The double disparity facing traditionally disadvantaged and underserved patients with regards to postoperative inpatient mortality after isolated CABG procedure

Introduction: Previous literature has demonstrated a correlation between hospital volume and perioperative outcomes after major surgeries in the US [1, 2]. Additionally, studies have shown associations between insurance, race, and income with regard to receiving treatment at high or low surgical volume hospitals [3-5]; insurance, race, and income have been shown to be independently associated with perioperative outcomes highlighting healthcare disparities. Herein, we investigate the “double disparity” effect and examine the associations between insurance, race, income, and hospital volume, in addition to potential disparities present in post-operative mortality after coronary artery bypass grafting (CABG) procedures.

Methods: A retrospective review was performed using the State Inpatient Databases of California, Florida, and New York, Healthcare Cost and Utilization Project, Agency for Healthcare Research and Quality, for all isolated CABG patients >18 years between 2007 to 2011. Bivariate analysis was performed according to primary insurance payer. Multivariate logistic regression for in-hospital mortality was calculated to obtain OR for outcomes by insurance, race, and socioeconomic status adjusting for demographic and medical history, state, year, hospital surgical volume, and other potential confounders. Multivariate logistic regression models for mortality were re-run stratified by hospital surgical volume (in quartiles) to attempt to statistically homogenize the cohorts.

Results: 194,912 individuals were included in our analysis. Bivariate analysis showed that when compared to the composition of the overall population, patients with Medicaid, who are Black or Hispanic, or in the poorest median income were more likely to have isolated CABG procedures at a lower surgical volume hospital and patients with Private Insurance, who are White, and with the highest median income were more likely to have procedures at a higher surgical volume hospital (Tables 1-3). Multivariate analysis showed that patients with Medicaid had increased risk-adjusted mortality at all 4 quartiles of hospital surgical volume compared to patients with Private Insurance, with the greatest disparity at the forth quartile of hospital surgical volume. Black patients and patients with the poorest median income also had increased mortality compared to White patients and patients with the richest median income for all 4 quartiles of hospital surgical volume (except for Black patients in third quartile hospitals). Patients with great co-morbidities and patients who experienced cardiovascular, gastrointestinal, pulmonary, infectious, or intraoperative complications post-operatively had higher OR of mortality at all 4 hospital surgical volume quartiles (Table 4).

Conclusion: Our results indicate a “double disparity” with regard to inpatient mortality after isolated CABG surgery. First, the data illustrates a disparity in the use of hospitals by surgical volume for CABG procedures with Medicaid patients, Black patients, and poorer income patients.
undergoing these procedures preferentially at low volume hospitals; patients with Private Insurance, who are White, and have high incomes preferentially, received surgery at high volume hospitals. Secondly, our data shows that within each individual hospital volume quartile there are insurance based, racial, and income based disparities for inpatient mortality. Further research is needed to better explore and define these relationships with the ultimate goal of reducing disparities and improving outcomes.

References:


