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## **Patient Characteristics and Factors Affecting Decision-Making Regarding Total Knee Replacement by Different Types of Physicians Treating Patients with Knee OA**

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**Background:** Total knee replacement (TKR) is considered an effective knee OA treatment and is a commonly performed orthopedic procedure that relieves pain and improves function and quality of life.<sup>1</sup> However, up to 20% of patients may not achieve good clinical outcomes.<sup>2</sup> Also, comorbidities and patient factors may limit the ability to safely perform the TKR. The objective of this was to identify the percentage and distribution of TKR surgical candidates across specialties (rheumatologists [RH], orthopedic surgeons [OS], sports medicine [SM] physicians, and pain specialists [PS]) to gain insight into patient characteristics that influence TKR candidacy.

**Methods:** Board-certified physicians with >2 years of practice and >10 knee OA patients per week participated in an interview about their two most recent knee OA patients. Interviews were conducted from March to April 2019 and assessed demographics, referral patterns, comorbidities, time to treatment, imaging use, candidacy for TKR, and reasons for noncandidacy. Multiple reasons for TKR noncandidacy per patients were allowed. Since no patient-identifying information was included, this project was exempt from IRB review and HIPAA consent. As this study was designed to assess multiple characteristics and associated effect modifications, a confidence level of 90% was used.<sup>3</sup>

**Results:** Overall, the mean age of knee OA patients was 65 years (range: 63 years for SM patients to 66 years for PS patients) (Table 1). Primary care physicians were the most common referrers to RH (83%) and the reported mean time from symptom onset to diagnosis was 3.4 years (longest in RH patients; 4.5 years) (Figure 1). Overall, the mean number of comorbidities was 2.6, with the most common being hypertension and obesity (Table 2). The mean pain score was 5.5 (0–10 NRS) and 58% of RH patients had moderate pain. RH predominantly saw KL grade 3 (55.6%) patients, whereas OS saw more KL grade 4 (45.3%) patients. TKR candidacy was assessed for 779 patients; approximately half were identified as future surgical candidates, with 38% projected to undergo TKR within the next 12 months. Overall, of 286 (37%) patients who were identified as TKR noncandidates, 65% had mild disease or well-controlled symptoms. Among RH noncandidates (42%, n=105), additional reasons for TKR exclusion included patient preference (30%), age (11%), overall health (10%), weight (5%), and smoking habits (5%) (Table 2). Limitations to this

study included potential selection bias, confounding by risk factors, inability to show causation, small sample size, missing data, and a pre-COVID-19 proposed timeline for TKR.

**Conclusion:** In this observational chart review, of the 42% of TKR noncandidates who were RH patients, several patient factors were identified as reasons for exclusion (patient preference, age, overall health, and lifestyle choices [such as smoking]). Patient preference contributed the largest impact (30%) and other influences were well characterized, suggesting further investigation of patient-focused factors that impact decision-making regarding TKR is warranted.

**References:**

1. NEJM 2015; 373:1597–1606
2. EFORT Open Rev. 2018;3(8):461–470
3. J Thorac Dis. 2016 Sep; 8(9): E928–E931

## Images, Tables, and Graphics

Table 1: Demographics

	Total N=854	Orthopedist (OS) n=352	Rheumatologist (RH) n=250	Sports Medicine (SM) n=152	Pain Specialist (PS) n=100
Mean age	65.15	65.46 <sup>C</sup>	65.36 <sup>C</sup>	63.34	66.33 <sup>C</sup>
65 years of age or older (total)	476	198	145	71	62
	56%	56% <sup>C</sup>	58% <sup>C</sup>	47%	62% <sup>C</sup>
Mean age when symptoms started	55.13	56.78 <sup>BCD</sup>	54.75	53.48	52.59
Male	419	185	106	77	51
	49%	53% <sup>B</sup>	42%	51%	51%
Female	435	167	144	75	49
	51%	47%	58% <sup>A</sup>	49%	49%
Mean BMI	30.74	30.19	29.80	32.96 <sup>AB</sup>	31.64 <sup>AB</sup>
BMI ≥35	22%	18%	17%	32% <sup>AB</sup>	34% <sup>AB</sup>
Not currently employed (total) due to inability to perform function	59%	57%	67%	52%	73% <sup>ABC</sup>
	7%	5%	7%	5%	15% <sup>ABC</sup>
Bilateral OA (total)	428	146	96	77	49
	50%	41%	62% <sup>ACD</sup>	49%	51%

Key: Statistical significance,  $P < 0.1$ ; A: versus orthopedist, B: versus rheumatologist, C: versus sports medicine physician, D: versus pain specialist

Table 2: Comorbidities and reasons for TKR noncandidacy

Comorbidities	Total N=854	Orthopedist (OS) n=352	Rheumatologist (RH) n=250	Sports Medicine (SM) n=152	Pain Specialist (PS) n=100
Average # of comorbidities	2.6	2.3	2.6 <sup>A</sup>	2.8 <sup>A</sup>	3.2 <sup>AB</sup>
Hypertension	57% (n=485)	59% (n=206)	57% (n=142)	57% (n=87)	50% (n=50)
Obesity	38% (n=326)	33% (n=117)	40% (n=99) <sup>A</sup>	46% (n=70)	40% (n=40)
Hyperlipidemia	33% (n=279)	28% (n=98)	36% (n=89) <sup>A</sup>	41% (n=63) <sup>AD</sup>	29% (n=29)
Type 2 diabetes	25% (n=210)	22% (n=76)	22% (n=54)	33% (n=50) <sup>AB</sup>	30% (n=30) <sup>A</sup>
Chronic back pain	21% (n=182)	17% (n=60)	19% (n=48)	24% (n=36) <sup>A</sup>	38% (n=38) <sup>ABC</sup>
Anxiety/depression	19% (n=160)	17% (n=59)	16% (n=41)	21% (n=32)	28% (n=28) <sup>AB</sup>
CVD	18% (n=155)	18% (n=64)	15% (n=38)	17% (n=26)	27% (n=27) <sup>ABC</sup>
Reason for noncandidacy	Total N=286	Orthopedist (OS) n=80	Rheumatologist (RH) n=105	Sports Medicine (SM) n=69	Pain Specialist (PS) n=32
Mild disease/ symptoms controlled	65% (n=186)	70% (n=56) <sup>D</sup>	66% (n=69) <sup>D</sup>	74% (n=51) <sup>D</sup>	31% (n=10)
Patient preference	29% (n=84)	23% (n=18)	30% (n=31)	30% (n=21)	44% (n=14) <sup>A</sup>
Age	16% (n=45)	18% (n=14)	11% (n=12)	17% (n=12)	22% (n=7)
Overall health	12% (n=35)	14% (n=11)	10% (n=11)	9% (n=6)	22% (n=7)
Weight	10% (n=29)	14% (n=11) <sup>B</sup>	5% (n=5)	13% (n=9) <sup>B</sup>	13% (n=4)
Smoking status	5% (n=14)	6% (n=5)	5% (n=5)	---	13% (n=4)

Key: Statistical significance,  $P < 0.1$ ; A: versus orthopedist, B: versus rheumatologist, C: versus sports medicine physician, D: versus pain specialist

Figure 1: Patients' path to TKR

