



Expectations in patients with total knee arthroplasty

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Objective: The primary objective of total knee arthroplasty (TKA) is to decrease pain and restore functional knee joint. Current hypotheses indicate higher knee flexion is required in terms of life style, culture and expectations in Eastern communities. Therefore, society-specific features related to life style and cultural habits are needed. The objective of this study was to investigate the expectations of patients undergoing TKA.

Methods: The study included 131 patients (18 male, 113 female; mean age: 66.2±8.3 years) who underwent cemented TKA due to knee osteoarthritis. All patients were operated by the same surgeon using the same implant and surgical technique. Patients were evaluated using the Hospital for Special Surgery (HSS) knee score, a 15-item clinical knee assessment questionnaire and the HSS knee arthroplasty expectation questionnaire.

Results: Mean HSS score for the right knee was 89.2±10.5 and for the left knee was 89.6±9.4. The two most expected outcomes were improvements in pain (99.2%) and gait (96.2%) and the two least expected outcomes were improvements in psychological well-being (22.9%) and communicative skills (35.1%). Expectations were not affected by education and working conditions.

Conclusion: Patients' most expected outcomes were improvement in pain and restoration of function (gait, climbing stairs and no need of assistive devices), similar to Western and American communities.

Key words: Culture; knee osteoarthritis; life style; patient expectation; total knee arthroplasty.

Total knee arthroplasty (TKA) has been shown to be effective in reducing pain and improving function and quality of life in individuals suffering from gonarthrosis, with no response to conservative treatment.^[1-12] Measurement of patients' expectations is necessary to provide more focused clinical care, highlight areas for patient education and promote shared decision-making when several treatment options are available. Patient involvement in discussing expectations has also been shown to increase adherence to recommendations.^[13-17] However, few studies have systematically measured

patients' expectations of orthopedics procedures and all of those that have focused only on Western and American patients.^[13-18] While elective TKA is becoming steadily more popular in the Turkish people, the majority of implants were designed and developed in the West and geared predominantly towards a Western lifestyle and it is questionable whether they are appropriately designed for the Turkish population. Latest prosthesis designs, however, include changes to increase knee flexion in line with hypotheses on the necessity for greater knee flexion to suit life style, cul-

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ture and expectations in Eastern communities.^[2,19-22] Previous studies have shown that patient treatment goals and expectations can differ widely, depending on diagnosis, gender, cultural activities of daily living and lifestyle.^[3,4,10,12,15,20,22] Therefore, society-specific features related to life style and cultural habituations are needed in the measurement of patient expectations.^[3,19,20,23]

The aim of this study was to determine and evaluate the expectations of Turkish patients undergoing TKA.

Patients and methods

This study included 131 patients (18 males, 113 females; mean age: 66.2±8.3) who underwent primary cemented TKA (NexGen[®]; Zimmer, Warsaw, IN, USA) for gonarthrosis by the same surgeon between December 2002 and January 2007. A minimum of 6 months of follow-up was required to join the study. Questionnaires and forms were completed face-to-face by the physiotherapist. Patients with revision operations, high tibial osteotomy, rheumatoid arthritis, septic arthritis, gout, vascular problems affecting cutaneous blood flow, systemic disease leading to serious functional loss, metastatic bone disease, previous fracture at lower extremities and neurological problems affecting the locomotor system were excluded from the study. The study protocol was approved by the local ethical committee and all patients gave their informed consent.

Demographic and social features were evaluated. A modified TKA clinical assessment questionnaire with 10 questions for clinical parameters and 5 questions for patient satisfaction^[24] and a modified version of the Hospital for Special Surgery (HSS) Knee Replacement Expectation Survey Questionnaire were used.^[14] The HSS Knee Score was also used to determine knee function scores.^[25] In evaluating patient satisfaction, scores indicating dissatisfaction were 1 (bad), 2 (weak), 3 (average) and those indicating satisfaction were 4 (good), 5 (excellent).

All patients followed the same rehabilitation program,^[5,12,26,27] including standard physiotherapy consisting of isometric and isotonic exercises, continuous passive motion exercises, active-assisted and active range of motion exercises, walking education and transfer activities. After discharge, a home-based physiotherapy program including stretching exercises, range of motion exercises, strengthening and endurance exercises, balance and proprioception exercises and walking education was implemented.

