Cardio-Oncology

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Cardio-oncology care in Africa: current trends and disparities

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Abstract

The emerging discipline of cardio-oncology addresses the cardiovascular complications associated with cancer therapies. In sub-Saharan Africa (SSA), where both cardiovascular disease (CVD) and cancer-related mortality are increasing, the development of cardio-oncology services remains limited. This correspondence assesses the current state of cardio-oncology in Africa, highlighting significant gaps in infrastructure, workforce, and policy. Despite the establishment of a single accredited cardio-oncology unit in South Africa, formalized services are lacking in the majority of African countries, leading to fragmented care and increased incidence of treatment-related cardiotoxicity. Key barriers include inadequate specialist training, limited diagnostic resources and a lack of standardized care protocols. The paper outlines strategic interventions, including multidisciplinary training, integration of cardiovascular screening into oncology, research funding, and policy reform. Strengthening cardio-oncology services is essential to reduce the dual burden of cancer and CVD and improve clinical outcomes for affected populations in SSA.

Keywords Cardio-oncology, Africa, Cardiac malignancy, Cardiovascular health

Background

Cardio-oncology is an emerging field within cardiology that examines the relationship between cancer and cardiovascular disease (CVD), with a focus on the cardiac complications caused by cancer therapies such as chemotherapy and radiotherapy. While these treatments are often life-saving, they can induce cardiac dysfunction and contribute significantly to cancer-related mortality [1].

In sub-Saharan Africa (SSA), CVD remains a major public health burden, causing more than one million deaths annually [2]. It accounts for 38.3% of noncommunicable disease-related deaths and 22.9 million disability-adjusted life years [3]. In 2019 alone, nearly one million CVD-related deaths will be recorded in SSA, representing a 50% increase since 1990. This increase is driven by population aging, urbanization, and lifestyle risk factors such as hypertension, tobacco use, obesity, physical inactivity, alcohol abuse, and diabetes, particularly among those under 30 years of age [3–5]. Meanwhile, cancer mortality in SSA is projected to double from 520,348 deaths in 2020 to one million deaths annually by 2030 [6].

Despite this increasing burden, cardio-oncology management capacity and research in Africa remains scarce. Most current data are from high-income countries and there is a significant knowledge gap in the African context [7]. As the field of cardio-oncology continues to evolve, there is a growing need to understand its impact on African populations, where unique challenges such as

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limited healthcare infrastructure and shortage of specialists persist.

The evolution of cardio-oncology has drawn attention to associated cardiac complications such as hypertension, vascular embolism, arrhythmias, and heart failure [8]. This field is critical to ensuring that efforts to eradicate cancer do not lead to significant cardiologic problems that can result in lifelong morbidity and, in some cases, pose a higher risk of mortality than the cancer itself [9]. Advancing research and practice in cardio-oncology is therefore essential to improve patient outcomes.

Cardio-oncology care in SSA; recent advances and challenges to widespread implementation

Advances

Specialized cardio-oncology care is still in its infancy on the African continent, especially in SSA. The majority of these cases are still handled by general hospitals and the few cardiology and oncology centers in the region. Specialized cardio-oncology units (COUs) did not exist for decades until recently, when one was established in Durban, South Africa in 2018. The Netcare Umhlanga Cardio-Oncology Unit, the first in Africa to be accredited by the International Cardio-Oncology Society, was founded by Dr. Y.T. Trishun Singh in response to the increasing recognition of irreversible cardiotoxicity in cancer patients undergoing chemotherapy and radiation. Dr. Singh emphasized the need to enhance the expertise of oncologists, hematologists, and cardiologists in cardio-oncology, particularly in identifying when patients require baseline cardiovascular assessment. Integrating cardiovascular risk assessment into oncology care is essential to optimize cancer treatment outcomes and mitigate the long-term cardiotoxic effects of cancer therapies [10].

Challenges

Lack of standardized protocols

Many African countries lack dedicated COUs, leaving oncologists and cardiologists to manage treatment-related cardiovascular complications reactively and without formal protocols. Cardiac assessments are typically limited to symptomatic patients or those in tertiary centers, and routine monitoring is inconsistently applied due to equipment and cost limitations [7, 11]. Risk-adapted models for low-resource settings prioritize high-risk patients for echocardiography and biomarker monitoring when universal imaging is not feasible. This fragmented care contributes to high rates of cardiotoxicity: Uganda reported a 21.9% incidence of anthracycline-induced cardiac dysfunction, while studies from Kenya showed rates of 29% [12]. Informal multidisciplinary collaboration is beginning to emerge, as ad hoc collaborations between oncologists and general cardiologists help fill gaps in care in the absence of formal COUs [10–12]. However, without specialized teams, cardiovascular risk is often misclassified, potentially depriving patients of curative therapies [7]. In contrast, South Africa's COU has demonstrated that structured cardiac assessment and integrated care can improve treatment completion rates and reduce cardiac injury [10].

