Impact of Obesity and Race on 90-Day Postoperative Complications Following Total Hip and Knee Arthroplasty: A Retrospective Cohort Study

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INTRODUCTION: Total hip arthroplasty (THA) and total knee arthroplasty (TKA) are common procedures that improve quality of life for patients with end-stage arthritis. While effective, short-term postoperative complications are a concern, particularly in patients with obesity or from racial minority groups. Prior studies have examined these risk factors independently, but few studies have examined how obesity and race may interact to influence postoperative outcomes following THA and TKA.

METHODS:

A retrospective cohort study was conducted using the Medicare Standard Analytic Files from 2005 to 2016. Patients undergoing THA and TKA were identified using CPT and ICD codes and stratified by obesity status (BMI ≥30 kg/m² vs. <30 kg/m²) and race (White vs. Non-White). Within each surgical group, obese and nonobese patients were matched 1:1 based on age, sex, Charlson Comorbidity Index (CCI), tobacco use, and diabetes. Primary outcomes included 90-day postoperative complications, such as hospital readmission, emergency department (ED) visits, acute kidney injury (AKI), and others. Univariate and multivariate logistic regression were used to assess the independent effect of race within BMI-stratified cohorts.

RESULTS: After matching, 28,544 THA and 62,926 TKA patients were included in both the obese and nonobese cohorts. In both obese and nonobese cohorts, Non-White patients had significantly higher odds of hospital readmission and ED visits compared to White patients. Among THA patients, Non-White individuals had greater odds of AKI and blood transfusion. TKA patients showed similar trends, particularly among obese individuals. However, Non-White patients had lower odds of cardiac arrhythmia, urinary tract infection, and myocardial infarction.

DISCUSSION AND CONCLUSION: Non-White race was independently associated with increased short-term complications following THA and TKA, even after controlling for obesity and other demographic factors. These findings highlight the need for race-conscious perioperative strategies to reduce disparities and improve outcomes for diverse patient populations undergoing joint arthroplasty.