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SAUDI PATIENTS' QUALITY OF LIFE FOLLOWING KNEE ARTHROPLASTY, RISK FACTORS, AND EFFECTS.

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Abstract

Introduction: Rheumatoid arthritis and osteoarthritis (OA) frequently result in knee discomfort, stiffness, and loss of motion. the condition's discomfort and functional restrictions, especially with regard to the lower limbs. Numerous studies have shown that TKA improves pain, mobility, quality of life, and overall contentment. The primary objective of this study is to assess the quality of life among Saudi patients following knee arthroplasty. This study aim is to assess the quality of life among Saudi patients following knee arthroplasty. **Methodology:** This cross-sectional survey was carried out in Saudi Arabia between June - December 2024. The research intends to enlist volunteers via social media sites such as Facebook, Instagram, Snapchat, and Twitter. Male and female Saudi citizens who have completed at least one TKR and are older than 18 are the inclusion criteria. Males and girls under the age of eighteen, patients with malignant tumors, psychological disorders, and patients involved in traffic accidents that resulted in TKR are excluded. **Results:** The study evaluated the quality of life of 122 Saudi patients post-knee arthroplasty, revealing significant insights into demographic influences and health outcomes. The mean age of participants was 56.5 years, with a notable prevalence of knee issues in the 53-60 age group, particularly among females (70.5%). Quality of life assessments indicated that 68.9% reported a good quality of life, yet 39.3% experienced moderate interference from physical or emotional problems in social activities. Statistically significant factors affecting quality of life included gender, marital status, weight, region, education, and the number of surgeries, highlighting the need for targeted psychological support post-surgery. **Conclusion:** In conclusion, our study contributes to the growing body of evidence supporting the effectiveness of TKA in improving QOL among patients with

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knee OA. The findings highlight the multifaceted nature of recovery, emphasizing the need for comprehensive care that addresses both physical and emotional health.

Keywords: Total Knee Arthroplasty (TKA), quality of life (QOL), Osteoarthritis (OA)Introduction, Saudi Arabia.

Introduction:

Osteoarthritis (OA) and rheumatoid arthritis often cause pain, stiffness, and loss of movement in the knee [1]. The discomfort and functional limitations resulting from this condition, particularly in the lower limbs, have a significant association with decreased quality of life (QOL) in these people [2]. Adolescents might decrease their physical activity due to the impairing knee discomfort caused by from osteoarthritis. Knee pain may cause someone to pull back on or stop engaging in active leisure activities, which can start a cycle that results in poor cardiorespiratory fitness, an increase in obesity, and other adverse health impacts [3].

Total Knee Arthroplasty (TKA) is an efficient process for alleviating pain and regaining function for patients with advanced knee arthrosis [4]. Worldwide, the rate of usage of TKA is rising significantly in knee arthritis patients, and the majority of TKA is anticipated to rise to 85% by 2030 [5]. According to the WOMAC-Index and the SF-12, patients with end-stage OA receiving knee replacement surgery showed improvements in their physical function and quality of life three months after the procedure. These results show that surgery is a viable treatment option for severe OA in any age group, especially in obese individuals [6]. Another study shows that TKA produced good outcomes, improving range of motion and quality of life for painless, fully ankylosed, or arthrodesis knees. Despite some postoperative minor pain, the patients expressed satisfaction with the outcome [7]. Also, according to a retrospective study published in 2022, TKA has a positive impact on pain, mobility, QOL, and final satisfaction in AlKhobar, Saudi Arabia [8].

Due to the shift in TKA attitudes, with many patients accepting it, few studies have been published on the quality-of-life post-TKA in Saudi Arabia. Therefore, the main goal of this study is to assess the quality of life after knee arthroplasty among Saudi patients.

Materials and Methods:

Study design:

This study was a cross-sectional study to assess the HQOL, outcome, and functional status after total knee replacement (TKR) among patients in Saudi Arabia. The survey was sent via social media platforms (Facebook, Instagram, WhatsApp, Twitter, Snapchat, etc.).

Inclusion and Exclusion Criteria:

The inclusion criteria were the Saudi population, males and females, age above 18 years old, from all provinces of the Kingdom of Saudi Arabia, who had done at least one TKR. The exclusion criteria were males and females under 18 years old. And patients with a road traffic accident that caused TKR,

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malignant tumours, and psychiatric disorders.

