Black Race and Government-Funded Insurance are Independent Predictors of Return to the Emergency Department without Readmission after Orthopaedic Surgery within the Global Period

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INTRODUCTION:

Emergency department (ED) visits and hospital readmissions within the 90-day global period following surgical procedures are commonly used metrics to assess care quality. ED revisits are often avoidable outcomes if patients do not require admission-level care. Understanding disparities in hospital return, with and without readmission after surgery, is crucial for achieving care equity and improving care coordination. Few studies have investigated independent predictors of ED revisits after orthopedic surgery. Previous studies emphasize the role of patient factors and hospital differences in contributing to care disparities but often limit their analysis to 30 days and do not examine ED returns without readmission. Our study aims to identify variables predictive of return to the ED with discharge and return to the ED with readmission at 7, 30, and 90 days within the global period after orthopedic surgery at a Level 1 academic hospital system.

METHODS:

In this retrospective cohort study, we analyzed adult patients who had undergone orthopaedic surgery at a level 1 academic hospital system. Inclusion criteria included all adults (Age > 18) who underwent any orthopedic surgery between January 1, 2017, and July 1, 2023, excluding non-operative cases. Primary variables included patient race, ethnicity, language, and insurance status. Additional variables included age, sex, BMI, comorbidities (hypertension, diabetes, COPD, type II diabetes, osteoporosis), discharge disposition, and work relative value unit (wRVU) of the primary procedure. The study was limited to patients living within 200 miles of the hospital to control for the likelihood of returning to the institutional ED. Two primary outcomes were assessed: the rate of return to the ED with discharge and the rate of return to the ED with readmission at 7-, 30-, and 90-days post-surgery. Six logistic regression models evaluated associations between predictors and outcomes at 7, 30, and 90 days, controlling for confounders and interactions. Odds ratios (ORs) with 95% confidence intervals assessed the strength and significance of associations. Statistical significance was assessed at $\alpha=0.0001$.

RESULTS:

The analysis included 91,725 patients. The average age was 60, with 46% males and 54% females. Most patients were White/Caucasian (75%), non-Hispanic (93%), and English speakers (98%). Insurance coverage included private insurance (50%), Medicare (41%), and Medicaid (6.4%). Return and discharge rates at 7, 30, and 90 days were 1.5%, 3.0%, and 4.7%, respectively, while readmission rates were 1.0%, 2.4%, and 3.9%. Black race was significantly associated with higher odds of return and discharge at all time points (OR=1.67, $p<0.001$; OR=1.68, $p<0.001$; OR=1.68, $p<0.001$, for 7, 30 and 90 days respectively). Black race was associated with return and readmission only at the 30-day time point (OR=1.21, 95% CI: 1.09-1.34, $p<0.001$). Furthermore, patients with public insurance, Medicare or Medicaid, were more likely to return and be discharged (Medicare: OR=1.76, $p<0.001$; OR=1.83, $p<0.001$; OR=1.84, $p<0.001$, Medicaid: OR=1.98, $p<0.001$; OR=1.92, $p<0.001$; OR=1.93, $p<0.001$, for 7, 30 and 90 days respectively) as well as readmitted (Medicare: OR=2.21 $p<0.001$; OR=1.93, $p<0.001$; OR=2.03, $p<0.001$, Medicaid: OR=2.12, $p<0.001$; OR=2.31, $p<0.001$; OR=2.34, 95% CI: 2.03-2.68, $p<0.001$, for 7, 30 and 90 days respectively) at all time points assessed within the global period.

DISCUSSION AND CONCLUSION:

Our study identified risk factors for return to ED with and without readmission within the 90-day global period after orthopedic surgery. Black patients exhibited higher rates of hospital return with discharge at all time points compared to White patients but no significant difference in readmission rates. Patients with government insurance (Medicaid and Medicare) had higher rates of both return with discharge and readmission at all time points. Understanding these risk factors can help healthcare systems implement proactive care and discharge plans to mitigate unnecessary returns. Furthermore, the patterns observed in this study suggest that Black and public insurance patients may face unique challenges after orthopaedic surgery, leading to increased hospital returns. Future research should incorporate more detailed patient data and external validation to enhance generalizability and identify targeted interventions for reducing disparities in ED returns and readmissions.