Financial constraints, limited infrastructure and specialised healthcare workers

As the dual burden of cancer and CVD continues to escalate across the African continent, many countries face considerable challenges in establishing cardio-oncology units (COUs). These challenges are primarily rooted in systemic underfunding, inadequate infrastructure, and a critical shortage of trained healthcare professionals. Alizadehasl et al. (2020) highlight that financial constraints, limited awareness regarding the functions of COUs, and the absence of standardized operational protocols constitute major barriers to the advancement of cardio-oncology services [7]. Moreover, essential diagnostic modalities such as echocardiography, vital for the early detection of cardiotoxicity, remain largely inaccessible due to prohibitive costs in many African settings [11]. As a result, more affordable alternatives, including cardiac troponin testing, have been proposed as feasible substitutes.

Economic disparities across African nations further exacerbate the crisis. Countries with fragile healthcare infrastructure and governance systems—such as Somalia and Chad—encounter substantial obstacles in implementing sustainable health policies [3]. In conflict-affected regions, the immediate prioritization of humanitarian relief often supersedes long-term investments in healthcare systems, including the development of cardio-oncology services.

The shortage of a specialized workforce presents an additional layer of complexity. With approximately 2,000 cardiologists distributed across the continent—many of whom are concentrated in South Africa—the scarcity of cardio-oncology specialists is particularly acute [13]. In rural and underserved areas, patients presenting with potential cardiac malignancies are frequently managed by general practitioners, contributing to delayed diagnoses and suboptimal clinical outcomes [14].

Poor screening programs and other societal factors

Cancer screening programmes are essential for early detection and patient survival. However, unlike other malignancies such as breast cancer, routine cardiovascular screening for cancer therapy-related cardiotoxicity are not a priority in most African countries [7]. This neglect is compounded by a systemic lack of cardio-oncology infrastructure and workforce capacity across

the continent. In many African oncology centres, cardiovascular assessment is often limited to a single pretreatment evaluation, with no subsequent monitoring during or after chemotherapy [12, 15]. Such gaps in longitudinal screening allow subclinical cardiac dysfunction, especially anthracycline-induced, to progress undetected until symptomatic heart failure manifests, by which time interventions are less effective [15].

Socioeconomic barriers and health system fragmentation further undermine effective surveillance. For instance, in Nigeria, over 80% of cardiologists surveyed were unfamiliar with cardio-oncology guidelines, and most patients with cardiac complications are managed in non-specialist settings without formal coordination between cardiologists and oncologists [16]. These deficits reflect a broader trend of low cardio-oncology awareness among healthcare providers, lack of dedicated clinics, and poor access to echocardiographic and biomarker-based surveillance tools [7, 12]. In some African cultures, beliefs can also serve as a hindrance to cardiovascular care, as certain traditions do not permit individuals to receive blood transfusions. These cultural beliefs may significantly influence the outcomes of treatment for patients undergoing care for CVD. Moreover, some cultural norms may discourage individuals from seeking cardiovascular care at medical facilities or may even stigmatize the adoption of healthy lifestyles [3, 17]. Addressing these structural, educational and cultural shortcomings is essential to preventing avoidable cardiovascular morbidity in African cancer patients.

Discussion of effective strategies to improving Cardio-oncology access in SSA

Improving cardio-oncology care in Africa requires a comprehensive strategy encompassing awareness, infrastructure, research, policy support, and collaboration. Training tailored to local needs is essential, as demonstrated by the POETIC exchange program, which highlights how international partnerships enhance the management of cardiovascular complications in cancer patients [18].

Infrastructural development and building a robust local capacity

Strengthening cardio-oncology access in SSA necessitates targeted infrastructural development, with a primary focus on the establishment of additional COUs. South Africa currently leads in this domain, and the emergence of similar units outside SSA, for example in Morocco, reflects a growing regional commitment to advancing cardio-oncology services [19]. While Morocco lies outside SSA, its recent COU establishment offers a valuable model that SSA countries could adapt to accelerate the development of similar units within the region. Furthermore, to mitigate the shortage of specialists, particularly in remote and underserved areas, telemedicine presents a viable and scalable solution. The implementation of the ECHO model in South Africa and Lesotho has demonstrated that virtual training and mentorship can effectively enhance local capacity in both cancer and cardiac care [20]. Expanding this model across SSA holds significant promise for improving the accessibility and quality of cardio-oncology services.

