurance where patients returned for

their routine post-operative follow-up visits. The researchers attended the Outpatient Clinic 2 days/week (Monday, and Wednesday) from 9:00 a.m. to 1:00 p.m. The researchers interviewed 3-4 patients/ day. In this stage, the researchers introduced themselves to the patients, provided a clear explanation of the study and its purpose, explained the importance and stages of the model, established trusting relationships with patients and their caregivers, assessed the needs of patients, showed means of communication, and clarified the needed home visits schedules to complete carrying out the CCM. Oral consent was obtained from patients who expressed interest in participating in the study. Researchers asked for contact information (home address and phone number) of studied patients. At the end of the orientation session, data collection tools for pretest were filled out in about 30-40 minutes.

II: Sensitization stage:

In this stage, the researchers sensitized the patients to be involved in continuous care and to participate in prioritizing their needs. In this stage, individualized objectives of the CCM were designed based on the assessment data and relevant literature. The content of the educational sessions and teaching methods and media were tailored to suit the cognitive and educational level of the studied patients.

The researchers prioritized the needs of the studied patients, and developed the following objectives:

General objective of the CCM:

The general objective of the continuous care model was to increase knowledge, improve healthy lifestyle, and quality of life of patients post total knee arthroplasty.

Specific objectives of the CCM:

After implementation of the continuous care model, the studied patients should be able to:

A: Knowledge objectives

- State meaning of TKA.
- Classify types of KA
- Enumerate purposes of TKA.
- Recognize risk factors and causes of knee diseases.
- Describe methods of diagnosis performed pre TKA.
- Identify complications post TKA.

B: Healthy lifestyle skills

- Implement healthy nutritional practices.
- Carry out prescribed physical activity
- Maintain treatment & follow up
- Promote sleep & rest
- Apply precaution for preventing wound infection
- Implement appropriate methods for reducing pain & swelling
- Apply the range of motion exercises for lower extremities.
- Apply prevention of falling measures.
- Demonstrate how to ascend and descend stairs in correct way.
- Use body mechanics during carrying objects.
- How to use toilet postoperative of TKA.
- Explain how patients improve their quality of life.

III: Control stage:

In this stage, the planned educational sessions were delivered to patients post TKA. The CCM included seven scheduled sessions (2 theoretical and 5 practical), and each session lasted between 30 and 45 minutes. The researchers implemented the CCM in patients` homes throughout 3 days/week (Saturday, Sunday and Thursday) from 9:00 a.m. to 3:00 p.m. The researchers interviewed 4-5 patients/ day. Used educational methods included lectures, interactive discussions, role play and step-by-step demonstrations & re-demonstration. Power point, printed booklets, colored posters and educational videos were used as educational media. Educational

booklets were provided to the studied patients at the end of the first session. The new session began with a brief review of the prior one, and as a result, the addressed educational content was thoroughly clarified and re-discussed. The following sessions were provided for the studied patients.

Theoretical sessions (2 sessions)

- **The first session:** Included a clarification of the meaning of TKA, types of KA and purposes of TKA.
- **The second session:** Involved risk factors, causes of knee diseases, diagnosis, and complications of TKA.

Lifestyle sessions (5 sessions)

- **The first session:** Involved healthy nutritional practices, physical activity, and treatment & follow up.
- **The second session:** Involved measures to promote sleep & rest, preventing wound infection and methods for reducing pain & swelling.
- **The third session:** Included demonstration of the range of motion exercises for lower extremities (hip, knee, ankle and toes exercises).
- **The fourth session:** Involved how to prevent falls post TKA, correct way to ascend and descend stairs, how to use body mechanics to carry objects and how to use toilet post TKA.
- **The fifth session:** Included how patients improve their quality of life.

IV: Evaluation stage:

In the final stage, the effectiveness of the CCM was evaluated after completing the control stage through posttest by using the same pretest tools to evaluate changes in studied patients` knowledge, healthy lifestyle and quality of life post total knee arthroplasty.

Statistical analysis:

Prior to entering the computer, the data was checked. This was achieved by using the Statistical Package for Social Sciences (SPSS) version 28 to tabulate the data once it has been analyzed. The mean, standard deviation, frequency, and percentages were among the descriptive statistics that were employed. The Spearman correlation test (r) was applied to establish the relationship between the total knowledge score, healthy lifestyle and quality of life, while to ascertain how the numbers and percentages were distributed, chi square was employed. P values were regarded as highly significant whenever p value equals and less than 0.001, significant when value equals or less 0.05 and in significant when p value was above 0.05.

Results:

Table (1) presents that; 50.0% of the studied patients aged from 50 years and more with mean age was 59.375±4.484 years, 64.1% of them were females, 48.4% of them had secondary education and 82.8% of them were married. In addition, 54.7% of studied patients were working, 59.4% of them lived in rural areas and 60.9% of them didn't have enough monthly income.

Table (2) indicates that; 71.9 % of the studied patients undergoing TKA since less than 1 month, 75.0% of them performed TKA due to osteoarthritis and 79.7% of them had complete wound healing. Furthermore, 48.4% of studied patients suffered from stiffness. Also, 57.8% of studied patients suffered from chronic diseases and 43.2% of those had diabetes mellitus. 85.9% of studied patients didn't smoke.

