

# **Black Patients undergo Hip Replacement at a Younger Age and have Worse Outcomes than White Patients: A Retrospective Matched Cohort Study**

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## **INTRODUCTION:**

Previous studies have shown that Black patients experience higher rates of postoperative complications. This study expands on that literature by investigating how race correlates with specific complications and total cost between Black and White patients following hip replacement. We hypothesized that Black patients would have higher rates of complications and cost, thus worse outcomes, than White patients.

## **METHODS:**

Data was collected from a large commercial insurance database from 2015-2017. Patients who underwent a hip replacement were assigned under Current Procedural Terminology (CPT) and International Statistical Classification of Diseases (ICD-9/ICD-10) codes. Black and White patients were matched for age, gender, tobacco use, diabetes, and obesity comorbidities. Standardized complications and total costs at one year were compared, before and after matching, using unequal variance t-tests.

**RESULTS:** A total of 1,424 Black patients (35% male) and 23,243 White patients (36% male) underwent hip replacement. Black patients were 4.1 times more likely to have hip replacement done under age 65 ( $p < 0.0001$ ) and more likely to undergo revision within two years ( $OR = 2.004$   $p = 0.002$ ). Black patients had significantly higher rates of acute kidney injury (AKI) ( $OR = 1.556$   $p < 0.0001$ ), wound complication ( $OR = 1.743$ ,  $p = 0.0013$ ), deep vein thrombosis ( $OR = 1.501$ ,  $p = 0.0152$ ), transfusion ( $OR = 2.023$ ,  $p < 0.0001$ ), and pulmonary embolism ( $OR = 2.069$ ,  $p = 0.0107$ ), but significantly lower rates of arrhythmia ( $OR = 0.636$ ,  $p < 0.0001$ ) and urinary tract infection ( $OR = 0.839$ ,  $p = 0.017$ ). Black patients were charged 67% ( $p < 0.0001$ ) more than White patients. Matching reduced each group to 1,424 patients included. Black patients had significantly higher rates of AKI ( $OR = 1.308$   $p = 0.0333$ ) and transfusion ( $OR = 1.693$   $p = 0.0008$ ), but significantly lower rates of arrhythmia ( $OR = 0.776$   $p = 0.0104$ ) and surgical site infection ( $OR = 0.702$   $p = 0.041$ ), and were charged 42% more ( $p < 0.0001$ ).

## **DISCUSSION AND CONCLUSION:**

Black patients experienced significantly greater rates of complications and higher costs. Therefore, this study supports our hypothesis that Black patients have worse outcomes than White patients after hip replacement and advocates for reducing health disparities.