Neighborhood socioeconomic status may impact patient outcomes after heart surgery

January 31 2022

Credit: Unsplash/CC0 Public Domain

Patients with mitral valve disease who live in disadvantaged communities are more likely to experience complications and are at higher risk for death after surgery than those with higher socioeconomic status (SES), according to research presented at the 58th Annual Meeting of The Society of Thoracic Surgeons.

"We collaboratively undertook this work with The Society of Thoracic Surgeons to better understand the impact of socioeconomic status on mitral valve surgery in the US," said Amit Iyengar, MD, MSE, from the University of Pennsylvania in Philadelphia. "The STS Adult Cardiac Surgery Database was linked with a very robust composite metric that evaluates average SES based on census block tract groups, and showed it relates to mortality and rate of achieving a successful repair, independent of all other demographic or hospital and surgeon-level characteristics we had available."

Using data from the STS Adult Cardiac Surgery Database, Dr. Iyengar and colleagues identified 46,831 adult patients who underwent—for the first time—isolated mitral valve repair or replacement for degenerative mitral disease from 2012 to 2018. Socioeconomic status was calculated using the 2018 Area Deprivation Index (ADI), a geographically-derived measure used to assess average income, education, employment, and housing quality for a given region. For this research, the group queried the ADI at a single city block level or rural equivalent.

"We confirmed the effect of ADI by looking at it more closely in smaller bootstrapped subsets," said Dr. Iyengar. "We did this thoughtfully, trying to shed some light on the mechanisms by which socioeconomic status would affect outcomes."

The researchers determined that low SES patients—who more commonly received health care under government payor programs such as Medicare and Medicaid (63% vs. 49%)—had more urgent/emergent surgery (21% vs. 13%), with minimally-invasive approaches used less often (24% vs. 39%).

"Neighborhood SES is associated with differing valve pathologies and presentations," said Dr. Iyengar. "Clinically, the extremes of SES represent two differing patient populations—elective degenerative

pathology (high SES) and more urgent, non-degenerative pathology (low SES)."

In addition, and importantly, low SES was associated with a lower repair rate (65.3% vs. 82.8%). Mitral valve repair has been widely regarded as the optimal surgical procedure to treat mitral valve disease and may help minimize complications that can occur with replacement, including the risk of blood clots with mechanical valves. In fact, low SES patients not only had a higher complication rate (48% vs. 40%), but also a higher 30-day mortality rate (2.9% vs. 1.3%).

"The data are very revealing and show several important findings such as lower SES patients have bigger incisions, fewer repairs, and worse outcomes in terms of complications and mortality," said T. Sloane Guy, MD, MBA, from Thomas Jefferson University in Philadelphia, Pennsylvania, who was not directly involved in this research. "There have been many papers out recently suggesting that certain groups of patients based on sex, race, or socioeconomic status have poorer outcomes. The usual conclusion drawn is that such patients are getting worse medical care. But the issue is more complicated, and I think most of us live by the tenant that we treat all patients the same regardless of any patient characteristics."

This research also showed that high SES patients tend to travel farther for surgery (33 vs. 17 miles) and receive operations from higher volume surgeons (62±69 vs. 31±46 cases/year).

Dr. Guy explained that access to care and the ability to travel to a high-volume mitral valve specialist were "clearly revealed as a discriminator" that negatively impacts those living in socioeconomically deprived neighborhoods. "Presumably, they have limited resources and options compared to those living in other neighborhoods," he said.

The researchers acknowledge that—moving forward—more work is required to determine how to best address these types of treatment disparities. Dr. Guy shared that efforts should focus on improving patient access to quality health insurance, care, and information.

Provided by The Society of Thoracic Surgeons