Sample size:
According to [9], a total of 100–300 samples with confidence interval of 95% and an error estimation of 5%.

Method for data collection and instrument (data collection technique and tools):
Patients given the following scales:
Section One: Sociodemographic characteristics of patients, which included gender, age, marital status, educational level, weight, height, body mass index (BMI), location, site of knee operation, previous TKR operation, and comorbidities.
Section Two of the WOMAC scale is used in this study. WOMAC is a valid measurement that its usage is increasing in the framework of knee replacement [10]. This scale consisted of 24 items divided into three dimensions, namely, pain severity (5 items), joint stiffness (2 items), and daily physical functioning of the joint (17 items). A five-point Likert-type scale was used to answer the items of the WOMAC scale from 1 “none” to 5 “extremely.”.
Part Three: Short Form SF-36 was used in this study. SF-36 consists of 36 items divided into two main dimensions: the first dimension is physical demand (22 items), and the second dimension is psychological demand (14 items). Since the WOMAC scale measured physical demand, the psychological demand section was only taken from SF-36 to measure different aspects of psychological issues such as emotional problems, depression, worn-outness, downheartedness, and lack of accomplishment.

Scoring system:
Regarding part two, the WOMAC scale, A five-point Likert-type scale was used to answer the items of the WOMAC scale from 1 “none” to 5 “extremely.”. The following criteria were followed: a mild mean score from 1 to 2.33, a moderate mean score from 2.34 to 3.67, and a high mean score from 3.68 to 5. A high mean score represents severe pain, stiffness, and difficulties in performing daily activities. For part three, the SF-36, A five-point Likert-type scale was used to answer the 14 items of the SF-36 scale from 1 “none” to 5 “extremely.”. The cut-off point for this scale was measured the same as on the WOMAC scale. A high mean score represents severe emotional problems, downheartedness, blues, and a lack of accomplishment.

Analyses and entry method:
The data had been entered into the device using the "Microsoft Office Excel Software" for Windows (2021). The collected data was subsequently transmitted to the Statistical Package of Social Science Software (SPSS) application, version 25 (IBM SPSS Statistics for Microsoft Windows, Version 21.0.), for statistical analysis.

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Results:

Table (1) displays various demographic parameters of the participants with a total number of (122). A large proportion of the participants (41.0%), 41.0%, are aged 53–60, indicating how common knee related problems are in this middle-aged demographic, as the mean age of participants is 56.5 years. The distribution of gender shows a preponderance of females (70.5%), which possibly is attributed to gender mores of health seeking behavior or, higher rate of knee problems amongst women. Marital status data indicates that the majority of participants (65.6%) are married thus they may be influenced by social support systems and health outcomes. Although the averages in weight and height suggest a population with an above average risk of obesity related complications, the large percentage of people with chronic conditions such as arthritis (45.9%) and hypertension (40.9%) increase the likelihood of this group being at risk. This is also reflected in the data, which indicates that over half of the participants were present more than three times, which strongly suggests that these problems with their knees are chronic, and that they might require continued medical intervention.

Table (1): Sociodemographic characteristics of participants (n=122)

Parameter		***No.***	***Percent (%)***
Age (Mean:56.5, STD:7.9)	52 years or less	40	32.8
	53 to 60	50	41.0
	61 years or more	32	26.2
Gender	Female	86	70.5
	Male	36	29.5
Marital status	Single	8	6.6
	Married	80	65.6
	Divorced	13	10.7
	Widowed	21	17.2
Height (Mean:163.1, STD:10.0)	158 cm or less	42	34.4
	159 to 165	44	36.1
	166 or more	36	29.5
Weight (Mean:80.7, STD:13.2)	75 kg or less	45	36.9
	76 to 82 kg	31	25.4
	83 kg or more	46	37.7
Region of residence	Northern region	6	4.9
	Southern region	28	23.0
	Central region	30	24.6
	Eastern region	32	26.2
	Western region	26	21.3
Educational level	High school or less	30	24.6
	Bachelor’s degree	66	54.1

