

Patient Satisfaction After Total Knee Arthroplasty Done At MOI Teaching And Referral Hospital, Eldoret - Kenya

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ABSTRACT

Background: Total Knee Arthroplasty is a surgical procedure used to relieve pain and restore function in patients with advanced knee arthritis or severe injuries. With an estimated 250 million people affected globally, TKA is one of the most commonly performed orthopedic surgeries. The success rate of TKA surgeries varies worldwide, with reported patient satisfaction rates ranging from 80% to 95%. In our local setting, the prevalence of knee osteoarthritis and the demand for TKA surgery have been steadily increasing, with the number of TKA procedures performed annually doubling in the past decade. Understanding patient demographics, expectations, and satisfaction levels is crucial for optimizing surgical outcomes and patient care.

Objective: To describe patient satisfaction after total knee arthroplasty done at Moi Teaching and Referral Hospital.

Methods: The research used a cross-sectional design involving patients undergoing total knee arthroplasty at MTRH. The sample size was 80 patients. Patients that met the inclusion criteria were selected using a purposive sampling technique. The researcher selected the sample unit since they had the characteristics needed for the research. Interviewer administered questionnaire were used to collect data. The level of patient satisfaction was measured by using Knee Society Score (KSS) tool. The KSS tool is a clinical assessment tool used to evaluate the function and outcomes of knee arthroplasty surgery. It assesses the functional status and satisfaction of patients who have undergone total knee replacement or total knee arthroplasty. The healthcare providers use clinical and functional components. Patients are asked to perform specific movements or activities while being observed, and may also complete self-reported questionnaires to provide additional information about their knee function and quality of life. The data was entered and analyzed using the STATA version 13. The categorical and continuous variables were summarized as frequencies and corresponding percentages. Specific statistical tests were used to determine associations between variables. The findings were used to make conclusions and recommendations.

Results: Total participants were 80. The study found that most patients undergoing Total Knee Arthroplasty at MTRH have positive expectations (70%) and high satisfaction, with complete pain relief (70%) and no functional limitation (52.5%) being key factors. Factors such as pain level, activity limitation, and Knee Society Score metrics were associated with satisfaction (81.3%). A higher knee score was associated with a higher knee function score which translated to a better and a higher satisfaction rate.

Conclusion: The majority of those who underwent TKA at MTRH are females and retirees. Majority of the participants expected no pain and no functional limitation after the surgery. Majority of the patients were satisfied with outcome of their surgery.

Recommendations: Anticipate and address the unique needs of TKA patients based on demographic characteristics. Implement preoperative counseling programs that address individual patient needs and set realistic expectations.

Keywords: Total Knee Arthroplasty, patient satisfaction, pain relief, function outcome, KSS.

I. INTRODUCTION

Total Knee Arthroplasty (TKA) is a widely performed surgical procedure aimed at alleviating pain, restoring joint function, and improving the quality of life for patients suffering from severe knee osteoarthritis (1). As a cornerstone of modern orthopedic care, TKA has evolved significantly with advancements in technology, leading to improved surgical techniques and outcomes (2). However, patient satisfaction remains a critical measure in evaluating the success of this procedure. Satisfaction encompasses not only physical recovery but also patients' experiences, expectations, and perceptions of care (3). In Kenya, the Ministry of Health prioritizes patient satisfaction as an indicator of healthcare quality, influencing compliance with treatment and long-term outcomes (4). Despite TKA's potential to transform lives, variations in reported satisfaction levels raise concerns about unaddressed factors impacting patients' experiences (5). Issues such as residual pain, unmet expectations, and limitations in daily activities highlight the need for comprehensive assessments. Understanding these factors is crucial for enhancing patient-centered care.

II. METHODS

The study population included all patients who underwent total knee arthroplasty at the MTRH and on follow up at the arthroplasty clinic. In the months of July, August and September, 2022 the total population was 117. It was based on the eligibility criteria. Patients were treated as per established hospital guidelines and protocols.

