Patient-Physician Racial Concordance Increases Likelihood of Total Knee Arthroplasty Recommendation

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Introduction

- Minority and low-income patients underutilize total knee arthroplasty (TKA) despite national efforts to bridge disparity gaps.

- Specific drivers of this underutilization require further investigation to direct efforts and eliminate disparity.

- The purpose of this study was to investigate whether racial concordance between patient and physician is associated with surgeon likelihood to recommend TKA.

Methods

- Patients who presented to the clinics of four fellowship-trained arthroplasty (3 White, 1 Black) surgeons for management of knee osteoarthritis were identified from January 1, 2023 to April 30, 2023.

- Surgeon recommendation for or against TKA was recorded for each patient.

- Physician and patient race were identified.

- Patient clinical info was input into the AAOS Appropriate Use Criteria website to generate a TKA appropriateness rating falling into the "Appropriate", "May Be Appropriate", or "Rarely Appropriate" categories. Only patients considered "Appropriate" were included in final analyses.

- Two-tailed chi-square tests and logistic multivariate analyses were conducted to test factors associated with differences in TKA recommendation, adjusting for patient factors, surgeon, and racial concordance. Statistical significance was defined as a p-value of less than 0.05.

Results

- 29 (29.3%) of White patients and 35 (59.3%) of Black patients with physician-patient racial concordance were recommended TKA by their surgeon.

- Black patients who received racially concordant care were more likely to be offered surgery than those who received discordant care (59.3% vs. 22.6%, p = 0.0001). The same effect was not observed in White patients (29.3% vs. 43.6%, p = 0.1087).

- Racial concordance was found to be an independent significant predictor of TKA recommendation while controlling for patient factors and individual differences by surgeon.

Table 1: Was TKA Recommended By Surgeon? Breakdown by AUC Category for TKA Appropriateness

Level of Appropriateness for TKA	Surgeon Recommended TKA?	
	Yes	No
	N=140	N=262
Appropriate (N=314)	131	183
Surgeon #1 (N=92)	25 (27.17%)	67 (72.83%)
Surgeon #2 (N=120)	69 (57.50%)	51 (42.50%)
Surgeon #3 (N=37)	6 (16.22%)	31 (83.78%)
Surgeon #4 (N=65)	31 (47.69%)	34 (52.31%)

"%" is percentage of that surgeon's patient N in that appropriateness category
Note: Surgeons #1, #3, and #4 are White and Surgeon #2 is Black.

Table 3: Multivariate logistic regression analyzing covariates for surgeon recommendation of TKA

	Coefficient	P value
Age	-0.0017	0.784
BMI	-0.0215	0.159
Racial Concordance with Surgeon	0.5702	**0.029**
Surgeon		
Surgeon #1	Reference variable	Reference variable
Surgeon #2	-0.8323	**0.005**
Surgeon #3	-1.4836	**0.002**
Surgeon $4	-0.1593	0.615
Sex		
Female	-0.3387	0.177
Male	Reference variable	Reference variable
Insurance		
Medicare	Reference variable	Reference variable
Medicaid	-0.4362	0.334
Private Insurance	0.2848	0.258
Other	0.4712	0.625
Race/Ethnicity		
White	Reference variable	Reference variable
Black	0.4095	0.140
Asian	-0.1004	0.887

Multivariate logistic regressions were completed to analyze significant covariates for surgeon recommendation for TKA. Significant relationships are bolded.

Table 2: Racial concordance/discordance with surgeon and recommendations for TKA based on ethnicity

Patient Ethnicity	Total Patients	Concordance	Concordance + TKA recommendation	Discordance	Discordance + TKA recommendation	Total TKA recommendations	TKA Recommendation from surgeon (Concordance vs. Discordance) p value
White	138	99	29 (29.3%)	39	17 (43.6%)	46	0.1087
Black	121	59	35 (59.3%)	62	14 (22.6%)	49	**0.0001**
Total	259	158	64 (40.5%)	101	31 (31.0%)	95	0.1100
White vs. Black p value			**0.0002**		0.0258	0.2327	

Concordance/Discordance = physician-patient racial concordance/discordance. TKA recommendation = TKA recommendation. Significant relationships are bolded.

Conclusions

- Patients receiving racially concordant care in this cohort were significantly more likely to be offered TKA, and effect of racial concordance on TKA recommendation was greater among Black patients.

- These results emphasize the importance of diversity in orthopaedic surgery as it shows that Black patients are more likely to receive appropriate TKA recommendation from surgeons who share the same racial background.

- Further work promoting diversity to effectively eliminate these disparities is warranted.