Table (3) indicates that all items pertaining to the patients' knowledge of total knee arthroplasty before and after the

continuous care model was implemented showed highly statistically significant differences.

According to **Figure (1)**, 20.3% of the patients under study had good total knowledge level concerning total knee arthroplasty prior to the continuous care model implementation, and this percentage was raised to 76.6% after continuous care model. While 56.3% of studied patients had poor total knowledge level pre continuous care model implementation and reduced to 7.8% post continuous care model implementation.

Table (4) represents that all items corresponding to the studied patients` subtotal healthy lifestyle dimensions showed statistically significant differences pre and post the application of the continuous care model.

Table (5) clarifies that; there were highly statistically significant differences in all items of the studied patients` range of motion exercises of lower extremities pre and post continuous care model implementation.

Table (6) demonstrates that all items pertaining to the studied patients` healthy lifestyle regarding practices for reducing physical efforts and promoting safety after total knee arthroplasty showed statistically significant differences pre and post the continuous care model was implemented.

Figure (2) reflects that; before implementing the continuous care model, 29.7% of the studied patients post total knee arthroplasty had satisfactory level of total healthy lifestyle which improved to 79.9% post continuous care model.

Table (7) reveals that all items concerning the studied patients` subtotal quality of life dimensions after total knee arthroplasty showed highly statistically significant differences before and after the application of the continuous care model.

Figure (3) discloses that 28.1% of the studied patients had good level of total quality of life post total knee arthroplasty pre continuous care model implementation which improved to 76.6% post continuous care model implementation. While 53.1% of the patients studied had poor level of total quality of life pre continuous care model implementation which decreased to 18.8% post continuous care model implementation.

According to **table (8),** there were highly positive statistically significant correlations between the studied patients` total knowledge, healthy lifestyle, and quality of life score concerning total knee arthroplasty prior to and following continuous care model implementation.

Table (1): Distribution of the studied patients regarding their socio demographic characteristics (n=64).

Socio-demographic characteristics	No.	%
Age / years		
40-	4	6.2
50-	32	50.0
60+	28	43.8
$\bar{x} \pm$S.D 59.375±4.484		
Sex		
Male	23	35.9
Female	41	64.1
Educational level		
Cannot read and write	4	6.2
Basic education	20	31.3
Secondary education	31	48.4
University education	9	14.1
Marital status		
Married	53	82.8
Widowed	11	17.2
Occupation		
Working	35	54.7
Not working	29	45.3
Residence		
Urban	26	40.6
Rural	38	59.4
Monthly income		
Enough and save	8	12.5
Just enough	17	26.6
Not enough	39	60.9

Table (2): Distribution of the studied patients regarding their medical history (n=64).

Medical history	No.	%
When TKA had undergone		
≤1 month	46	71.9
2 months	16	25.0
3 months	2	3.1
Causes of TKA		
Osteoarthritis	48	75.0
Rheumatoid arthritis	11	17.2
Tumor	1	1.6
Fracture	4	6.2
Has the wound completely healed?		
Yes	51	79.7
No	13	20.3
***Current complaint**		
Pain	13	20. 3
Fever	3	4.7
Stiffness	31	48.4
Swelling	13	20. 3
Grinding sensation during movement	2	3.1
No complaint	17	26.6
Suffering from chronic diseases		
Yes	37	57.8
No	27	42.2
***Chronic diseases (n=37)**		
Diabetes mellitus	16	43.2
Hypertension	10	27.0
Cardiac disease	6	16.2
Liver disease	9	24.3
Smoking		
Yes	9	14.1
No	55	85.9

***Answers not mutually exclusive**

Table (3): Distribution of the studied patients` knowledge regarding total knee arthroplasty pre and post continuous care model implementation (n=64).

Knowledge regarding knee arthroplasty	Pre-continuous care model implementation						Post-continuous care model implementation						X^2 p-value
	Complete & correct answer		Incomplete & correct answer		Don't know		Complete& correct answer		Incomplete & correct answer		Don't know		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Meaning	14	21.9	23	35.9	27	42.2	51	79.7	9	14.1	4	6.3	44.251 <0.001**
Types	12	18.8	25	39.1	27	42.2	49	76.6	11	17.2	4	6.3	44.952 <0.001**
Purposes	17	26.6	34	53.1	13	20.3	52	81.3	12	18.8	0	0.0	41.275 <0.001**
Risk factors of knee diseases	10	15.6	33	51.6	21	32.8	50	78.1	10	15.6	4	6.3	50.529 <0.001**
Causes of knee diseases	12	18.8	31	48.4	21	32.8	50	78.1	9	14.1	5	7.8	45.236 <0.001**
Diagnosis	13	20.3	27	42.2	24	37.5	47	73.4	8	12.5	9	14.1	36.399 <0.001**
Complications	8	12.5	28	43.8	28	43.8	45	70.3	8	12.5	11	17.2	70.888 <0.001**

