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Capitalising on 'the missing middle' dilemma to strengthen South Africa's research pipeline

Significance:

Mid-career researchers are at risk of falling into a critical gap in which they are no longer eligible for early-career support, but not yet fully prominent enough for established grants. This lack of strategic funding creates a precarious position that threatens to stall their innovative potential and curb the progress of South Africa's research ecosystem. Are funders, institutions, and society unintentionally sidelining this crucial talent pool? The future of research and groundbreaking innovation hinges on intentional investment in mid-career researchers. By creating targeted funding opportunities and developing a more inclusive environment, funders can bridge this gap, turning the untapped potential of these researchers into the driving force behind long-term academic and scientific excellence. Now, more than ever, we must ask ourselves: can we afford not to invest in the researchers who will shape tomorrow's breakthroughs?

Introduction

In South Africa's academic landscape, the path from PhD graduate to established researcher is often segmented into three key stages: early career, mid-career, and established researcher. Early-career researchers, typically defined as those who earned their PhD within the past 5 years and are generally between 30 and 40 years old, benefit from an array of targeted funding opportunities specifically designed to cultivate their potential.[1] Funding opportunities, including those from the National Research Foundation (NRF), often prioritise investment into the innovative capacity of early-career researchers, focusing on their proposed research rather than a long track record, while also incorporating mentorship and professional development to foster growth.[1,2] At the opposite end of the spectrum, established researchers, with extensive publication history, significant grants, and leadership experience, have access to prestigious funding. This enables them to lead large-scale research projects, influence national and international research agendas, and further cement their standing within the academic community.

However, between these well-supported stages of early-career researcher and established researcher, mid-career researchers are left stranded, overlooked, and underfunded. In the literature, mid-career researchers are defined in various ways, each emphasising different aspects of academic growth. Some definitions include scientists who have held the rank of associate professor (or equivalent) for at least 3 years and are balancing teaching and service with limited resources[3]; researchers with about 5–10 years of post-PhD experience, moving into mentorship and leadership roles[4]; and those in the early stages of independent research after completing one or two major projects[5]. For this article, we define mid-career researchers as individuals with approximately 5–10 years of post-PhD experience, assuming increased academic and leadership responsibilities. They are no longer eligible for grants specifically for early-career researchers but still lack the esteemed portfolio required for established funding. Despite their proven potential to drive innovative, transdisciplinary work, the lack of strategic funding and support often stalls their progress, impeding not only their own career trajectories but also the advancement of the research landscape.

Barriers to progress – challenges faced by mid-career researchers in South Africa

Mid-career researchers in South Africa face a unique set of challenges that severely hinder their progress toward becoming established academics. Unlike early-career researchers who benefit from strategic funding and mentorship programmes, mid-career professionals find themselves in a 'funding limbo'. They are caught in a gap that could stall their academic trajectory and diminish their contribution to innovative research. One of the most significant barriers is the scarcity of tailored funding for mid-career researchers. While various programmes are designed to encourage the innovative potential of early-career researchers or support established academics, the middle ground is woefully underfunded. This gap forces mid-career researchers into fierce competition for limited opportunities, threatening the continuity and momentum of their research. Previous studies have reported that insufficient financial support directly affects the quality of research, as mid-career researchers often lack access to essential resources such as equipment and materials, which can lead to stagnation in research projects, reduced publication output, and missed opportunities for potentially groundbreaking work.[6] This challenge is not confined to individual researchers – it also impacts sustainable development by limiting the capacity of research to address societal challenges. For universities, the shortage of funding exacerbates supervisory capacity issues, with increasing PhD enrolments not matched by enough qualified faculty, which affects mentorship quality and training.[7] Securing adequate resources is undeniably essential for advancing research and boosting publication output. A study found that funded researchers produce significantly more publications than those without financial support, with their output being 22 times higher.[6] However, for mid-career researchers, this funding gap risks becoming a blocking point, reducing both their potential and the overall research ecosystem.