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	Postgraduate degree	8	6.6
	I don't have educational qualification	18	14.8
How many times you went to the hospital in the past?	One time	30	24.6
	2 – 3 times	28	23.0
	More than 3 times	64	52.5
Location of the knee you have problem with:	Right knee	28	23.0
	Left knee	18	14.8
	Both	76	62.3
How many arthroplastic surgery have you done to your knee:	One surgery	62	50.8
	Two surgeries	50	41.0
	Three surgeries or more	10	8.2
Choose from the following the chronic condition you have*	Diabetes	42	34.4
	Hypertension	50	40.9
	Osteoporosis	16	13.1
	Arthritis	56	45.9
	Psychological problems	2	1.6
	Nothing	40	32.8

Results may overlap

As shown in figure 1, The data on knee arthroplasty surgery frequency in the study sample of 122 subjects showed some interesting surgical intervention trends. For example, from the sample, 62 persons – that is approximately 50.8 percent – have had one surgical procedure, suggesting a dominant but sole reliance on this mechanism for knee problems. This means, conversely, that 50 participants — roughly 41 percent of the total — have had two surgeries, suggesting a large chunk must deal with recurring or unresolved knee issues. Additionally, for 10 individuals or about 8.2% reported having undergone three or more surgeries indicating the complexities and the challenge with the managing knee conditions.

Figure (1): Illustrates number of arthroplasty surgeries done among participants.

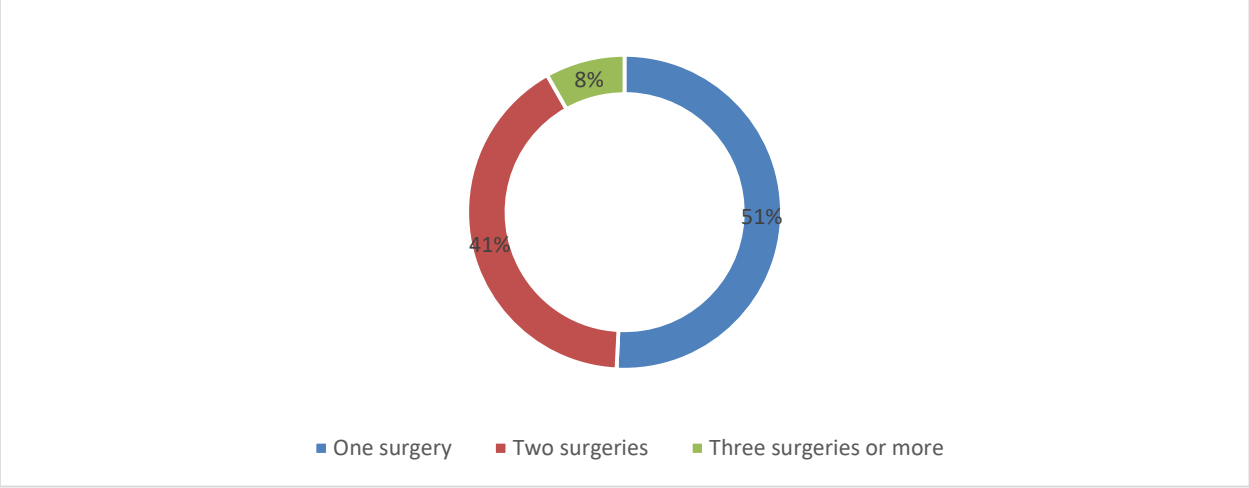

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Table 2 presents the data that describes the quality-of-life parameters of the Saudi patients after knee arthroplasty, this shows that physical and emotional health play important role in social interactions and daily activities. In particular, a large proportion (39.3%) of respondents reported moderate interference of physical or emotional problems with social activities, indicating that although many patients experience some interference, a sizable number (32.8%) reported no interference at all. Moreover, there was severe emotional challenge, with 47.5 percent detecting no impact on their work and daily activities, and 26.2 percent recording moderate interference, indicating that the psychological support in the postoperative period should be focused targeted. Moreover, the data mirrors a worrisome bend in how patients are feeling emotionally: 41.0% of patients found themselves nervous; 32.8% were downhearted, factors that could block recovery and rehabilitation.

Table (2): Parameters related to quality of life among Saudi patients following knee arthroplasty (n=122).