Equally critical is the development of national cardio-oncology registries, which would enable the collection of real-time data on treatment outcomes and cardiovascular complications. Such registries would inform clinical decision-making and guide policy development, complementing initiatives like the African Cancer Coalition's SSA-specific treatment guidelines that emphasize the need for robust, locally derived epidemiological data [21]. Addressing the limitations in diagnostic capacity is also imperative. In many African healthcare settings, diagnostic tools such as electrocardiograms, echocardiograms, and cardiac biomarkers are either scarce or prohibitively expensive, thereby hindering the early detection and management of cardiotoxicity [11, 15].

Finally, the allocation of research funding tailored to the African context is essential to foster innovation in diagnostics, the development of low-cost screening tools, and the creation of risk stratification models that are appropriate for resource-constrained environments. Collectively, these strategies offer a pathway toward building a sustainable and equitable cardio-oncology framework across SSA, ensuring that cancer survivors are not burdened by preventable cardiovascular complications [15].

Providing robust training, fellowships and encouraging multidisciplinary approach

Implementing cardio-oncology programs in SSA is vital for improving the prevention, diagnosis, and treatment of cancer patients at risk of cardiotoxicity while preventing unnecessary treatment discontinuation. These programs should integrate clinical skills, research, training, innovation, and quality control. Research on cancer treatments tailored to African populations and studies examining nutrition and environmental factors in cardio-oncology outcomes offer valuable insights. Dietary patterns, including low-fat, low-carbohydrate, and Mediterranean diets, play a significant role in improving outcomes, while environmental pollutants, such as cigarette smoke and industrial oxidants, contribute to adverse effects [22, 23].

Furthermore, encouraging a multidisciplinary approach both in training and practice will massively improve cardio-oncology care in SSA. This approach should include medical and radiation oncologists, specialized nurses, pathologists, and cardiac surgeons. Clinicians must be equipped to identify cases requiring specialized cardiac

referral versus local management. Educational sessions with cardiologists, hematologists, and oncologists for medical students, residents, and fellows, along with seminars and conferences, would enhance engagement. Professional society memberships could further strengthen training ethics and holistic participation [24]. Additionally, comprehensive cardiology fellowships and specialized cardio-oncology programs incorporating structural cardiovascular interventions, imaging studies, and high-volume cardiac catheterization laboratories are crucial [25]. Strengthening these structures would not only alleviate healthcare workforce burdens but also improve patient outcomes by ensuring access to well-trained specialists.

Enhancing public health initiatives

Public awareness initiatives, such as Choosing Wisely Africa, emphasize early diagnosis and cardiovascular care and promote best practices in the management of cancer-related cardiovascular complications [26]. Raising awareness through cancer screening, public education, and social media can further improve understanding of the link between CVD and cardio-oncology [27]. Implementation of resource-appropriate monitoring and follow-up strategies would also facilitate early detection of cardiac toxicity in SSA [7]. Private institutions and non-governmental organizations, including the World Health Organization, can support health promotion and awareness campaigns to encourage healthy lifestyles and early screening.

Conclusion

Cardio-oncology care in Africa is underdeveloped, despite the increasing prevalence of both cancer and cardiovascular disease. Lack of specialized units, shortage of trained professionals, and limited diagnostic capabilities contribute to suboptimal management of treatment-related cardiotoxicity. Addressing these challenges requires a multifaceted approach that includes capacity building, investment in infrastructure, public health awareness, and the formulation of region-specific clinical guidelines. Establishing integrated cardio-oncology programs and fostering international collaboration will be critical to advancing patient care. Prioritizing this discipline within national health agendas is imperative to reduce morbidity and mortality and improve quality of life for cancer patients across the continent.

Abbreviations

CVD	Cardiovascular Disease
SSA	Sub-Saharan Africa
COU	Cardio-Oncology Unit

Acknowledgements

Not Applicable.

Author contributions

Conceptualisation: P.A.N.B. and W.A.A. Material preparation, data collection, analysis and writing of the first draft: P.A.N.B, A.B.J, A.N.A.B, P.O.T, T.A.R, W.A.A. Writing and approval of the final draft of the manuscript: All authors.

Funding

The authors declare that no funds, grants, or other support were received during the preparation of this manuscript.

Data availability

No datasets were generated or analysed during the current study.

Declarations

Ethical approval

Ethics approval is not applicable.

Consent to participate

No original data from new patients were collected, consent to participate is not applicable.

Consent for publication

Consent for publication is not applicable.

Competing interests

The authors declare no competing interests.

Received: 26 September 2024 / Accepted: 18 April 2025
Published online: 02 May 2025

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