Study Schema

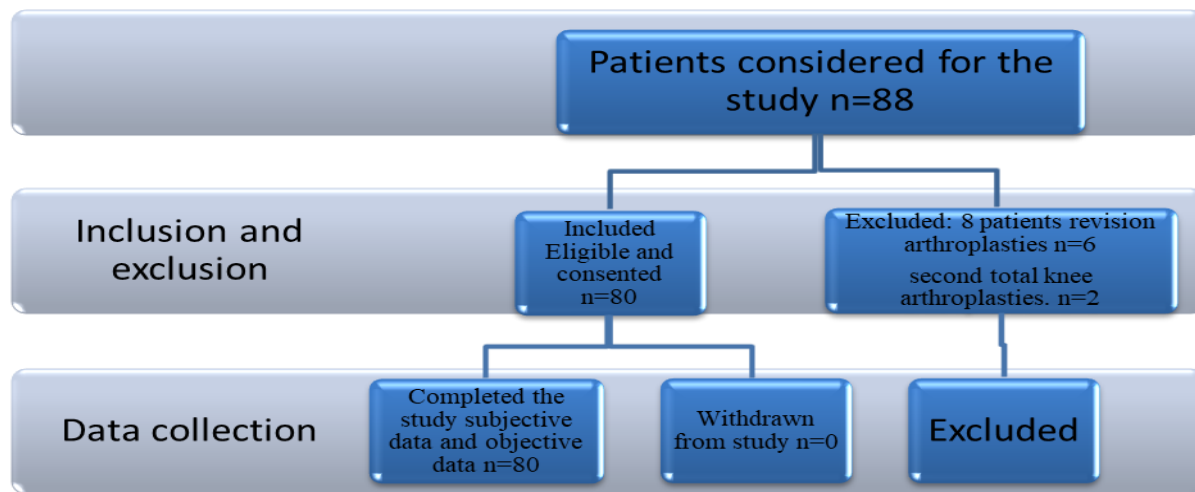


Figure 1: study schema

III. RESULTS

The demographics of patients undergoing Total Knee Arthroplasty at Moi Teaching and Referral Hospital
 Table 1: Demographics

	Total N=80
Years	
Mean (SD)	63.3 (10.1)
Range	31 – 84
Sex	
Male	5 (6.4%)
Female	75 (93.6%)
Occupation	
Housewife	33 (45.8%)
Farmer	25 (34.7%)

Nb other were Business (7), secretary (2), police (1), casual labourer (1), retired clerk (10) teacher (1).

The study included 80 patients aged 18 and above who underwent total knee arthroplasty (TKA) at Moi Teaching and Referral Hospital (MTRH) for non-inflammatory degenerative joint disease. The mean age of participants was 63.3 years, with a range of 31–84 years. The majority were female (93.6%) and engaged in domestic or agricultural occupations, such as housewives (45.8%) and farmers (34.7%).

Expectations of patients undergoing Total Knee Arthroplasty at Moi Teaching and Referral Hospital

Table 2: Expectations of patients

	Total N=80
Expectation on pain before surgery	
Complete pain relief	56 (70.0%)
Moderate pain relief	24 (30.0%)
Expectation of function before surgery	
No functional limitation	42 (52.5%)
Mild functional limitation	38 (47.5%)
Months after surgery (months)	
Median (IQR)	7.0 (5.0-12.0)
Range	1 – 39
How long ago surgery was done	
0-4 wks	4 (5.0%)
5-8 wks	3 (3.8%)
9-12 wks	1 (1.3%)
13-17 wks	2 (2.5%)
>17 wks	70 (87.5%)
Level of pain after surgery	
Not at all painful	19 (23.8%)
Slightly painful	33 (41.3%)
Moderately painful	18 (22.5%)
Very painful	10 (12.5%)
Limitation of usual activity after surgery	
Not at all limited	17 (21.3%)
Slightly limited	29 (36.3%)
Moderately limited	30 (37.5%)
Very limited	4 (5.0%)

Preoperatively, 70% of patients expected complete pain relief, and 52.5% anticipated no functional limitations. However, postoperative outcomes varied. At a median follow-up of 7 months, only 23.8% of patients reported being pain-free, with 41.3% experiencing slight pain and 12.5% reporting severe pain. Functional limitations were noted, as 36.3% were slightly limited, and 37.5% moderately limited in activities.