SPSS for Windows v.15.0 (SPSS Inc., Chicago, IL, USA) software was used for statistical analysis. Data was shown as mean, standard deviation, frequency and percentage.

Results

Demographic features are shown in Table 1. Mean HSS score for the right knee was 89.2±10.5 and 89.6±9.4 for the left knee. According to materiality ratio, the most important patient expectation was a decrease in pain (99.2%) and the least important expectation was an improvement in physiological well-being (22.9%) (Table 2). 81.7% of patients had no lift in their living area. 90.8% of patients ate at a table while 9.2% ate on the floor. 97.7% of patients used a closet type toilet and 2.3% used an old-fashioned style toilet. 85.5% of patients were unable to sit cross-legged and 93.1% could not sit on their knees.

84.7% of patients scored the ability to wear shoes and socks as excellent. 26% were not satisfied in terms of the distance or time that could walk without support. The two parameters with excellent scores were the ability to wear shoes and socks and the decrease in pain medication (Table 3).

According to the TKA expectation questionnaire, the most important parameters for retired patients

Table 1. Demographic details of the cases.

Demographic features	Value	%
Age (yrs)	66.2±8.3	
Body Mass Index (kg/m ²)	33.2±5.4	
Gender	Women	113 86.3
	Men	18 13.7
Occupational status	Housewife	100 76.3
	Retired	28 21.4
	Employee	3 2.3
Marital status	Married	90 68.7
	Widow	41 31.3
Educational status	Primary education	73 55.7
	Secondary education	24 18.3
	Higher education	7 5.4
	Literate	8 6.1
	Illiterate	19 14.5
Living areas	Detached house	59 45
	Apartment	72 55
Living with	Alone	22 16.8
	With family	105 80.2
	Nursing home	4 3.0
The habitat	Urban	122 93.1
	Countryside	9 6.9
Despondency	Yes	21 16
	No	110 84
Charnley classification	Class A	5 3.8
	Class B	53 40.5
	Class C	73 55.7
Income level	>1,000 Turkish Liras	34 26
	421-1,000 Turkish Liras	85 64.9
	0-420 Turkish Liras	12 9.1

Table 2. Rates of cases' expectations.

Expectations	%
Pain relief	99.2
Improve ability to walk	96.2
Improve ability to go up and down stairs	93.1
Remove the need for a cane, crutch or walker	87.8
Make the knee straight	80.2
Improve ability to change position	71.8
Improve ability to squat	70.2
Improve ability to kneel	69.5
Improve ability to perform daily activities	60.3
Improve ability to use public transportation or drive	54.2
Improve ability to participate in recreational activities	42.0
Sleep regularly	38.2
Improve ability to interact with others	35.1
Improve psychological well-being	22.9

were an improvement in pain, a gain in their ability to walk and get up and down stairs. An improvement in pain was the most important parameter for housewives (Table 4). When the study groups classified according

to the Charnley classification were compared to expectations, the most important parameter for all the groups was an improvement in pain (Table 5).

The most important parameter for all income levels was the improvement in pain. Improvement in walking ability was also important for the patients with an income of 420 to 1,000 Turkish liras (Table 6).

According to their educational level, the most important parameters were improvement in pain and walking ability for the three groups while the most important parameter was improvement in walking ability for the primary school group and improvement in pain for the secondary school group. Getting up and down stairs was the most important parameter for the high school, no schooling and illiterate group.

Discussion

Patient assessments are important in determining treatment success, especially in elective operations such as TKA which aims to improve quality of life.^[11,14,16,28] Therefore, detailed evaluations of patients'

Table 3. Satisfaction rates with the clinical parameters.

