Mapping Inequity: Racial Variations in Breast Cancer Hospital Admissions and Clinical Outcomes in the U.S

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Abstract

- In a national cohort of 33,597 breast cancer hospitalizations (2022), marked racial disparities were observed in age at admission, mortality, complications, hospital characteristics, and socioeconomic factors. African-American patients had higher odds of AKI and pulmonary embolism compared with Whites, while several minority groups showed lower complication risks. These findings underscore persistent inequities in clinical outcomes and care settings.

Introduction

- Despite advances in screening and treatment, substantial racial and socioeconomic disparities continue to shape access to care, severity at presentation, and the trajectory of in-hospital complications.
- Prior research has demonstrated that structural inequities—including differences in insurance coverage, regional resource distribution, and hospital teaching status—contribute to heterogeneous patient experiences across racial groups.
- A comprehensive assessment of national hospitalization data provides an opportunity to delineate these disparities with greater precision, thereby informing targeted interventions and policy reforms aimed at improving equity in clinical outcomes.

Methods and Materials

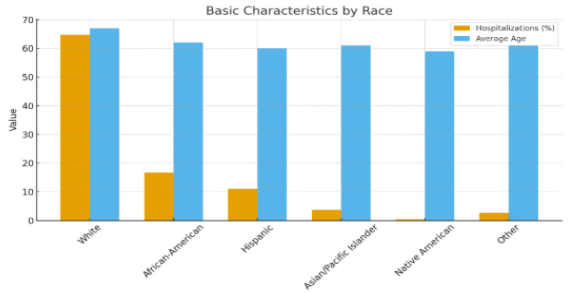
- We conducted a retrospective analysis of breast cancer–related hospitalizations using the 2022 National Inpatient Sample, enabling population-level assessment of demographic and clinical variations.
- Patients were stratified into six racial groups—White, African American, Hispanic, Asian/Pacific Islander, Native American, and Other—to evaluate disparities across diverse patient populations.
- Statistical analyses were performed using STATA/BE 18.5, with ANOVA, Chi-square tests, and multivariate logistic regression applied to determine the independent effect of race on key clinical outcomes.

Results

- A total of 33,597 breast cancer hospitalizations occurred in 2022, with notable racial distribution: 64.7% White, 16.7% African-American, 11.1% Hispanic, 3.7% Asian/Pacific Islander, 0.4% Native American, and 2.7% Other.
- In-hospital mortality varied by race, with the highest rate in African-Americans (6.0%) and the lowest in Whites (5.0%) ($p = 0.02$).
- African-Americans demonstrated higher odds of AKI (OR = 1.42) and pulmonary embolism (OR = 1.27) relative to Whites, while several minority groups showed significantly lower odds of pulmonary embolism.

Results

- Teaching-hospital utilization exceeded 83% for African-American, Hispanic, and Asian/Pacific Islander patients, compared with 76.6% in Whites and 73.4% in Native Americans.
- Hospital region differed significantly by race, with African-Americans concentrated in the South, Whites in the South and Midwest, and Asian/Pacific Islanders predominantly in the West.
- Socioeconomic disparities were evident, with nearly half of African-American patients in the lowest income quartile and Asian/Pacific Islanders concentrated in the third quartile.
- Discharge disposition and insurance status showed marked variation, with Hispanics and Asian/Pacific Islanders more frequently discharged home, and Medicaid coverage more common among African-American and Hispanic patients.



Discussion

- Higher complication rates and mortality among African-American patients may reflect the cumulative influence of comorbidity burden, differential access to timely care, and systemic structural disadvantages.
- Lower odds of pulmonary embolism among Hispanic, Asian/Pacific Islander, Native American, and Other groups suggest heterogeneous risk profiles that may be shaped by biological, environmental, or care-pattern differences.
- Disparities in hospital type and regional distribution underscore how geography and institutional resources unevenly affect the care environments patients encounter.
- Income and insurance variations reinforce the role of socioeconomic factors in shaping healthcare utilization, discharge disposition, and overall inpatient experiences.

Conclusions

- Significant racial disparities persist in U.S. breast cancer hospitalizations, influencing patient age at presentation, clinical outcomes, comorbidity burden, and access to healthcare resources.
- These findings underscore the urgent need for targeted, equity-focused interventions to reduce racial gaps in breast cancer care quality and outcomes.

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