The level of patient satisfaction in pain relief and functional outcome of patients undergoing Total Knee Arthroplasty at Moi Teaching and Referral Hospital

Table 3: Patient satisfaction in pain relief & functional outcome

	Total N=80
Patient satisfaction	
No	15 (18.8%)
Yes	65 (81.3%)
Pain KSS	
None	14 (17.5%)
Mild-occasional	15 (18.8%)
Mild-stairs only	9 (11.3%)
Mild-walking & stairs	17 (21.3%)
Moderate-occasional	16 (20.0%)
Moderate-continual	7 (8.8%)
Severe	2 (2.5%)
Flexion contracture KSS	
None	33 (41.3%)
5-10	31 (38.8%)
10-15	12 (15.0%)
15-20	2 (2.5%)
>20	2 (2.5%)
Extension lag KSS	
None	49 (61.3%)

<10	29 (36.3%)
10-20	2 (2.5%)
Total range of flexion KSS	
Mean	80.0 (18.3)
Range	5 – 115
Alignment KSS	
0	36 (45.0%)
1	28 (35.0%)
2	12 (15.0%)
3	1 (1.2%)
4	3 (3.8%)
Anteroposterior stability KSS	
<5mm	78 (97.5%)
5-10mm	2 (2.5%)
Mediolateral KSS	
<5	75 (93.8%)
5-9	5 (6.3%)
Function walking KSS	
Housebound	6 (7.5%)
<5 blocks	10 (12.5%)
5-10 blocks	15 (18.8%)
>10 blocks (Approx 1km)	33 (41.3%)
Unlimited	16 (20.0%)
Stairs function KSS (climbing up a steep place)	
Unable	5 (6.3%)
Up rail down unable	10 (12.5%)
Up & down with rail	16 (20.0%)
Normal up, down with rail	26 (32.5%)
Normal up & down	23 (28.7%)
Walking aids KSS	
Crutches	29 (36.3%)
Canes	20 (25.0%)
None	31 (38.8%)

Overall, 81.3% of patients were satisfied with their TKA outcomes. Higher satisfaction was significantly associated with minimal postoperative pain, greater range of flexion, and better walking and stair-climbing abilities ($p < 0.001$). Dissatisfied patients were more likely to experience severe pain, activity limitations, and lower flexion range. Expectations of complete pain relief pre-surgery did not guarantee satisfaction if postoperative pain persisted.

Table 4: Association between patient satisfaction and patients' characteristics

	No N=15	Yes N=65	p-value
Years	63.0 (12.7)	63.4 (9.5)	0.90
Sex			0.84
Male	1 (20.0%)	4 (80.0%)	
Female	12 (16.4%)	63 (84.0%)	
Expectation on pain before surgery			0.35
Complete pain relief	12 (21.4%)	44 (78.6%)	
Moderate pain relief	3 (12.5%)	21 (87.5%)	
Expectation of function before surgery			0.073
No functional limitation	11 (26.2%)	31 (73.8%)	
Mild functional limitation	4 (10.5%)	34 (89.5%)	
Months after surgery	6.0 (5.0-7.0)	8.0 (4.5-15.5)	0.076
Level of pain after surgery			<0.001
Not at all painful	0 (0.0%)	19 (100.0%)	
Slightly painful	3 (9.1%)	30 (90.9%)	
Moderately painful	5 (27.8%)	13 (72.2%)	
Very painful	7 (70.0%)	3 (30.0%)	
Limitation of usual activity after surgery			<0.001
Not at all limited	0 (0.0%)	17 (100.0%)	

Slightly limited	2 (6.9%)	27 (93.1%)	
Moderately limited	10 (33.3%)	20 (66.7%)	
Very limited	3 (75.0%)	1 (25.0%)	
Absolute range of flexion	70.5 (21.9)	82.2 (16.8)	0.024
Pain KSS			<0.001
None	0 (0.0%)	14 (100.0%)	
Mild-occasional	2 (13.3%)	13 (86.7%)	
Mild-stairs only	1 (11.1%)	8 (88.9%)	
Mild-walking & stairs	3 (17.6%)	14 (82.4%)	
Moderate-occasional	3 (18.8%)	13 (81.3%)	
Moderate-continual	6 (85.7%)	1 (14.3%)	
Sever	0 (0.0%)	2 (100.0%)	
Function walking KSS			0.002
Housebound	4 (66.7%)	2 (33.3%)	
<5 blocks	4 (40.0%)	6 (60.0%)	
5-10 blocks	3 (20.0%)	12 (80.0%)	
>10 blocks	4 (12.1%)	29 (87.9%)	
Unlimited	0 (0.0%)	16 (100.0%)	
Stairs function KSS			0.006
Unable	3 (60.0%)	2 (40.0%)	
Up rail down unable	4 (40.0%)	6 (60.0%)	
Up & down with rail	2 (12.5%)	14 (87.5%)	
Normal up, down with rail	6 (23.1%)	20 (76.9%)	
Normal up & down	0 (0.0%)	23 (100.0%)	