Clinical parameters		Satisfaction		
		Satisfied	Not satisfied	Total
Activity and work level	f	99	32	131
	%	75.6	24.4	100.0
Activity and work level in the last three months	f	99	32	131
	%	75.6	24.4	100.0
Knee pain level	f	116	15	131
	%	88.5	11.5	100.0
Ability to wear socks and shoes	f	111	20	131
	%	84.7	15.3	100.0
Ability to get up and down stairs	f	91	40	131
	%	69.5	30.5	100.0
Ability to stand up from sitting position	f	102	29	131
	%	77.9	22.1	100.0
Necessity of help especially for walking	f	105	26	131
	%	80.2	19.8	100.0
Time or distance of walking without help	f	97	34	131
	%	74.0	26.0	100.0
Time or distance of walking with help	f	109	22	131
	%	83.2	16.8	100.0
Hitch level during walking	f	109	22	131
	%	83.2	16.8	100.0
Operation increased functions	f	106	25	131
	%	80.9	19.1	100.0
Operation improved pain	f	114	17	131
	%	87.0	13.0	100.0
Operation decreased need of medicine for pain	f	114	17	131
	%	87.0	13.0	100.0
Satisfaction from results	f	114	17	131
	%	87.0	13.0	100.0
Satisfaction level of the knees against last visit	f	111	20	131
	%	84.7	15.3	100.0

Table 4. Review of occupational status and expectations.

Expectation	Work status											
	Full time (n=3) (2.3%)				Retired (n=28) (21.4%)				Housewife (n=100) (76.3%)			
	Important		Not important		Important		Not important		Important		Not important	
	F	%	F	%	F	%	F	%	F	%	F	%
Improvement in pain	3	2.3	0	0	28	21.4	0	0	99	76.3	1	0.8
Increase in walking ability	3	2.3	0	0	28	21.4	0	0	95	72.5	5	3.8
Vehicle for help	3	2.3	0	0	25	19.1	3	2.3	87	66.4	13	9.9
Make the knee straight	3	2.3	0	0	23	17.6	5	3.8	79	60.3	21	16
Getting upstairs	3	2.3	0	0	28	21.4	0	0	91	69.4	9	6.8
Getting downstairs	3	2.3	0	0	28	21.4	0	0	91	69.4	9	6.8
Squatting	2	1.5	1	0.8	17	13.0	11	8.4	72	54.9	28	21.3
Ability of kneeling	3	2.3	0	0	17	13.0	11	8.4	72	54.9	28	21.3
Driving	3	2.3	0	0	17	13.0	11	8.4	51	38.9	49	37.4
Regular sleep	2	1.5	1	0.8	9	6.9	19	14.5	39	29.7	61	46.5
Recreational activities	3	2.3	0	0	11	8.4	17	13.0	41	31.2	59	45
Daily activities	3	2.3	0	0	19	14.5	9	6.9	57	43.5	43	32.8
Changing position	2	1.5	1	0.8	23	17.6	5	3.8	69	52.6	31	23.6
Communicate other people	1	0.8	2	1.5	12	9.2	16	12.2	33	25.1	67	51.1
Psychological well-being	1	0.8	2	1.5	9	6.9	19	14.5	20	15.2	80	61

expectations are recommended. Our study found a decrease in pain, improvement in walking ability and increase in functionality were the most expected improvements following TKA operation. Patients also complained of difficulty with requiring higher knee

flexion such as sitting cross-legged and kneeling. According to our results, although these positions were commonly used in activities of daily living, patients did not give much more importance to their improvements. These results are parallel to the literature.^[2,19,29,30]

Table 5. Review of the Charnley classification and expectations.