Parameter		***No.***	***Percent (%)***
During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups?	None	40	32.8
	A little	28	23.0
	Moderate	48	39.3
	Important	4	3.3
	Extreme	2	1.6
During the past 4 weeks, how much of the time has your emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)	None	32	26.2
	A little	48	39.3
	Moderate	36	29.5
	Important	4	3.3
	Extreme	2	1.6
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?	None	58	47.5
	A little	30	24.6
	Moderate	32	26.2
	Extreme	2	1.6
Cut down the amount of time you spent on work or other activities	None	34	27.9
	A little	52	42.6
	Moderate	34	27.9
	Extreme	2	1.6
Accomplished less than you would like	None	34	27.9
	A little	32	26.2
	Moderate	44	36.1
	Important	8	6.6
	Extreme	4	3.3
Didn't do work or other activities as carefully as usual	None	36	29.5

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	A little	46	37.7
	Moderate	28	23.0
	Important	8	6.6
	Extreme	4	3.3
Did you feel full of pep?	None	32	26.2
	A little	40	32.8
	Moderate	32	26.2
	Important	6	4.9
	Extreme	12	9.8
Have you been a very nervous person	None	30	24.6
	A little	50	41.0
	Moderate	28	23.0
	Important	8	6.6
	Extreme	6	4.9
Have you felt so down in the dumps that nothing could cheer you up?	None	58	47.5
	A little	30	24.6
	Moderate	30	24.6
	Important	4	3.3
Have you felt calm and peaceful?	None	22	18.0
	A little	50	41.0
	Moderate	26	21.3
	Important	20	16.4
	Extreme	4	3.3
Did you have a lot of energy?	None	22	18.0
	A little	48	39.3
	Moderate	44	36.1
	Extreme	8	6.6
Have you felt downhearted and blue?	None	40	32.8
	A little	40	32.8
	Moderate	34	27.9
	Important	8	6.6
Did you feel worn out?	None	50	41.0
	A little	24	19.7
	Moderate	30	24.6
	Important	12	9.8
	Extreme	6	4.9
Have you been a happy person?	None	18	14.8
	A little	42	34.4

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	Moderate	28	23.0
	Important	8	6.6
	Extreme	26	21.3
Do you feel tired?	None	44	36.1
	A little	30	24.6
	Moderate	40	32.8
	Important	8	6.6

As shown in figure (2), The statistics provided by data in the figure give useful data regarding how the participants experienced fatigue from a sample size of 122 in total. Interestingly, a majority of 50 respondents (40.8 percent of the sample) reported no exhaustion of the feeling, representing that there is a big chunk of the population who had kept themselves in good physical condition. On the contrary, a lower proportion of individuals (24 or so or 20%) reported feeling a little fatigued and 30 individuals (around 25%) declared moderate degree of fatigue. In addition, 12 respondents, approximately 10 percent, considered their fatigue important, and 6 respondents, roughly 5 percent, felt extreme fatigue.

Figure (2): Illustrates feeling worn out among participants.

