

# Racial Disparities in Cardiovascular Disease Among Patients with Cancer in the United States: The Elephant in the Room

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Cardiovascular disease (CVD) is common among patients with cancer, potentially due to overlapping risk factors such as diabetes, obesity, tobacco abuse, etc. While underlying systemic inflammation appears to be a common driver for both disease processes, a significant burden of CVD also appears to stem from anti-cancer therapies. As the paradigm of cancer care continues to evolve from purely disease-focused to more patient-centered, there is a growing emphasis on developing strategies for the early diagnosis and treatment of disease and treatment-related complications such as CVD. However, racial and ethnic disparities in CVD among patients with cancer continue to pose a significant challenge in this direction.

There are several factors that perpetuate disparities in CVD among patients with cancer. African American individuals are known to have an earlier onset of several traditional cardiovascular risk factors such as hypertension, diabetes, obesity, etc., which subsequently increase the incidence of heart failure, stroke and peripheral vascular disease in these patients.<sup>1</sup> Higher prevalence of CVD in African American individuals has also been linked to poorer access to primary care.<sup>2</sup> Subsequently, poorer baseline cardiac function further increases the risk of cardiac dysfunction and reduces treatment tolerability with potentially cardiotoxic anti-cancer therapies.<sup>3</sup> [Table 1](#) summarizes the existing evidence on ethnic and racial disparities in treatment-related CVD among patients with cancer (while the terms “African American” and “Black” are widely different, they have been referred to interchangeably to parallel their use in existing literature).

It is also possible that lack of health insurance or the presence of a less favorable insurance status may potentiate disparities in CVD among patients with cancer. African American and Hispanic individuals are more

likely to be uninsured during adulthood than non-Hispanic individuals.<sup>4</sup> Cardiovascular death in specific has been reported to be higher in patients with cancer and Medicaid (more common among socioeconomic minorities) than those with non-Medicaid insurance coverage.<sup>5</sup> Additionally, patients with cancer and co-morbid CVD may forego or delay care due to higher costs of care.<sup>6</sup>

Furthermore, lack of access to appropriate care is a pervasive issue that continues to hamper the delivery of quality healthcare to patients with cancer in general. In a large study of patients with non-metastatic breast cancer, Black race was associated with the underuse of resection with curative intent (94.9% vs 96.4%,  $p < 0.001$ ).<sup>7</sup> Other similar studies have underscored the fact that disparities in outcomes stem from poor access to cancer care, instead of tumor biology and stage presentation. The issue of lack of adequate access to care also extends to include specialized services such as cardio-oncology. A retrospective analysis of 149 patients who received **human epidermal growth factor receptor 2 (HER2)** receptor antagonists and/or anthracyclines showed lower rates of referrals among patients belonging to areas associated with lower income quartiles.<sup>8</sup> Access to cardio-oncology services is restricted by factors such as lack of funding and infrastructure. Most cardio-oncology clinics are limited to larger institutions that patients with relatively poorer socioeconomic backgrounds may not have access to. Due to cardio-oncology being a novel and upcoming service, coverage by several insurance providers may also be scarce. To overcome these barriers, cost-effective models for setting up cardio-oncology programs in resource limited settings have also been proposed.<sup>9</sup>

There is a growing need to conduct clinical and translational research geared towards developing a better understanding of factors that drive racial inequities in cardio-oncology. Racial and ethnic minorities like African Americans and Hispanic patients have been found to be underreported in cancer clinical trials. It is possible that disparities in cardio-oncology are compounded by disparate enrolment of patients

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Study	Year	Therapeutic intervention	Type of study	Definition of cardiotoxicity	Outcomes	Reference
Litvak et al.	2019	Trastuzumab +/- pertuzumab	Retrospective	LVEF decline to <50% and absolute drop in LVEF of $\geq 10\%$ from baseline	Black patients had a higher rate of cardiotoxicity, and resultant incomplete adjuvant HER2-targeted therapy than white patients.	<i>Cancer</i> . 2018;124(9):1904–1911.
Hassan et al.	2004	Doxorubicin	Retrospective	CHF or a measured LVEF <45%.	African Americans had a higher rate of cardiotoxicity.	<i>J Natl Med Assoc</i> . 2004;96(2):196–199.
Al-Sadawi et al.	2021	Trastuzumab	Retrospective	Clinical heart failure (New York Heart Association class III or IV) or asymptomatic LVEF decline (absolute decrease $\geq 10\%$ to < 53%, or $\geq 16\%$ )	Risk of cardiotoxicity was significantly higher in black compared with white women (adjusted OR, 1.88; 95% CI, 1.25–2.84).	<i>Am J Cardiol</i> . 2021;147:116–121.
Baron et al.	2014	Trastuzumab	Retrospective	$\geq 16\%$ absolute decrease in LVEF from baseline or $\geq 10\%$ absolute decrease in LVEF from baseline with LVEF below institutional limits of normal (50%)	African Americans had a higher risk of developing decreased LVEF.	<i>J Card Fail</i> . 2014;20(8):555–559.

**Table 1: Existing evidence highlighting racial disparities in treatment-related CVD among patients with cancer.**  
LVEF: left ventricular ejection fraction, HER2: human epidermal growth factor receptor 2, CHF: congestive heart failure, OR: Odd's ratio.

representing these populations into clinical trials investigating potentially cardiotoxic agents. Several factors such as cultural and language barriers or poor access to cardio-oncology care may potentially influence clinical trial accrual. Strategies to overcome barriers to clinical trial accrual (such as wearables to mitigate transportation issues and allow remote enrollment) are needed.<sup>10</sup>

As we continue to witness diagnostic and therapeutic advancements in cancer care, there is an urgent need to address the racial and ethnic disparities in co-morbid conditions that impact overall outcomes and affect treatment tolerability among patients with cancer. Improving access to primary care is important to minimize baseline prevalence of CVD among minorities, which will also help mitigate disparities in chemotherapy-induced cardiotoxicity. There is a need to consolidate efforts to maximize research on the impact of race on chemotherapy-induced cardiotoxicity and modify clinical trial design to help augment the accrual of racial minorities. Enabling access to cardio-oncology services would go a long way in building an efficient infrastructure for an equitable delivery of care for improving overall outcomes in these patients.

#### Declaration of interests

None to declare.

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