The study found that patient satisfaction after total knee arthroplasty (TKA) was influenced by factors such as postoperative pain, activity limitations, and functional outcomes. Satisfied patients had a median recovery duration of 8.0 months compared to 6.0 months for dissatisfied patients, with no significant difference in satisfaction based on gender or age. Expectations of complete pain relief before surgery were linked to higher satisfaction, while patients with moderate to severe postoperative pain were more likely to report dissatisfaction. Higher pain Knee Society Scores (KSS), greater range of knee flexion, and better walking and stair function were significantly associated with satisfaction. These findings highlight the importance of addressing pain management and functional outcomes to enhance patient satisfaction after TKA.

Table 5: Patient satisfaction in pain relief & functional outcome

	Total N=80
Knee score	
<60 (Poor)	39 (48.8%)
60-69 (Fair)	18 (22.5%)
70-79 (Good)	17 (21.3%)
80-100 (Excellent)	6 (7.5%)
KSS score function	
<60 (Poor)	37 (46.3%)
60-69 (Fair)	8 (10.0%)
70-79 (Good)	7 (8.8%)
80-100 (Excellent)	28 (35.0%)
Knee score	
Mean (SD)	57.5 (17.9)
Range	9 – 85
KSS score function	
Mean (SD)	61.2 (28.4)
Range	0 – 100

KSS data revealed that nearly half of the patients (48.8%) had poor knee scores (<60), with only 7.5% achieving excellent scores (80–100). Function scores mirrored this trend, with 46.3% rated as poor and 35% as excellent. A significant positive correlation ($r = 0.625$,

$p < 0.001$) was observed between knee scores and functional scores, highlighting that better knee function aligns with higher knee

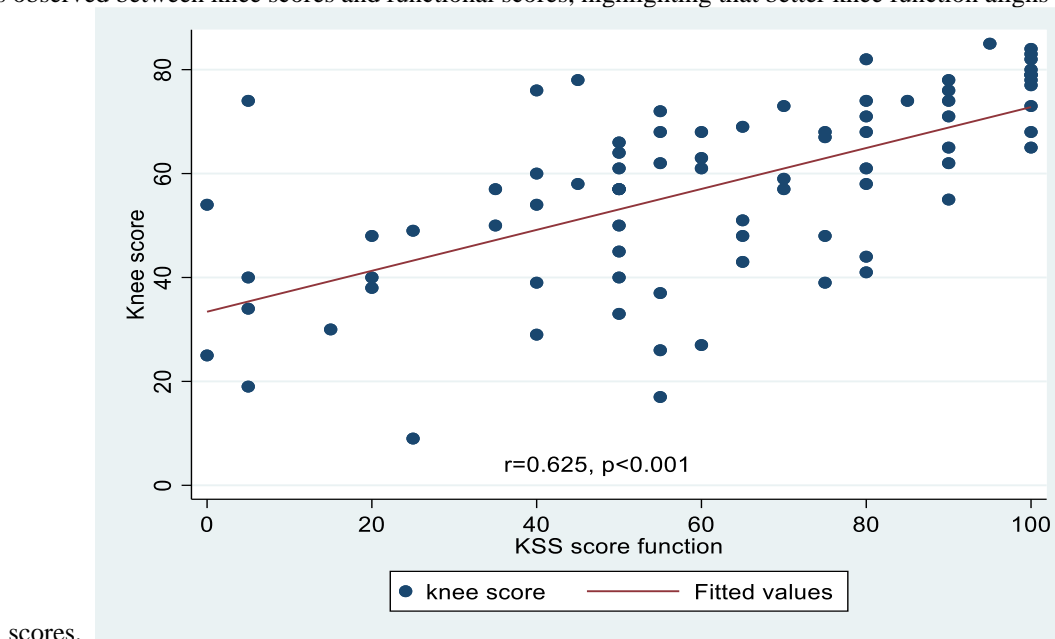


Figure 2: Scatter plot KSS score and knee function score

The scatter plot illustrates a positive correlation between the Knee Score and the Knee Function Score, where higher function scores are associated with higher Knee Scores. With a correlation coefficient (r) of 0.625 and statistical significance ($p < 0.001$), the data confirms a strong relationship between improved knee function and better Knee Scores.

