

**The Emerging Discipline of Cardio-Oncology; What, why and how?**Syed Arsalan Ahmed Naqvi<sup>1</sup>, Syed Danish Hasan Zaidi<sup>2</sup>, Mohammad Zeeshan Haider<sup>3</sup>

*Madam*, Cardio-oncology is a fairly new subspecialty that deals with cardiovascular diseases in patients with active cancer, undergoing cancer treatment, or having any history of cancer and its treatment. The field does not only cover therapeutic and diagnostic options to treat cardiovascular toxicities, but also risk-stratify the patients prior to the induction of different cancer therapies and follow short-term and long-term cardiovascular complications secondary to cancer and its treatment. It also covers the rare domain of primary and metastatic cardiac tumours.<sup>1</sup>

With the advent of newer and more potent therapies such as immune-check point inhibitors and targeted monoclonal antibodies, along with older and classical targeted therapies, short-term and long-term cancer survival have been improved to a great extent. However, this increased survival brings a detrimental toll on the cardiovascular system. Myocardial dysfunction, either due to direct myocardial destruction or myocardial functional impairment, is the major cardiotoxicity that occurs in patients undergoing cancer treatment. Moreover, myocardial ischaemia, systemic/pulmonary hypertension, venous/arterial thrombosis, and/or arrhythmias can also develop secondary to various cancer therapies. Similarly, radiotherapy is associated with the subsequent development of fibrosis that can possibly damage pericardium, myocardium, coronary vessels and/or heart valves.<sup>2</sup>

Cancer and cardiovascular disorders, similar in their complexities, have a rapidly growing prevalence globally.<sup>3</sup> Cardiovascular diseases account for most non-communicable disease deaths globally followed by cancers.<sup>4</sup> Similarly, the burden of diseases is shifting from communicable diseases to non-communicable diseases in Pakistan and around 2000 people die due to non-communicable diseases every day. It has been projected that by 2025, approximately 3.87 million people in Pakistan

will succumb to non-communicable diseases with cardiovascular diseases and cancers as the top culprits, signifying the predisposition of population of Pakistan to develop cardiovascular diseases and cancers.<sup>5,6</sup>

Cardio-oncology is not merely a combination of the fields of cardiology and oncology but a domain that requires dynamic collaboration between the two fields. It serves a common purpose of providing top notch integrative care to the patients.<sup>7</sup> Despite the fact that this is an emerging field, it is high time for Pakistan to develop and train its cardiovascular workforce for cardio-oncological care considering the inflating burden of cardiovascular disorders and cancers. This can be done by establishing a dedicated cardio-oncology fellowship programme.

The cardio-oncology fellowship programme is still on the verge of gaining a full recognition world-wide, but it is being rapidly adopted by many health care centers globally. Its development requires a multi-disciplinary and an innovative approach involving the integration of multiple domains in general cardiology enabling the practitioners to have profound knowledge of medical oncology as well.<sup>1,3</sup> The cardio-oncological programme, similar to general cardiology in structure, would need additional educational resources, new curriculum based on international cardio-oncological guidelines, translational research, educational conferences and seminars, support from medical organizations and associations, and vigorous funding. Establishing a cardio-oncological workforce and providing an effective training programme in Pakistan would help the people in long-term by providing a targeted care which would in turn improve the prognostic outcomes of cancer patients undergoing cancer treatment or cancer survivors.

**Disclaimer:** None**Conflict of interest:** None**Funding disclosure:** None

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<https://doi.org/10.5455/JPMA.50648>

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