

Disparities Associated with Total Joint Arthroplasty Transfusion Rates



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Background

- Black patients are at increased risk of complications following orthopaedic surgeries, including Total Joint Arthroplasty (TJA)¹
- Transfusion increases complications following surgery:^{2,3}
 - Infection
 - Readmission
 - Longer length of stay
- There has been a significant decline in transfusion rates over time⁴
- Previous studies showed that both Black patients and women undergoing TJA had higher transfusion rates^{5,6}
- Previous studies have not identified confounding variables that influence the rate of transfusion in TJA cases across demographic groups

Aims

- Investigate the impact of patient demographics on transfusion rates
- Identify trends in transfusion rates for TJA over time
- Explore variables related to transfusion rates across demographic groups

Methods

- We identified TJA patients from the Ochsner Healthcare Network from 2013 to 2021
- Patients with a diagnosis code that indicated a fracture within 30 days of surgery were excluded from the analysis to focus on elective surgeries
- Fisher exact to compare categorical covariates across transfusion groups, and Wilcoxon rank-sum tests to compare continuous covariates were used
- Multivariable logistic regression was performed to predict whether transfusion occurred based on patient covariates within 5 days of surgery

Results

Variable	OR (CI)	P-value
Black v White	1.75 (1.33-2.31)	<.001
Male Gender	0.77 (0.56-1.06)	0.111
Smoking	0.78 (0.56-1.08)	0.138
BMI>=40	0.87 (0.65-1.18)	0.38
Private Insurance	0.99 (0.67-1.46)	0.955
Hip Surgery	1.07 (0.79-1.45)	0.651
Age (Continuous)	1 (0.98-1.01)	0.859
CCI (Continuous)	1.11 (1.03-1.21)	0.007
Surgery Year (Continuous)	0.78 (0.74-0.83)	<.001
Creatinine (Continuous)	0.98 (0.82-1.17)	0.835
Hemoglobin (Continuous)	0.66 (0.61-0.71)	<.001

Figure 1. Multivariable logistic regression for transfusion

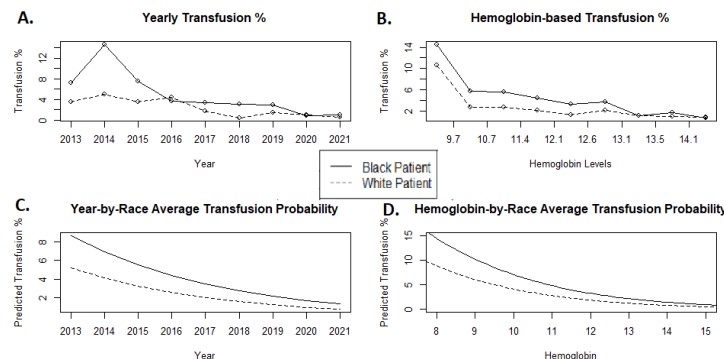


Figure 2. Empirical (top) and predicted (bottom) probabilities of transfusion in black and white patients. A) Observed probability of transfusion by year in each racial group. B) Observed probability of transfusion within each Hgb percentile group. C) Average predicted transfusion probability by year. D) Average predicted transfusion probability based on continuous hemoglobin.

Results Continued

- We identified 7,595 patients, of which, 233 (3.0%) had transfusion at the time of TJA
- Black patients had a higher rate of transfusion than White patients overall (4.9% vs. 2.2%)
- After adjusting for confounding variables, the biggest factor associated with a higher risk of transfusion was being Black (aOR = 1.75, 95% CI = 1.33-2.31)

Discussion and Future Directions

- Transfusion rates for TJA patients are declining, however Black patients continued to receive transfusions at higher rates than white patients, despite similar hemoglobin levels
- It is imperative to understand why this disparity exists and understand physician decision making surrounding transfusion
- Further analyses will allow for interventions in peri-operative care to eliminate this disparity and improve TJA outcomes across different racial groups

Acknowledgements

Thank you to my mentor, Dr. Vinod Dasa for his support on this project and to Dr. Chapple for his help with study design and data analysis. Thank you to Dr. Peter Krause, Dr. Deryk Jones, and Dr. Lauren Leslie for their guidance on study design and writing.

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