(**) highly statistically significant at (p<0.001)

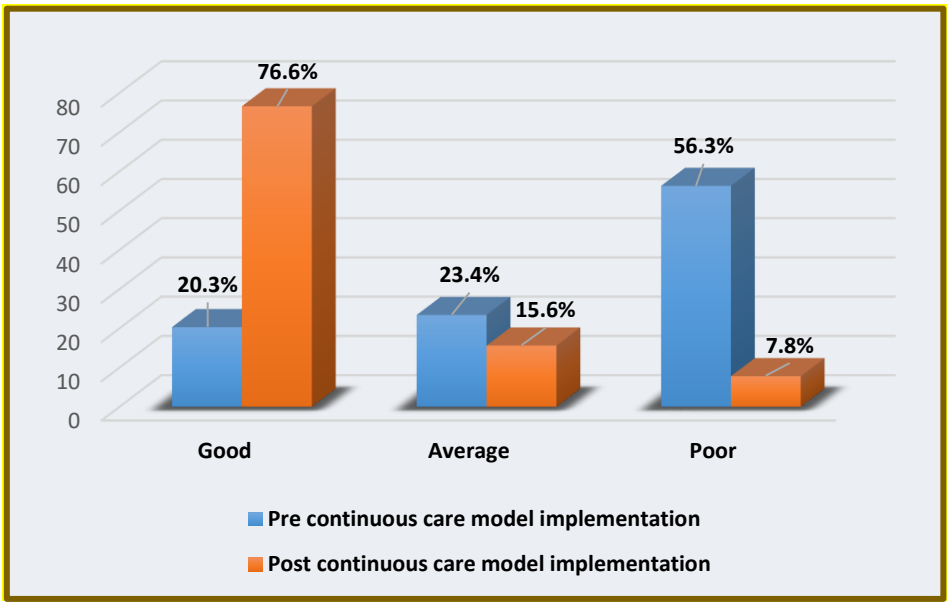

Figure (1): Percentage distribution of the studied patients` total knowledge level regarding total knee arthroplasty pre and post continuous care model implementation (n=64).

Table (4): Distribution of the studied patients` subtotal healthy lifestyle dimensions post total knee arthroplasty pre and post continuous care model implementation (n=64).

Subtotal healthy lifestyle dimensions	Pre- continuous care model implementation				Post- continuous care model implementation				X^2	p-value
	Satisfactory ≥ 60%		Un-satisfactory < 60%		Satisfactory ≥ 60%		Un-satisfactory < 60%			
	No.	%	No.	%	No.	%	No.	%		
Nutrition	22	34.4	42	65.6	51	79.7	13	20.3	26.811	<0.001**
Physical activity	19	29.7	45	70.3	48	75.0	16	25.0	26.339	<0.001**
Treatment &follow up	30	46.9	34	53.1	61	95.3	3	4.7	36.533	<0.001**
Sleep & rest	29	45.3	35	54.7	56	87.5	8	12.5	31.270	<0.001**
Prevention of wound infection **(n=13)**	4	30.8	9	69.2	11	84.6	2	15.4	7.721	<0.005*
Reducing pain and swelling **(n=13)**	2	15.4	11	84.6	13	100.0	0	0.0	19.067	<0.001**

(**) highly statistically significant at (p<0.001) **(*) statistically significant at (p<0.005)**

Table (5): Distribution of the studied patients` healthy lifestyle regarding range of motion exercises for lower extremities pre and post continuous care model implementation (n=64).

Healthy lifestyle regarding range of motion exercises	Pre- continuous care model implementation				Post- continuous care model implementation				X^2	p-value
	Satisfactory ≥ 60%		Un-satisfactory < 60%		Satisfactory ≥ 60%		Un-satisfactory < 60%			
	No.	%	No.	%	No.	%	No.	%		
Hip exercises	10	15.6	54	84.4	49	76.6	15	23.4	47.823	<0.001**
Knee exercises	14	21.9	50	78.1	55	85.9	9	14.1	52.854	<0.001**
Ankle exercises	11	17.2	53	82.8	51	79.7	13	20.3	50.049	<0.001**
Toes exercises	8	12.5	56	87.5	49	76.6	15	23.4	51.491	<0.001**

**** Highly statistically significant at (p<0.001)**

Table (6): Distribution of the studied patients` healthy lifestyle concerning practices for reducing physical efforts and promoting safety post total knee arthroplasty pre and post continuous care model implementation (n=64).

