

Race and poverty not risk factors for total knee replacement revision or failure

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Previous studies have established that black patients have a higher risk for knee replacement revision. Black patients also report significantly more pain and worse joint function two years after surgery compared to white patients. Some years ago, a team of investigators at Hospital for Special Surgery analyzed HSS patient data and found an interaction between race and poverty that impacted patient reported pain and function two years after surgery. They discovered that black patients from wealthy neighborhoods fared as well as white patients, but black patients from poor areas experienced fared significantly worse than white patients.

Now, in a new study published in [Arthritis Care & Research](#) that looked at the risk of total knee replacement revision or failure, HSS investigators found very a different result. "There was a trend toward race being a risk factor, but it was not statistically significant, and poverty had no impact: There wasn't even a trend," said lead study author Anne R. Bass, MD, an attending physician and program director of the Rheumatology Fellowship Program at Hospital for Special Surgery, and a professor of clinical medicine at Weill Cornell Medicine. "We were definitely surprised by our results."

For about 85 percent to 90 percent of people who have [total knee replacements](#), the artificial joints last about 15 to 20 years. In elderly patients, that may mean the rest of their lives. But for younger patients, especially those who are very active, the implants may fail over time and require revision. Over the last five years or so, the team of HSS

researchers have been collaborating to understand the factors placing some patients at higher risk of poor outcomes, including needing revisions.

This study was the first to link [patient data](#) to a statewide discharge database. The researchers linked the HSS Knee Replacement Registry with the Statewide Planning and Research Cooperative System (SPARCS) database and captured discharge information for patients who received revisions at other hospitals within the state of New York. Also new with this study, they explored whether race and poverty played a role in knee replacement failure, a broader outcome definition that includes patients who failed to improve at all after their initial procedures but who did not have revisions. Poverty information was collected from the U.S. census data.

Among a total of 4,062 patients who had a total knee replacement between January 2008 and February 2012 at HSS, only 122 or 3 percent required revisions during a median of five years of follow-up. Black patients had a 1.7 times higher risk of knee replacement revision than [white patients](#), but when the researchers analyzed multiple variables, race and poverty were not driving factors. Race and poverty also did not explain differences among patients with knee replacement failure.

The factors that were associated with a higher risk for revision were younger age, being male, and the use of a constrained prosthesis—a knee implant with conforming components that provides more stability. The [risk factors](#) driving failure included being treated by a surgeon that performs a low number of [knee](#) replacement surgeries and patients' low expectations for improvement after surgery.

"Younger people and males are typically more active, putting more strain on their implants. Constrained prostheses are only used in patients with bigger deformities and ligament imbalances, which tend to put more

strain on the implant and loosen the bone-cement interface," said study author Mark P. Figgie, MD, an attending [orthopedic surgeon](#) and Chief Emeritus of the Surgical Arthritis Service at HSS, and professor of clinical orthopedic surgery at Weill Cornell Medicine. "Our findings suggest that all patients should seek care from experienced surgeons at a high-volume hospital."

To explore their findings on a larger scale, the research team is conducting a new study, linking data from about one million patients from California, New York, Florida, Arizona, and Arkansas with their respective statewide databases. "We are asking the same questions about race and poverty, and we will be able to look at the influence of hospital choice on the risk of revision by linking to the American Hospital Association database," Dr. Bass said. "We are also looking at differences in revisions caused by infections versus mechanical issues." The more extensive study is expected to be completed later this year.

More information: Anne R. Bass et al, Racial Disparities in Total Knee Replacement Failure As Related to Poverty, *Arthritis Care & Research* (2019). [DOI: 10.1002/acr.24028](https://doi.org/10.1002/acr.24028)

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