EDITORIAL

Challenges in advancing clinician scientist careers in cardiology in South Africa

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Clinician scientists (CS) are medically trained professionals with advanced expertise in both clinical practice and biomedical research.[1] Their aim is to develop a complete understanding of disease processes, from molecular mechanisms to clinical manifestations and therapeutics, enabling them to play an important role in advancing translational research.[1]

It is now well known that only a small fraction of physicians pursue career pathway as CS, declining from approximately 5% in 1985 to just 2% by 2014.[1] Increasingly, CS are being described as an "endangered species", reflecting concerns about their diminishing presence. Numerous factors have been implicated in this decline, prompting the development of various strategies aimed at revitalising and sustaining this essential professional group.[1]

Sliwa, et al. reported 175 registered cardiologists practicing in South Africa in 2016[2] However, this number is considered insufficient, with a significant shortage, especially in the public sector. For a population of 52 million, this translates to roughly one cardiologist for every 260 000 people.[2] In South Africa there are even fewer CS in cardiology, as of now, there is no publicly available data specifying the exact number of cardiologists in South Africa who hold a PhD. CS in cardiology encounter numerous challenges in South Africa: these in balancing clinical duties with research responsibilities, difficult in securing protected research time and insufficient internal and external support. This results in majority of the clinicians interested in research using after-hours and weekends to do research. Institutions frequently demand that CS meet the expectations of both full-time clinical practitioners and full-time researchers, a standard that is seldom attainable.[3] This unrealistic dual burden often results in burnout, diminished job satisfaction, and a departure from research careers.[3] Additionally, even with limited healthcare personnel provisions exist for Remunerative Work Outside the Public Service, but none for creating protected research time.

Despite the high clinical demand and complexity associated with cardiology, funding for innovative or flexible roles, such as shared consultant positions or part-time posts, often does not match the remuneration or structural support provided to full-time consultant cardiologists.[4,5] This is true even within public healthcare systems, where budget allocations and staffing models tend to prioritise traditional, full-time consultant roles.[4,5] As a result, alternative working arrangements are underfunded or not formally recognised, limiting opportunities for career flexibility, academic engagement, or phased retirement.

Even though South Africa has strong academic institutions, National R&D spending remains below global averages, constraining innovation, and capacity building.[6] One of the greatest barriers to research in South Africa, particularly in the health and medical sciences, is insufficient and unstable

funding, especially for long-term and collaborative projects. This challenge has been exacerbated by recent cuts to international funding, such as reductions in US support, which have disrupted clinical trials and global health partnerships that rely heavily on South African infrastructure.[7]

The absence of structured training programmes, mentorship, and clear career pathways discourages senior professionals, especially in rural areas, from staying in their roles, leading to a loss of expertise and inadequate training for junior doctors.[8] This creates a cascading effect: early-career cardiologists are increasingly burdened with clinical, research, teaching, and administrative responsibilities, often without adequate institutional support. As a result, many CS are forced to choose between research and clinical practice, with most opting for the latter due to greater stability and clearer advancement opportunities.[3,9]

The practice of attributing authorship to individuals who may not fully meet the established criteria can present challenges within the clinician-scientist career pathway.[10] Such practices may inadvertently compromise the integrity of the scientific record, create imbalances in recognition, and potentially affect the advancement of researchers who have made substantial contributions. This concern is particularly relevant for early-career researchers, who might feel obliged to include co-authors with limited involvement.[11] By fostering transparent and equitable authorship practices, institutions have an opportunity to uphold scientific integrity, encourage fairness, and support the growth and success of CS.[10]

Professional jealousy has been cited as an important hurdle in clinician scientist progression pathway in South Africa.[12] A recent review highlighted the high prevalence of academic jealousy in South Africa higher education institution characterised by actions such as the sabotage of colleagues' work, spreading false information, and hindrance of academic progress.[12]

Female CS face further challenges in the existing system in Africa. Sliwa, et al. emphasised the urgent need to support and empower women in cardiovascular science across the African continent.[13] They outline the systemic barriers female CS face, including limited mentorship, funding disparities, and underrepresentation in leadership roles. The piece advocates for building robust, continent-wide networks that foster collaboration, mentorship, and visibility for African women in cardiovascular research.[13] By strengthening these networks, the article argues, we can create a more inclusive and innovative research environment that addresses Africa's unique cardiovascular health challenges.

Research is essential for shaping effective policy and practice because it provides the evidence needed for informed decision-making, efficient resource use, and equitable outcomes.[14] It supports innovation, accountability, and responsiveness—especially in times of crisis—while also identifying gaps and disparities that need addressing. To strengthen its impact, countries should invest in local research capacity, promote collaboration between researchers and policymakers, ensure findings are accessible, and incentivise studies that directly inform real-world challenges.[14] To strengthen research capacity, a research component has been made compulsory and is now integrated into undergraduate medical curricula at some institutions,[15,16] as well as into postgraduate registrar training across all South African training programmes.[17] However, these initiatives face significant challenges, including a shortage of research-qualified supervisors, limited protected time for research during demanding clinical rotations, delayed registration with Health Professional Council of South Africa, poor quality research output, and poor retention of research-trained registrars after graduation due to lack of government-funded consultant posts.

We strongly support the establishment of clinician scientist pathways within academic institutions. These tracks should offer flexible, gender-sensitive working environments, protected time for

research, robust core support, and transparent routes for career advancement and succession planning. The work of CS is pivotal in enhancing patient outcomes, informing policy and practice, and driving meaningful, lasting impact across the healthcare landscape—ultimately shaping a legacy of excellence in our profession. Success in clinician scientist pathways can only be achieved by cultivating a genuinely inclusive environment[18,19]—one that actively confronts toxic leadership,[20] favouritism and systematically eliminates bias and exclusionary practices.[19]

Drawing from our collective experiences at various stages of our clinician-scientist careers in South Africa, we conclude that—despite considerable challenges such as limited resources and delayed recognition—the role remains deeply rewarding. The opportunity to generate new knowledge, uncover unexpected findings, and foster lasting professional relationships has been invaluable. For those driven by curiosity, research offers a uniquely fulfilling and enduring pursuit.

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