Mid-career researchers also grapple with increasing responsibilities, such as leading research teams, mentoring junior colleagues, and managing higher administrative burdens, alongside personal obligations, including family commitments and other life responsibilities.[7] However, these demands are often not supported by the necessary institutional backing, adding to the strain. Many mid-career researchers do not have the infrastructure to conduct independent research, often relying on established researchers to act as principal investigators. This dependency limits their ability to show leadership and explore bold and innovative ideas that could shape their fields. Moreover, it reduces their opportunities to secure funding. Adding to the challenge is the relentless 'churn' of mid-career

research, where the pressure to secure funding and churn out papers overshadows opportunities to engage in deep, transdisciplinary work. Instead of pushing the boundaries of knowledge, many researchers are left chasing short-term goals. Compounding this is the rising administrative and teaching responsibilities that mid-career researchers face, leaving even less time for their primary pursuit, research.

Real-life examples illustrate these barriers. Consider a promising scientist who secures early-career funding, using it to initiate impactful research, but after the grant ends, they are plunged into uncertainty, unable to secure new funding due to a lack of an extensive publication record. Their career, along with their research, is stalled. Without access to innovative, transdisciplinary collaborations or the financial backing to expand their networks, these researchers are left in a precarious position, highlighting the severity of the 'funding limbo'. To address these critical challenges, some institutions have introduced mid-career awards, such as the South African Medical Research Council and the US National Science Foundation's Mid-Career Advancement programme. These initiatives, although promising, are still too few. Strategic and targeted funding for mid-career researchers must become the norm, not the exception, if we are serious about fostering innovation and ensuring sustained growth of South Africa's research capacity.

Another glaring issue is the lack of mentorship for mid-career researchers. In contrast to the mentorship-rich environment of early-career stages, this phase often lacks guidance, leaving researchers without the critical advice needed to navigate this complex period. Without mentorship, mid-career researchers often focus narrowly on immediate outputs, sacrificing the opportunity to explore ambitious research questions that could distinguish them in their fields. Established researchers, with their wealth of experience, can play a pivotal role here. By mentoring mid-career researchers, sharing insights, and helping them understand the evolving expectations of academic leadership, they can ensure that this cohort is better equipped to thrive.[8] Without this support, mid-career researchers are at risk of burnout, diminished productivity, and, ultimately, career stagnation. Addressing these barriers through strategic investment, targeted funding, and tailored mentorship – ideally involving field-specific mentors – is not just a solution for mid-career researchers, it is essential for sustaining a vibrant, innovative research ecosystem in South Africa. This approach ensures that mentorship is not generic but rather responsive to the specific challenges faced in different fields. In doing so, we ensure that promising academics at this critical career stage have the resources and guidance they need to continue making groundbreaking contributions to their fields.

How can funding bodies support 'the missing middle'?

To combat the challenges faced by mid-career researchers, funding bodies and industry partners must take a far more proactive stance. This impacts succession planning due to the ageing established researcher community. One critical intervention is the establishment of targeted funding opportunities, specifically designed for researchers who have outgrown early-career support but have not yet gained access to established funding. This approach should lead to policy interventions that directly address the unique needs of mid-career researchers, ensuring that they receive the support necessary to continue their progression. These grants should empower mid-career researchers to strengthen their track record, scale up their projects, and secure stable academic positions – key steps in advancing their careers and ensuring they contribute meaningfully to the research landscape.

In addition, mentorship has proven invaluable in shaping early-career researchers, so why should mid-career researchers be left out? Funding bodies should make mentorship a requirement in established researchers' funding proposals. A structured mentorship programme for mid-career researchers would ensure that they get essential guidance on building networks, improving research impact, and positioning themselves for leadership roles. While the current capacity for such programmes may be limited, South Africa, for example, has 130 A-rated and 768 B-rated researchers, providing a strong foundation for mentorship initiatives. These mentors do not necessarily need to be subject experts but can focus on offering career progression mentorship. Collaborative efforts between the DSTI/NRF and academic institutions could further expand capacity to support these initiatives. Such an approach would not only assist mid-career researchers in navigating the complexities of research funding but would also expose them to innovative, transdisciplinary projects, helping them push the boundaries of their fields. Therefore, policy recommendations that advocate for structured, tiered funding and sponsored and funded mentorship programmes designed to address the distinct needs within the mid-career category would ensure that mid-career researchers are able to transition into established roles with adequate infrastructure, leadership skills, and guidance.

