

# The Impact of Race on Choice of Post-Mastectomy Reconstruction: Is There a Healthcare Disparity?

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**INTRODUCTION:** Although the Institute of Medicine has declared equity to be one of the six key domains of health care quality<sup>1</sup>, racial disparities continue to be a well-documented problem afflicting contemporary American healthcare.<sup>2</sup> Since breasts represent a symbol of femininity for many women, breast reconstruction is critical to mitigating the psychosocial and cultural stigma of a catastrophic breast cancer diagnosis. However, whether different races have equitable access to breast reconstruction, after accounting for other pertinent clinicopathologic variables, remains unknown.

**MATERIALS AND METHODS:** A retrospective cohort study was designed using  $N = 2,533$  women who underwent either first-time autologous or first-time implant-based breast reconstruction following mastectomy for breast cancer. The following were tabulated for each patient: age, smoking, diabetes, obesity, provider, race, pathologic stage, health insurance type, charge to patient, and socioeconomic status. Wilcoxon rank-sum and chi-squared tests were used to compare group medians and proportions, respectively. A backwards-stepwise multivariate logistic regression model was employed to identify independent predictors of type of breast reconstruction. Two-sided  $\alpha = 0.05$  indicated significance in all tests.

**RESULTS:** Compared to those of Caucasian descent ( $n = 2,086$ ), African-Americans ( $n = 349$ ) were statistically-significantly more likely to be under-insured ( $p < 0.01$ ), face a lesser charge for reconstruction ( $p < 0.01$ ), smoke ( $p < 0.01$ ), have diabetes ( $p < 0.01$ ), suffer from obesity ( $p < 0.01$ ), live in a zip code with a lower median household income ( $p < 0.01$ ), and undergo autologous-based reconstruction ( $p = 0.01$ ).

On initial multivariate analysis, African-American race (OR 2.21,  $p < 0.01$ ), charge to patient (OR 1.00,  $p < 0.01$ ), and provider (OR 0.96,  $p < 0.01$ ) were significantly associated with autologous-based reconstruction. After backwards-stepwise regression, only African-American race (OR 2.23,  $p < 0.01$ ), charge to patient (OR 1.00,  $p < 0.01$ ), and provider (OR 0.96,  $p < 0.01$ ) independently predicted type of breast reconstruction, while age (OR 1.02,  $p = 0.06$ ) and diabetes (OR 0.48,  $p = 0.08$ ) did not.

**CONCLUSION:** To our knowledge, this study is the first high-powered and rigorous analysis to demonstrate a racial disparity regarding breast reconstruction while accounting for other important confounders. African-American race remains the most clinically significant predictor of autologous-based breast reconstruction after mastectomy for breast cancer, even after controlling for age, obesity, pathologic stage, health insurance type, charge to patient, socioeconomic status, smoking, and diabetes. Future research is required to address whether this disparity stems from patient preferences or more profound sociocultural and economic forces including discrimination.

## REFERENCES:

1. Institute of Medicine (IOM). Crossing the Quality Chasm: A New Health System for the 21<sup>st</sup> Century. Washington D.C.: National Academy Press; 2001.
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**Table 1.** Clinical, Pathologic, and Socioeconomic Characteristics.

Variable	Caucasian (N = 2086)	African-American (N = 349)	P-Value
Age	49.7 [42.3, 57.6] <sup>1</sup>	48.5 [41.9, 56] <sup>1</sup>	0.06 <sup>2</sup>
Insurance Type	Medicare 306 Commercial 25 HMO 751 Hospital Contracts 8 Medicaid 181 PPO 0 Self Pay 739 Other 76	Medicare 56 Commercial 3 HMO 93 Hospital Contracts 6 Medicaid 133 PPO 1 Self Pay 52 Other 5	<b>&lt; 0.01<sup>3</sup></b>
Charge	5580 [3579, 7600] <sup>1</sup>	3990 [3488, 6860] <sup>1</sup>	<b>&lt; 0.01<sup>2</sup></b>
Pathologic Stage	0 444 I 467 II 437 III 189 IV 11 Unknown 538	0 72 I 82 II 63 III 41 IV 3 Unknown 88	0.37 <sup>3</sup>
Smoking	Never 1017 Prior 285 Active 240 Unknown 544	Never 176 Prior 46 Active 70 Unknown 57	<b>&lt; 0.01<sup>3</sup></b>
Diabetes	No 1471 Yes 72 Unknown 543	No 259 Yes 34 Unknown 56	<b>&lt; 0.01<sup>3</sup></b>
Obesity	No 1472 Yes 71 Unknown 543	No 266 Yes 27 Unknown 56	<b>&lt; 0.01<sup>3</sup></b>
Median Household Income of Zip Code	\$51,512 [\$40,772 – \$67,934] <sup>1</sup>	\$35,071 [\$30,826 – \$52,477] <sup>1</sup>	<b>&lt; 0.01<sup>2</sup></b>
Breast Reconstruction Type	Implant-based 1418 Autologous-based 356 Other or N/A 312	Implant-based 219 Autologous-based 79 Other or N/A 51	<b>0.01<sup>3</sup></b>

<sup>1</sup>Median [IQR]; <sup>2</sup>Wilcoxon rank-sum; <sup>3</sup>Chi-squared.

**Table 2.** Multivariate Logistic Regression Predicting Reconstruction Type

Variable	Odds Ratio (CI)	P-Value
Age	1.02 (1.00, 1.03)	0.06
African-American Race	2.23 (1.44, 3.44)	<b>&lt;0.01</b>
Diabetes	0.48 (0.21, 1.09)	0.08
Charge	1.00 (1.00, 1.00)	<b>&lt; 0.01</b>
Provider	0.96 (0.94, 0.98)	<b>&lt;0.01</b>