Table 6: Knee score by KSS functional score

	<60 (Poor) N=39	60-69 (Fair) N=18	70-79 (Good) N=17	80-100 (Excellent) N=6
KSS score function				
<60 (Poor)	27 (69.2%)	6 (33.3%)	4 (23.5%)	0 (0.0%)
60-69 (Fair)	4 (10.3%)	4 (22.2%)	0 (0.0%)	0 (0.0%)
70-79 (Good)	4 (10.3%)	2 (11.1%)	1 (5.9%)	0 (0.0%)
80-100 (Excellent)	4 (10.3%)	6 (33.3%)	12 (70.6%)	6 (100.0%)

The data shows that most participants had poor Knee Society Score (KSS) function scores, with 69.2% scoring below 60, indicating significant knee function limitations. A smaller proportion achieved fair or good scores, with the highest function scores observed in those with excellent Knee Scores. While higher Knee Scores generally correlated with better function, exceptions existed, as some participants with fair Knee Scores achieved excellent function. These findings highlight variability in knee function outcomes and the need to consider both scores when assessing knee health. Further research is needed to identify factors driving these variations and improve patient outcomes.

IV. DISCUSSION

Demographics of TKA Patients

The study revealed that the mean age of patients undergoing Total Knee Arthroplasty (TKA) at Moi Teaching and Referral Hospital (MTRH) was 63.3 years, with a majority being female (93.6%). Most patients were housewives (45.8%) or farmers (34.7%), reflecting the prevalence of degenerative joint diseases across various socioeconomic groups. These findings align with studies that state the majority of 59.1% were female (5) and 60% (6), The mean age for both was 66.3 years and a majority of female patients at 59.1% and 60%, respectively. Understanding these demographics is vital for tailoring patient-centered care.

Preoperative Expectations

The majority of patients (70%) expected complete pain relief, and 52.5% anticipated no functional limitations before surgery. These findings are consistent with Bryan et al. (2018), who reported that 30% of patients expected complete pain relief within three months, and 25% expected no functional limitations. Preoperative counseling to manage expectations is essential for enhancing satisfaction (3).

Patient Satisfaction Levels

The study found that 81.3% of patients were satisfied with their postoperative outcomes, particularly due to pain relief and improved mobility. Patients with mild or no pain and those achieving better functional outcomes, such as walking long distances or climbing stairs unaided, reported higher satisfaction levels. These findings align with studies that noted improved pain management and functional recovery were significant predictors of satisfaction (2,3).

Factors Influencing Satisfaction

Satisfaction was strongly associated with postoperative pain relief, functional improvements, and alignment with preoperative expectations. However, age ($p = 0.90$) and gender ($p = 0.84$) were not significant predictors of satisfaction, consistent with findings by a study (7). Patients with higher Knee Society Scores (KSS) and greater knee flexion reported better satisfaction levels, aligning with studies by researchers (2,3).

Knee Score and Function Outcomes

The mean Knee Score was 57.5, and the mean Function Score was 61.2, indicating variability in outcomes. Nearly half (48.8%) of participants reported poor knee function, and only 7.5% achieved excellent Knee Scores. A significant correlation ($r = 0.625$, $p < 0.001$) between Knee Score and Function Score suggests a strong relationship between better knee health and functional outcomes. Similar findings were reported, with strong correlations between KSS and the Knee Injury and Osteoarthritis Outcome Score (KOOS) pain subscale (8).

Implications for Care

The study emphasizes the need for personalized interventions, addressing pain, mobility, and individual patient expectations. Tailored care plans, effective communication, and interdisciplinary approaches, including physiotherapy and pain management, are critical for optimizing outcomes. Another study highlighted the importance of addressing persistent pain and functional limitations to improve satisfaction (2).

CONCLUSION

TKA is effective in improving quality of life, with satisfaction levels exceeding 80%. However, variability in outcomes highlights the importance of patient-centered care. Aligning preoperative expectations with achievable results and addressing individual needs are crucial for enhancing satisfaction and functional recovery.

Recommendations

Preventive measures such as weight management, regular exercise, and joint protection techniques are essential for reducing the risk of degenerative joint diseases, especially in older women who represent the majority of TKR patients. Early detection through regular check-ups can lead to timely interventions that improve joint health and delay the need for surgery. Comprehensive preoperative education about expected outcomes, rehabilitation, and realistic goals can help manage patient expectations and enhance participation in recovery. Utilizing the Knee Society Score (KSS) to assess pain, function, and satisfaction provides valuable insights for tailoring treatment plans and optimizing postoperative outcomes.

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