Healthy lifestyle concerning practices for reducing physical efforts and promoting safety	Pre- continuous care model implementation				Post- continuous care model implementation				X^2	p-value
	Satisfactory ≥ 60%		Un-satisfactory < 60%		Satisfactory ≥ 60%		Un-satisfactory < 60%			
	No.	%	No.	%	No.	%	No.	%		
Prevention of falling	26	40.6	38	59.4	55	85.9	9	14.1	28.276	<0.001**
Ascending and descending stairs in correct way	39	60.9	25	39.1	62	96.9	2	3.1	24.830	<0.001**
Use body mechanics during carrying objects	46	71.9	18	28.1	64	100.0	0	0.0	20.945	<0.001**
Toilet use	42	65.6	22	34.4	52	81.3	12	18.8	4.005	<0.005*

(**) highly statistically significant at (p<0.001) **(*) statistically significant at (p<0.005)**

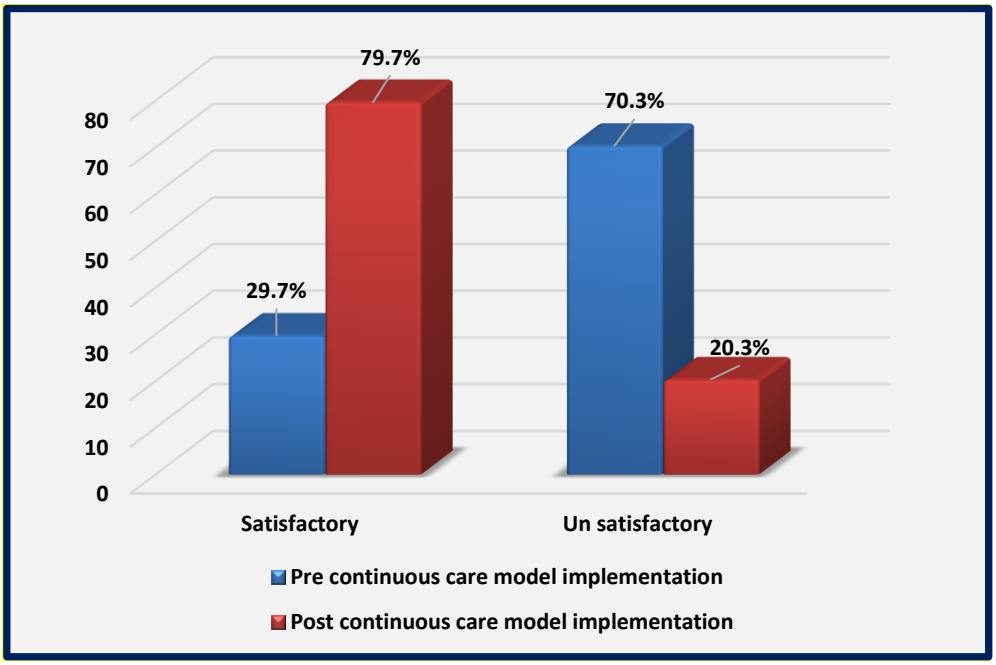

Figure (2): Percentage distribution of the studied patients` total healthy lifestyle post total knee arthroplasty pre and post continuous care model implementation (n=64).

Table (7): Distribution of the studied patients` subtotal quality of life dimensions post total knee arthroplasty pre and post continuous care model implementation (n=64).

Subtotal quality of life dimensions	Pre- continuous care model implementation						Post- continuous care model implementation						X^2 p-value
	Good		Average		Poor		Good		Average		Poor		
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Physical status	19	29.7	28	43.8	17	26.6	50	78.1	9	14.1	5	7.8	30.230 <0.001**
Psychological status	24	37.5	21	32.8	19	29.7	49	76.6	9	14.1	6	9.4	20.122 <0.001**
Social status	11	17.2	19	29.7	34	53.1	39	60.9	13	20.3	12	18.8	27.327 <0.001**

(**) highly statistically significant at (p<0.001)

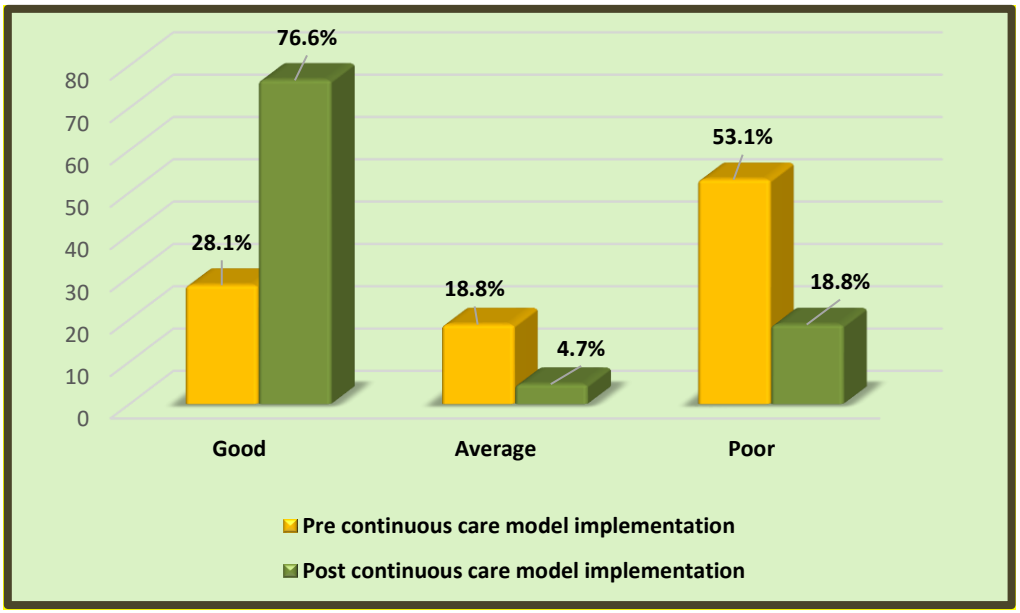

Figure (3): Percentage distribution of the studied patients` total quality of life post total knee arthroplasty pre and post continuous care model implementation (n=64).

