

How does Ethnicity affect Postoperative Outcomes following Anterior Cervical Discectomy and Fusion?

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INTRODUCTION:

Significant health disparities exist across racial and ethnic patient populations, but literature investigating these disparities across ethnic groups for spine surgery outcomes is lacking. Some studies have shown that Black patients are more likely to experience negative outcomes following anterior cervical discectomy and fusion (ACDF) compared to White patients. A greater understanding of these disparities across multiple racial and ethnic groups will aid in equitable health care.

METHODS: A retrospective analysis was performed using data from a single urban institution. A total of 2,231 patients were identified from the institutional database using CPT codes 22551, 22552, and 22554, excluding patients undergoing the posterior approach, patients younger than 18 years old, and patients undergoing non-elective ACDF. Self-reported patient ethnicity was used to divide the sample population into four cohorts: 1,230 White patients, 198 Asian patients, 230 Black patients, and 573 patients of other ethnicities. Patient postoperative outcomes, including required ICU stay, complications, non-home discharge, 30- and 90-day readmission, prolonged length of stay, and dysphagia, were compared with an unadjusted chi-square analysis and a multivariable logistic regression, controlling for age, sex, and number of segments fused.

RESULTS:

Asian patients tended to be older ($p < 0.001$) and had a higher number of segments fused ($p < 0.001$) compared to White patients. Black ($p = 0.001$) and other ($p < 0.001$) patients were more likely to be female compared to White patients.

The unadjusted chi-square analysis showed that Black patients were significantly more likely to experience non-home discharge ($p = 0.001$) and prolonged length of stay ($p < 0.001$) compared to White patients. The multivariable logistic regression showed that Black patients were more likely to experience non-home discharge (OR: 3.06, 95% CI: [1.53, 6.09], $p = 0.001$) and prolonged length of stay (OR: 2.41, 95% CI: [1.59, 3.64], $p < 0.001$). Additionally, Asian patients were less likely to experience prolonged length of stay (OR: 0.27, 95% CI: [0.12, 0.61], $p = 0.002$) compared to White patients.

The multivariable linear regression revealed that Black patients were significantly more likely to experience longer surgeries compared to White patients. This also revealed that Black, Asian, and patients of other ethnicities had higher ELIX scores, higher incidence of diabetes and hypertension, and higher BMI compared to White patients.

DISCUSSION AND CONCLUSION:

Healthcare outcomes vary immensely across various racial and ethnic groups. This study shows that Black patients are significantly more likely to experience negative outcomes following ACDF, particularly non-home discharge and prolonged length of stay. The reasons for these disparities are complex, related to many different social determinants of health which contribute to these negative outcomes.

Further studies are necessary to understand the extent of these disparities in order to identify imperative interventions to provide equitable care to every patient. It is paramount to use the data from these studies in order to provide fair, equitable care to all patients who undergo an ACDF procedure and optimize postoperative outcomes.

Figure 1: Multivariable Logistic Regression Postoperative Outcomes