Expectation	Charnley classification															
	A (n=5) (3.8%)				B (n=53) (40.5%)				C (n=73) (55.7%)				Total (n=131) (100%)			
	Important		Not important		Important		Not important		Important		Not important		Important		Not important	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Improvement in pain	5	3.8	0	0	53	40.5	0	0	72	55	1	0.7	130	99.2	1	0.8
Increase in walking ability	5	3.8	0	0	50	38.2	3	2.3	71	54.2	2	1.5	126	96.2	5	3.8
Vehicle for help	4	3.1	1	0.8	47	35.9	6	4.6	64	48.9	9	6.9	115	87.8	16	12.2
Make the knee straight	4	3.1	1	0.8	40	30.5	13	9.9	61	46.6	12	9.2	105	80.2	26	19.8
Getting upstairs	4	3.1	1	0.8	49	37.4	4	3.1	69	52.7	4	3.1	122	93.1	9	6.9
Getting downstairs	4	3.1	1	0.8	49	37.4	4	3.1	69	52.7	4	3.1	122	93.1	9	6.9
Squatting	3	2.3	2	1.5	31	23.7	22	16.8	57	43.5	16	12.2	91	69.5	40	30.5
Ability of kneeling	4	3.1	1	0.8	30	22.9	23	17.6	58	44.3	15	11.5	92	70.2	39	29.8
Driving	4	3.1	1	0.8	28	21.4	25	19.1	39	29.8	34	26.0	71	54.2	60	45.8
Regular sleep	3	2.3	2	1.5	17	13.0	36	27.5	30	22.9	43	32.8	50	38.2	81	61.8
Recreational activities	3	2.3	2	1.5	17	13.0	36	27.5	35	26.7	38	29.0	55	42.0	76	58.0
Daily activities	4	3.1	1	0.8	28	21.4	25	19.1	47	35.9	26	19.8	79	60.3	52	39.7
Changing position	3	2.3	2	1.5	37	28.2	16	12.2	54	41.2	19	14.5	94	71.8	37	28.2
Communicate other people	2	1.5	3	2.3	14	10.7	39	29.8	30	22.9	43	32.8	46	35.1	85	64.9
Psychological well-being	1	0.8	4	3.1	11	8.4	42	32.1	18	13.7	55	42.0	30	22.9	101	77.1

In the literature the mean age of TKA patients is over 65 years, with a predominance of females.^[2,6,8,10,15-18,28,30-32] Our study demographics are similar (Table 1).

Getting up from a chair, walking, and getting up-down the stairs are the most required activities in daily life and allow for independence.^[12,33] 93.2% of patients in our study lived in the city center and 55% lived in apartments (Table 1). 81.7% of patients had no lift in their house. Getting up and down stairs was an important expectation for 93.1% of patients and 69.5% was satisfied with their improvement. This same ratio is between 47% and 75% in the literature.^[1,4,33,34] The ability to climb stairs, the second most important expectation following walking ability, should be assessed regularly and improved using postoperative problem-based rehabilitation.

A decrease in pain might be a common expectation following TKA for patients with severe preoperative pain whereas improvement in functionality might be more important for patients with less pain.^[9,35] In our study, the most important expectation was pain relief for 99.2% of patients and 87.0% reported pain relief following the operation. Our results are parallel to the literature which reports a ratio between 60% and 90%.^[1,6,36-39]

The inability to sit cross-legged was reported in 85.5 % of our patients. Patients often limit their move-

ments to prevent damage to their prosthesis after learning of the biomechanical boundaries of the joint following arthroplasty.^[40,41] Although our patients experienced difficulty in activities requiring higher knee flexion, such as kneeling, squatting, and sitting cross-legged, they did not give more importance to these activities than improvements in pain relief and other routine daily life activities (Table 2).

Kneeling is an important function of the knee joint and difficulty leads to restrictions in the performance of daily activities as fixing, doing cleaning on the floor, praying, and gardening.^[4,20,22,23] In addition, kneeling is of great importance in daily living activities, praying and sitting habits of Eastern cultures. Conversely, in Western societies kneeling is commonly used for gardening and house activities.^[4,20,23] The majority of TKA patients (more than 85%) reported inability in kneeling and squatting without pain.^[3,3,4,40,41] In our study, 93.1% of patients were not able to sit on their knees. Fear of harming the prosthesis, uncertain recommendations by other people and pain at the site of incision may be the causes of this result.

Differences due to cultural style and habits exist between communities in terms of the functional requirements during daily life and should be considered in patient assessments.^[3,4,19,20,22,23] We hypothesized that improvements in squatting and kneeling would be

Table 6. Review of the income level and expectations.

Expectation	Income level															
	0-420 Turkish Liras (n=12) (9.2%)				420-1,000 Turkish Liras (n=85) (64.9%)				1,000 Turkish Liras and above (n=34) (26.0%)				Total (n=131) (100%)			
	Important		Not important		Important		Not important		Important		Not important		Important		Not important	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
Improvement in pain	11	8.4	1	0.8	85	64.9	0	0	34	26.0	0	0	130	99.2	1	0.8
Increase in walking ability	9	6.9	3	2.3	85	64.9	0	0	32	24.4	2	1.5	126	96.2	5	3.8
Vehicle for help	9	6.9	3	2.3	76	58.0	9	6.9	30	22.9	4	3.1	115	87.8	16	12.2
Make the knee straight	6	4.6	6	4.6	72	55.0	13	9.9	27	20.6	7	5.3	105	80.2	26	19.8
Getting upstairs	8	6.1	4	3.1	82	62.6	3	2.3	32	24.4	2	1.5	122	93.1	9	6.9
Getting downstairs	8	6.1	4	3.1	82	62.6	3	2.3	32	24.4	2	1.5	122	93.1	9	6.9
Squatting	8	6.1	4	3.1	58	44.3	27	20.6	25	19.1	9	6.9	91	69.5	40	30.5
Ability of kneeling	8	6.1	4	3.1	58	44.3	27	20.6	26	19.8	8	6.1	92	70.2	39	29.8
Driving	9	6.9	3	2.3	43	32.8	42	32.1	19	14.5	15	11.5	71	54.2	60	45.8
Regular sleep	4	3.1	8	6.1	29	22.1	56	42.7	17	13.0	17	13.0	50	38.2	81	61.8
Recreational activities	3	2.3	9	6.9	37	28.2	48	36.6	15	11.5	19	14.5	55	42.0	76	58.0
Daily activities	5	3.8	7	5.3	54	41.2	31	23.7	20	15.3	14	10.7	79	60.3	52	39.7
Changing position	6	4.6	6	4.6	64	48.9	21	16.0	24	18.3	10	7.6	94	71.8	37	28.2
Communicate other people	2	1.5	10	7.6	28	21.4	57	43.5	16	12.2	18	13.7	46	35.1	85	64.9
Psychological well-being	0	0	12	9.2	24	18.3	61	46.6	6	4.6	28	21.4	30	22.9	101	77.1

the most important expectations as a result of cultural habits and daily life activities. However, our results revealed kneeling to be 8th at 69.5% and squatting 7th with 70.2% (Table 2). Although patients had difficulty in activities requiring higher knee flexion, such as kneeling and squatting, less importance was given compared to pain relief and improvement in other routine daily life activities (e.g. walking, stair climbing, etc.). As suggested by Kim et al., this may be related to the belief that difficulties in knee flexion are natural consequences of aging.^[2,30] Old-style toilet usage and taking meals on the floor are common habits in our community. However, 97.7% of our patients reported closet style toilet use and 90.8% eating at a table. This may also show modifications in cultural habits.

Patients' expectations and satisfaction levels can also be affected by social and demographic features.^[1,3,7,15,17,18] Bourne,^[1] Linsell et al.^[7] and Hepinstall et al.^[18] determined a significant relationship between TKA and living alone. Linsell et al.^[7] also indicated significant relationships between TKA and female gender and obesity. 86.3% of our patients were women and the mean BMI was 33.2 kg/m² (Table 1). These results were parallel with the findings of Linsell et al.^[7] However, in contrast to Bourne,^[1] Linsell et al.^[7] and Hepinstall et al.,^[18] 80.2% of our patients live with family and 16.8% live alone. This may be related to traditional Turkish family arrangements.

More joint involvement is related with lower levels of expectation. The most important expectation for all classifications of patients according to the Charnley classification was pain improvement and walking ability was the most important for Group A patients. Pain relief was equally important for Group A and B and lower for Group C (Table 5). Patients living with preoperative limitations might have less postoperative expectations.^[31] Similarly, Dunbar et al.^[36] and Callaghan et al.^[42] found that questionnaire scores of arthroplasty patients were significantly affected by the Charnley classification.

Satisfaction rates following TKA have been reported between 80% and 95% in the literature.^[1,2,31,32,36] In our study, 87% of patients were satisfied with the results. Our findings were parallel with the literature (Table 3).

Our study had some limitations. First, our results could not be generalized as the study was carried out in one center. Second, we only investigated postoperative expectations and a comparison to preoperative expectations would be useful. Third, our assessments of physical activities were performed using questionnaires

and more objective results could be provided through direct evaluations.

In conclusion, patient expectations are important predictors of the success of TKA surgery and determination of patients' expectations and progression ratios can assist physiotherapists and orthopedists in planning treatment and therapy goals. Increased patient satisfaction can be accomplished by the fulfillment of patients' postoperative goals.

Conflicts of Interest: No conflicts declared.

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