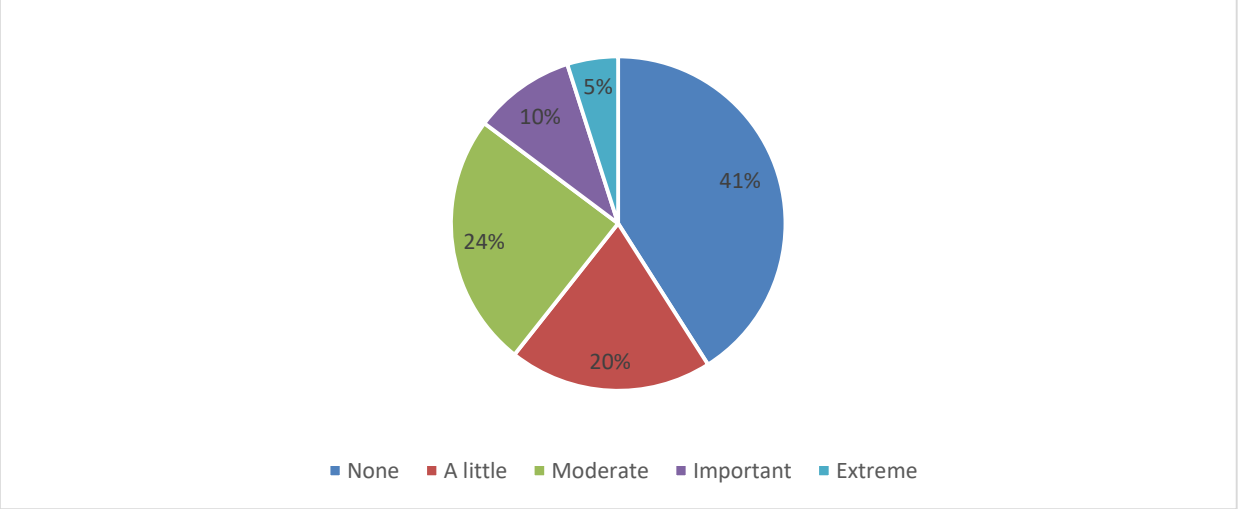

Table 3 contains the results of WOMAC SF 36 score which depicts quality of life of the surveyed population in predominantly positive manner. A great majority of respondents reported having a "good quality of life" (68.9%). Conversely, only 3.3 percent of participants reported a "bad quality of life," ie, severe impairments are relatively rare in this cohort. Despite this, the overall results advise on optimism about the majority's health status, although the moderate challenges in the "fair quality of life" category categorized 27.9% of individuals.

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Table (3): Shows WOMAC SF-36 score results.

	Frequency	**Percent**
Good quality of life	84	68.9
Fair quality of life	34	27.9
Bad quality of life	4	3.3
Total	122	100.0

Table (4) shows that quality of life has statistically significant relation to gender (P value=0.025), marital status (P value=0.005), weight (P value=0.007), region of residence (P value=0.0001), educational level (P value=0.0001), location of knee that has the problem (P value=0.002), and number of arthroplasty surgeries done (P value=0.011). It also shows statistically insignificant relation to age, height, and number of times the patient went to the hospital. Participants of male gender, weighing 75 kg or less, residing in eastern region, who had two arthroplastic surgeries on their knees were found to have better quality of life than others.

Table (4): Relation between quality of life and sociodemographic characteristics.

Parameters		***Quality of life***		***Total (N=122)***	***P value****
		Fair or bad quality of life	**Good quality of life**		
Gender	Female	32	54	86	0.025
		84.2%	64.3%	70.5%	
	Male	6	30	36	
		15.8%	35.7%	29.5%	
Marital status	Single	0	8	8	0.005
		0.0%	9.5%	6.6%	
	Married	28	52	80	
		73.7%	61.9%	65.6%	
	Divorced	0	13	13	
		0.0%	15.5%	10.7%	
	Widowed	10	11	21	
		26.3%	13.1%	17.2%	
Age	52 years or less	12	28	40	0.126
		31.6%	33.3%	32.8%	
	53 to 60	20	30	50	
		52.6%	35.7%	41.0%	
	61 years or more	6	26	32	
		15.8%	31.0%	26.2%	
Height	158 cm or less	8	34	42	0.086

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		21.1%	40.5%	34.4%	
	159 to 165	18	26	44	
		47.4%	31.0%	36.1%	
	166 or more	12	24	36	
		31.6%	28.6%	29.5%	
Weight	75 kg or less	8	37	45	0.007
		21.1%	44.0%	36.9%	
	76 to 82 kg	16	15	31	
		42.1%	17.9%	25.4%	
	83 kg or more	14	32	46	
		36.8%	38.1%	37.7%	
Region of residence	Northern region	0	6	6	0.0001
		0.0%	7.1%	4.9%	
	Southern region	4	24	28	
		10.5%	28.6%	23.0%	
	Central region	15	15	30	
		39.5%	17.9%	24.6%	
	Eastern region	0	32	32	
		0.0%	38.1%	26.2%	
	Western region	19	7	26	
		50.0%	8.3%	21.3%	
Educational level	High school or less	8	22	30	0.0001
		21.1%	26.2%	24.6%	
	Bachelor's degree or diploma	30	36	66	
		78.9%	42.9%	54.1%	
	Postgraduate	0	8	8	
		0.0%	9.5%	6.6%	
	I don't have educational qualification	0	18	18	
		0.0%	21.4%	14.8%	
How many times you went to the hospital in the past?	One time	14	16	30	0.087
		36.8%	19.0%	24.6%	
	2 – 3 times	6	22	28	
		15.8%	26.2%	23.0%	
	More than 3 times	18	46	64	
		47.4%	54.8%	52.5%	
Location of the knee you have problem with	Right knee	8	20	28	0.002
		21.1%	23.8%	23.0%	
	Left knee	12	6	18	

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		31.6%	7.1%	14.8%	
	Both	18	58	76	
		47.4%	69.0%	62.3%	
How many arthroplastic surgery have you done to your knee	One surgery	26	36	62	0.011
		68.4%	42.9%	50.8%	
	Two surgeries	12	38	50	
		31.6%	45.2%	41.0%	
	Three surgeries or more	0	10	10	
		0.0%	11.9%	8.2%	

P value was considered significant if ≤ 0.05.