Table (8): Correlation matrix between studied patients` total knowledge scores, total healthy lifestyle scores and total quality of life scores regarding total knee arthroplasty pre and post continuous care model implementation (n=64).

Phases	Total		Knowledge	Healthy lifestyle	Quality of life
Pre continuous care model implementation	Knowledge	r	1	.791	.768
		P	----	.000**	.000**
	Healthy lifestyle	r	.791	1	.917
		P	.000**	----	.000**
	Quality of life	r	.768	.917	1
		P	.000**	.000**	----
Post continuous care model implementation	Knowledge	r	1	.927	.899
		P	----	.000**	.000**
	Healthy lifestyle	r	.927	1	.968
		P	.000**	----	.000**
	Quality of life	r	.899	.968	1
		P	.000**	.000**	----

(**) highly statistically significant at (p<0.001)

Discussion:

Total knee arthroplasty is one of the greatest effective therapies to control knee joint pain and dysfunction among patients suffering from end-stage osteoarthritis. A continuous care model is usually provided to patients who undergo a TKA with the aim of maximizing postoperative results, involving physical well-being, capacity, and pain relief, the ability to resume regular daily activities, and improve patients` QoL **(Konnyu et al., 2024).**

Regarding socio demographic characteristics, the current research demonstrated that; half of the studied patients aged from 50 years and more, and more than three fifths of them were females. These study findings concurred with **Abozead et al. (2022),** who assessed the impact of nursing instructions on the knowledge of 60 Egyptian patients undergoing total knee replacement at Assiut University and pointed out that 50 % of the patients` age ranged from 50 - ≥ 65 years, and 48.3 % of them were females. Also, these findings concurred with **Almatari et al. (2025),** who performed a qualitative study to evaluate quality of life and satisfaction among 93 Saudi patients performed knee replacement and mentioned that 41.5% of the participants` age were 51-60 years, and 66.0% of the participants were women. From the perspective of the researchers, these findings possibly because postmenopausal hormonal changes that accelerate joint degeneration and increased incidence rate of knee osteoarthritis and osteoporosis among females.

Concerning the medical history, the existing study revealed that; osteoarthritis was the most cause for undergoing total knee arthroplasty among three quarters of studied patients, this result was consistent with **Wang et al. (2023),** who conducted a randomized controlled study at a teaching hospital in Shanghai, China, to evaluate the efficacy of a

mobile application-based program for rehabilitation following total hip or knee replacement among 86 patients and stated that 76.7% of participants had osteoarthritis which was the primary cause for surgery.

The responses of the existing research presented that; more than half of studied patients suffered from chronic diseases and one fifths of them suffered from pain, this finding was consistent with **Savcı & Bilik (2023),** who implemented a quasi-experimental study in western Türkiye among 83 patients undergoing total knee replacement to evaluate the continuous care and declared that; 69.7% of studied patients had a chronic illness. In addition, this result aligned with **Lebleu et al. (2023),** who used a digital health approach to assess risk factors and methods for managing pain among 740 total knee arthroplasty patients in France and commented that up to 25% of patients experience pain following a knee arthroplasty.

As regards the knowledge of studied patients about total knee arthroplasty, the outcome of the current study disclosed that; all items pertaining to the patients' knowledge of TKA before and after the continuous care model implementation showed highly statistically significant differences. This study finding was in the same line with **Ali et al. (2020),** who evaluated the alteration in self-efficacy among 193 Egyptian patients post knee joint replacement after the implementation of the intervention protocol and revealed that there was a noticeable difference in all of the patients' knowledge about knee joint replacement after the intervention protocol was conducted, compared to before. According to the researchers, this could be because of the willingness and desire of patients to know everything about TKA.

Regarding the studied patients` total knowledge level, the current study findings illustrated that one fifth of the studied patients had good knowledge level regarding total knee arthroplasty pre continuous care model implementation which raised to three quarters of them post continuous care model implementation. This study finding was in align with **Abozead et al. (2022),** who approved a significant improvement in the total knowledge level of the study group patients and the percentage increased to 80% after the application of the program. However, this result was opposed to **Chen et al. (2025),** who assessed the requirements for discharge from the hospital among 15 patients undergoing knee arthroplasty in China and indicated that the patients in the study had a difficult time taking care of themselves once they went home because they didn't know enough about knee replacements. From the opinion of the researchers, this could be because of the vital role of the continuous care model which enhanced knowledge of patients regarding post total knee arthroplasty.

The finding of the current research confirmed that all items corresponding to the studied patients` subtotal healthy lifestyle dimensions showed statistically significant differences pre and post the application of the continuous care model. This finding supported by **Hamed & Gaballah (2021),** who evaluated how an improved program of exercise affected physical activity and pain among 64 Egyptian patients after TKA and approved that there was difference rise in the total mean score of nutrition and physical exercise with statistical significance, after 1 and 3 months of program implementation. This finding was possibly because of the positive effect of continuous care model on improving patients` healthy lifestyle post total knee arthroplasty.

Concerning healthy lifestyle concerning practices for reducing physical efforts and promoting safety after total knee arthroplasty, the finding of the present study displayed that; there was a highly statistically significant difference in the studied patients` healthy lifestyle regarding ascending and descending stairs in correct way pre and post continuous care model implementation. This result was symmetrical with **Abdelall et al. (2024),** who evaluated the effect of rehabilitation program concerning physical exercises on knee function among 60 Egyptian patients undergoing arthroplasty and disclosed that the study and the control group showed differences that were really significant regarding climbing and descending stairs before and after rehabilitation program.

Concerning the healthy lifestyle of the studied patients regarding range of motion exercises for lower extremities, the finding of the present finding demonstrated that; there were highly statistically significant differences in all items of studied patients` range of motion exercises of lower extremities pre and post continuous care model implementation. These findings confirmed with **Cheng et al. (2025),** who assessed the role of educational level on rehabilitation outcomes post TKA among 187 Chinese patients with knee osteoarthritis and confirmed a significant improvement in all range of motion indicators was found among the studied group ($P<0.001$). Also, these findings were supported by **Sun et al. (2024),** who evaluated the efficacy and safety of continuous nursing in enhancing older patients' functional restoration following hip or knee replacement and mentioned that range of motion exercises could be significantly enhanced by continuous nursing programs.

Regarding the total healthy lifestyle, the finding of the present research showed that; more than one quarter of the patients under study had satisfactory level regarding total healthy lifestyle post total knee arthroplasty pre continuous care model implementation which enhanced to more than three quarters post continuous care model implementation. These study findings were symmetrical with **Abd Elghany et al. (2019),** who evaluated the efficacy of educational program on post-operative outcomes among 60 Egyptian patients performing TKA and reported that 63.3% patients in the study group had satisfactory total level of self-reported practices post program compared to 33.3% of patients in the control group. Researchers believed that this could be because the significant effect of the continuous care model which offered continuous education, increased awareness about self-care practices, enhanced recovery, reduced complications and encouraged patients post total knee arthroplasty to adopt healthy lifestyle compared to pre- implementation phase.

Regarding the studied patients` subtotal quality of life dimensions, the current study results revealed that; all items concerning the studied patients` subtotal quality of life dimensions after total knee arthroplasty showed highly statistically significant differences before and after the application of the continuous care model. These study findings were congruent with **Araújo et al. (2025),** who evaluated the application of +PERTO® in rehabilitation of 11 patients post total knee arthroplasty, in Northern Portugal, and commented that the PERTO® program (Technological Rehabilitation Nursing Program) greatly enhanced patients' quality of life, especially in the areas of physical functioning, role barriers, body pain, general health, strength, and modifications in health status. Also, these findings agreed with **Damar & Bilik (2022),**

who applied video-based education program among 83 patients with total knee replacement in Turkey and stated that statistically significant difference was observed in physical, social functioning and emotional role scores pre and post program (p=0.001). This finding could potentially be the result of the positive impact of continuous care model and lifestyle modification which served as a significant step for improving patients` quality of life.

Regarding the studied patients` total quality of life post total knee arthroplasty, the finding of the current study disclosed that more than quarter of the studied patients had good level of total quality of life post total knee arthroplasty pre continuous care model implementation which raised to three quarters of them post continuous care model implementation. According to researchers, this could be because of the positive effect of the continuous care model which provides consistent follow up, education and support. Also, continuous care model had a significant role in meeting patients` postoperative needs, promoting adherence to rehabilitation and encouraging healthier lifestyle. Moreover, the personalized and ongoing nature of the model empowered patients, reduced anxiety, and fostered greater functionality, so all of which contributed significantly to better quality of life.

The current finding disclosed that there were highly positive statistically significant correlations between the studied patients` total knowledge, healthy lifestyle, and quality of life score regarding TKA prior to and following continuous care model implementation (p value<0.001). From a viewpoint of the researchers, this may be because of the reality that enhancing patients` knowledge which in turn contributes to positive modifications in the lifestyle and these improvements collectively lead to a noticeable enhancement in patients` quality of life post total knee arthroplasty.

Conclusion

The continuous care model had a positive outcome in enhancing knowledge, promoting healthy lifestyle and quality of life of patients post total knee arthroplasty.

Recommendations

- Continuous care models needed to be incorporated into routine postoperative protocols for total knee arthroplasty patients to increase their knowledge, motivate long-lasting improvements in their lifestyle and quality of life.
- Developing planned follow up system involving scheduled home visits or telehealth interventions to sustain total knee arthroplasty patients' engagement and assess recovery progress.
- Additional research is recommended to verify the effectiveness of continuous care model across various populations and healthcare settings.