Discussion:

The present study was aimed at evaluating QOL among Saudi patients after total knee arthroplasty (TKA). The relevance of this investigation is especially pertinent in light of escalating prevalence of knee osteoarthritis (OA), as well as the escalating incidence of knee arthroplasties worldwide. We observed that a large proportion of patients reported doing well following surgery and a 68.9% proportion of responders reported favorable outcomes. This corroborates with previously documented studies that've shown that TKA has reliably helped improve QOL and functional status in patients with end-stage knee disease. To illustrate, Oliveira et al. report significant improvement in QOL for TKA patients reporting that the procedure reduces pain and improves daily functioning [11]. As in patients at King Abdulaziz University Hospital, Batarfi et al. also noted marked improvements in the QOL of patients after TKA, indicating that surgery can certainly make a large difference for this demography [12].

We found great gender disparity in our study with a sample of females of 70.5%. This finding is consistent with literature which indicates women are more likely to suffer knee problems and undergo surgery. For instance, Singh and Lewallen reported that there is often a greater severity of pain and functional impairment for women compared with men, and that may explain their greater proportions in TKA populations [13]. Furthermore, consistent with other studies that have indicated comorbidities as major determinants of postoperative outcomes, our participants experienced a high prevalence of chronic health conditions including arthritis (45.9%) and hypertension (40.9%) [14]. Like Khan et al., these comorbidities may complicate recovery, and impact overall QOL [15].

The analysis indicated that demographic factors such as being married, being overweight, or being filled with education had a large influence on QOL results. Especially, those who are married had better QOL scores and those with higher educational attainment. Researchers Jansson and Granath have done research that supports this finding, revealing that social support and educational background are key to recovery post orthopedic surgeries [16]. Our results also showed that participants less than 75 kg had a better QOL outcome, which is reported by Skou et al., who found that lower body weight has better postoperative recovery and satisfaction [17]. Differences in the region referred by participants (better outcomes reported by participants in eastern region, as reported by Cross et al. when analysing the global burden of OA [18]) may also reflect geographical influence of access to care and rehabilitation

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resources.

In our cohort emotional health proved to be a major factor impacting QOL, with 41% of patients reporting nervousness and 32.8% depressed. Tsonga et al. have shown that these emotional challenges are not uncommon in patients undergoing TKA, since these patients psychologic well being is associated with better recovery and better overall satisfaction regarding surgical outcomes [19]. It's all intertwined – physical and emotional health are vitally important, because if patients are emotionally distressed it makes it all harder to rehabilitate, which can negatively affect the whole process of actually recovering. The importance of planning a psychological support program in postoperative care plans is further emphasized by Losina et al. who revealed that health coaching improves physical activity and QOL outcomes in TKA patients [20].

However, our study is limited, as there are positive findings for the improvements in QOL after TKA. Due to its cross sectional design, the relationship between demographic variables and QOL outcomes can only be drawn as correlational. Furthermore, reliance on self-reports of measures may be biased since perceptions of health and wellness are likely to be influenced by a wide range of external nonbehavioral factors. There is still a need for future longitudinal studies to better determine how the long term affects TKA on QOL and to identify specific interventions that can improve recovery and satisfaction for many different patient populations.

Conclusion:

Finally, we provide novel evidence supporting the use of TKA to improve QOL in patients with knee OA. What's new is that the findings bring to light the multifaceted nature of recovery — it involves both physical and emotional health and must be treated comprehensively. Because demand for knee arthroplasties is increasing, knowledge of the factors influencing postoperative outcome will be essential for optimizing care and improving the quality of life of patients having this procedure.

Acknowledgement:

We thank the participants who all contributed samples to the study.

Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

Funding

The study did not receive any external funding.

Conflict of interests

The authors declare that there are no conflicts of interest.

Informed consent:

Written informed consent was obtained from all individual participants included in the study.

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Data and materials availability

All data associated with this study are present in the paper.

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