References

Abd Elghany, S., Hassanein, A., Badran, H. and Hammad, A. (2019). Efficacy of Implementing Pre-operative Health Education Program on Post-operative Outcomes of Patients Undergoing Total Knee Arthroplasty. International Journal of Novel Research in Healthcare and Nursing, 6 (3), 239-249.

Abdelall, H., Hashem, E., AbdElaal, E., Abozied, H., Gerges, M. and Ghayth, E. (2024). Effect of Physical Exercises Rehabilitation Program on Knee Function for Patients with End-stage Knee Osteoarthritis Undergoing Arthroplasty. Tanta Scientific Nursing Journal, 32(1), 247.

AbdElhafeez, A., Sadek Abd El-Hameed, H., Said Sabry, S. and Hamido Abosree, T. (2022). Quality of Life among Patients with Knee Replacement. Journal of Nursing Science Benha University, 3(1), 1029-1041.

Abozead, S., Sayed, S., Abd-Alhameid, M. and Abd El-all, H. (2022). Effect of Nursing Instructions on Total Knee Replacement Patient' s Knowledge. International Journal of Novelty Research in Healthcare and Nursing, 9(3), 5.

Ali, R., Mohamed, A. and Morad, A. (2020). Effect of Implementing Intervention protocol on Self Efficacy of Patient's Post Knee Joint Replacement. Egyptian Journal of Health Care, 11(4), 580.

Almatari, A., Alhidri, B., Alhazmi, N., Jafar, H., Alghamdi, F., Sabbagh, L., Banjar, G., Gheliwi, H., Alsaadi, J., Marhomi, F. and Halawani, J. (2025). Qualitative Study: Quality of Life and Patient Satisfaction Following Knee Replacement Surgery in Saudi Arabia. International Journal of Medicine in Developing Countries, 9(3), 557–564.

Araújo, T., Rodrigues, E., Files, A., Ventura-Silva , J., Mendes, J., Novo, A. and Ribeiro, O. (2025). Implementation of +PERTO® in Rehabilitation for Total Knee Arthroplasty: A Pilot Study. Healthcare, 13 (6), 605.

Batarfi, A., Alkhiary, Y., Abulaban, A., Alzahrani, A., Bagais, K. and Kermily, A. (2018). Quality of life of patients after total knee arthroplasty at King Abdulaziz University Hospital, Arabia. Egyptian Journal Jeddah, of Medicine, 70(9), 1448-1454.

Chen, N., Zou, Q., Gu, C. and Cheng, Q. (2025). Requirements of Patients Undergoing Unicompartmental Knee Arthroplasty in Preparation for Discharge from the Hospital - A Qualitative Study. Patient Preference and Adherence, 19, 741.

Cheng, Y., ZheYiKen, J., Kang, X. and He, W. (2025). The impact of educational level on rehabilitation outcomes after total knee arthroplasty in patients with knee osteoarthritis: A retrospective study. Current Problems in Surgery, 63 (2025), 101693.

Dai, L., Tong, R., Cai, J., Deng, C. and Chen, Y. (2025). The Application of Continuous Care Model in Rehabilitation Management for Total Hip Arthroplasty Patients. International Journal of Orthopaedic and Trauma Nursing, 58(2025),101205.

Damar, H. and Bilik, Ö. (2022). Effects of Video-Based Education Program on Pain, Physical Function, and Quality of Life in Patients with Total Knee Replacement. Journal of Inonu University Health Services Vocational School, 10(1), 96-115.

Drainville, A. (2025). Evaluation of the Implementation of a Preoperative Assessment in Total Hip or Total Knee Replacement Patients. Doctor of Nursing Practice. Nursing and Health Sciences. Azusa Pacific University, California.11.

Durmaz, M. and Kural, S. (2022). The Effect of Continuing Nursing Care Applied with a Coaching Strategy for Patients with total knee replacement on Some Patient Outcomes: A Randomized Controlled Study Protocol. Selcuk University School of Medicine, 32(5), 540-541.

Franzoni, S., Rossi, S., Cassinadri, A., Sangaletti, R. and Benazzo, F. (2023). Perioperative Pain Management in Total Knee Arthroplasty: A Narrative Review of Current Multimodal Analgesia Protocols. Applied Science Journal, 13(6), 3798.

Germano, J., Baichoo, N., Germano, A. and Scuderi, G. (2024). Patient Perception of Preoperative Nutrition and Recovery After Orthopaedic Surgery. The Journal of Arthroplasty, 39(9), 2221-2224.

Güllü, A. and Tosun, B. (2024). Effectiveness of the transitional care model in total knee arthroplasty patients: A randomized controlled trial. International Journal of Nursing Practice, 30(6), 2.

Hamed, S. and Gaballah. R. (2021). Effect of Enhanced Exercise Program on Pain and Physical Activity for Patients after Total Knee Arthroplasty. Evidence-Based Nursing Research, 3 (3), 51.

Ibraheem, M., Elsayed, M. and Amin, H. (2023). Assessment for Nurses' Practices Regarding Pre and Postoperative Care for Patients with Total Knee Arthroplasty. Menoufia Nursing Journal, 8(3), 260.

Knee Replacement Patient Handbook, (2019). Total knee arthroplasty © 2019 Patient education materials, Available at : osm-knee-handbook.pdf. Accessed on 12/1/2025.

Konnyu, K., Thoma, L., Cao, W., Aaron, R., Panagiotou, O., Bhuma, M., Adam, G., Balk, E. and Pinto, D. (2024). Rehabilitation for Total Knee Arthroplasty: A Systematic Review. Am J Phys Med Rehabil, 102(1), 20.

Lebleu, L., Pauwels, A., Poilvache, H., Anract, P. and Belbachir, A. (2023). Severe Postoperative Pain in Total Knee Arthroplasty Patients: Risk Factors, Insights and Implications for Pain Management via a Digital Health Approach. Journal of Clinical Medicine, 12(24), 7695.

Murakami, T., Fujiwara, M., Ohmine, T., Yamamoto, S., Kanayama, A., Minami, M. and Iwata, A. (2024). Comparison of difficulty in stair ascent and descent after total knee replacement. Journal of physical therapy science, 36(4), 214-217.

Mutsuzaki, H., Takeuchi, R., Mataki, Y. and Wadano, Y. (2017). Target range of motion for rehabilitation after total knee arthroplasty. Journal of Rural Medicine, 12(1), 33-37.

Sadiq, S., Noor, R. and Asim, H. (2025). Development, Urdu translation, and validation of a lifestyle modification manual for patients post-total knee replacement. Frontiers in Rehabilitation Sciences, 6, 1565544.

Savcı, A. and Bilik, O. (2023). Assessment of Continuous Care Based on the Roy Adaptation Model in Patients Undergoing Total Knee Replacement: A Quasi-Experimental Study. Cyprus Medical Science, 8(5), 344-353.

Shalash, K. and Zedan, A. (2023). Prevalence of knee osteoarthritis. Benha International Journal of Physical Therapy, 1(1), 19-23.

Sun, J., Xu, Y., Zhu, J., Zhu, B. and Gao, W. (2024). Efficacy and safety of continuous nursing in improving functional recovery after total hip or knee arthroplasty in older adults: A systematic review. International Journal of Nursing Sciences, 11 (2024), 288.

Wang, Q., Hunter, S., Lee, R. and Chan, S. (2023). The effectiveness of a mobile application-based program for rehabilitation after total hip or knee arthroplasty: a randomized controlled trial. International Journal of Nursing Studies, 140, 104455.

Wu, K., Kutzer, K., Kugelman, D. and Seyler, T. (2024). Fall prevention after hip and knee arthroplasty. Orthopedic Clinics, 56 (2), 121-134.

تأثير نموذج الرعاية المستمرة على نمط الحياة الصحي بين المرضى بعد إستبدال مفصل الركبة الكامل

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يُسهم نموذج الرعاية المستمرة بشكل فعال في تعزيز نمط الحياة الصحي وممارسات الرعاية الذاتية لدى المرضى بعد إستبدال مفصل الركبة الكامل. لذا هدفت هذه الدراسة إلى تقييم تأثير نموذج الرعاية المستمرة على نمط الحياة الصحى بين المرضى بعد إستبدال مفصل الركبة الكامل. وتم استخدام تصميم شبه تجريبي. وقد أجريت هذه الدراسة في عيادة العظام الخارجية بمستشفى التأمين الصحي ببنها ومنازل المرضى على عينة غرضية من المرضى حيث شملت ٦٤ مريضًا أجروا جراحة استبدال مفصل الركبة الكامل. وأظهرت النتائج بأنه ٢٠,٣٪ من المرضى كان لديهم معلومات جيدة فيما يتعلق بإستبدال مفصل الركبة الكامل قبل تطبيق نموذج الرعاية المستمرة والتي ارتفعت إلى ٧٦,٦٪ بعد تطبيق نموذج الرعاية المستمرة، وكان لدى ٢٩,٧٪ من المرضى مستوى مرضي فيما يتعلق بنمط الحياة الصحي بعد إستبدال مفصل الركبة الكامل قبل تطبيق نموذج الرعاية المستمرة والذي تحسن إلى ٧٩,٧٪ بعد تطبيق نموذج الرعاية المستمرة، وكان لدى ٢٨,١٪ من المرضى مستوى جيد من جودة الحياة بعد إستبدال مفصل الركبة الكامل قبل تطبيق نموذج الرعاية المستمرة والذي تحسن إلى ٧٦,٦٪ بعد تطبيق نموذج الرعاية المستمرة. كما لخصت الدراسة بأن كان لنموذج الرعاية المستمرة نتيجة إيجابية في تحسين معلومات وتعزيز نمط الحياة الصحي للمرضى وجودة حياتهم بعد إستبدال مفصل الركبة الكامل. وأوصت الدراسة إلي دمج نموذج الرعاية المستمرة في بروتوكولات الرعاية الروتينية للمرضى بعد عملية إستبدال مفصل الركبة الكامل لتحسين نمط حياة المرضى وجودة حياتهم.