Another key intervention lies in rethinking the evaluation criteria for mid-career grants. Far too often, funding is awarded based on extensive publication records or past leadership in large-scale projects.[9] This narrow focus sidelines promising mid-career researchers who may not yet boast these credentials but possess groundbreaking ideas. Instead, funders should prioritise the potential for innovation, the quality of preliminary work, and the strategic relevance of the research area. This shift would create space for mid-career researchers on the brink of major breakthroughs, those who need just one more strategic push to realise their potential and make significant contributions to South Africa's research landscape.

Equally important is the need for continuity between early-career and mid-career funding. Funders must design programmes that allow for seamless transitions for researchers to build on their previous work without interruption. Such continuity would not only preserve research momentum but would also prevent the erosion of talent that occurs when promising mid-career researchers are forced to step back due to financial constraints. By adopting these strategic interventions, targeted funding, mentorship programmes, and continuity in funding, the gap that mid-career researchers currently fall into can be curbed. These researchers are not only the future of innovation; they are the critical link between early promise and established success. Supporting them through this critical career stage is vital to creating a dynamic and resilient research ecosystem that drives long-term scientific and academic excellence in South Africa.

Paving the way for a sustainable research pipeline

The sustainability and vivacity of South Africa's research landscape hinge on addressing the overlooked challenges faced by mid-career researchers. If there is no intervention, the current gap in support threatens not only to derail individual careers but also to erode the overall impact of the nation's research output, an essential pillar of South Africa's National System of Innovation.[10] Ensuring that mid-career researchers are adequately supported is essential for maintaining a steady pipeline of innovation, retaining top talent, and cultivating the next generation of academic leaders. The challenges faced by mid-career researchers are not confined to specific types of institutions, such as historically disadvantaged ones – they affect researchers across all higher education sectors. From historically advantaged to historically disadvantaged institutions, the plight of mid-career researchers is universal. Resolution would result in improved research output and succession planning. Sustained support would allow researchers to develop long-term projects with the potential to make significant contributions to both knowledge and societal impact. In addition, South Africa would be more competitive on the global stage, making it an attractive destination for top research talent.

Moving forward requires a collective, coordinated effort from all stakeholders: funding bodies, academic institutions, government agencies, and the researchers themselves. Funding bodies must lead the way by adopting more innovative and flexible approaches and designing programmes that address the specific needs of mid-career researchers. The one-size-fits-all model is no longer sufficient. Tailored inclusive funding that bridges the gaps in the current system is urgently needed. Academic institutions must also play a pivotal role in fostering environments that support research across all stages of a scholar's career. This includes offering internal funding streams, mentorship opportunities, and professional development resources that target mid-career academics. Institutions must also adopt transdisciplinary approaches that promote collaboration across sectors and research fields,

thus maximising the innovative potential of mid-career researchers. Taking this into consideration, funding bodies could partner with institutions to create co-sponsored grants that include both financial support and institutional resources. This dual approach could alleviate some of the administrative and teaching burdens on mid-career researchers, allowing them to focus more on their research contributions.

Furthermore, government agencies and policymakers cannot afford to remain passive. National strategies and policies must be developed that acknowledge and address the funding gaps for mid-career researchers. This could include the establishment of national benchmarks for funding allocations, ensuring that no researcher falls through the cracks of the research pipeline. Additionally, incentives could be introduced to reward institutions that successfully support the progression of mid-career researchers, recognising them as key drivers of innovation. For researchers themselves, it is crucial to take an active role in navigating this challenging phase of their career. Career planning, seeking collaboration opportunities, and building diverse research portfolios are vital strategies to improve competitiveness. Active participation in professional networks and seeking mentorship are equally important in maximising visibility and access to new funding avenues.

Ultimately, the creation of sustainable support systems for mid-career researchers requires a collective effort from all spheres of the research ecosystem. By addressing its unique needs, South Africa can foster a more inclusive, dynamic, and innovative research landscape. This will ensure that excellence and groundbreaking innovation are nurtured at every stage of a researcher's career, driving the country toward sustained academic and societal progress.

Conclusions

Navigating the complexities of academic funding and career development reveals that both researchers and funding bodies have vital roles to play in overcoming the challenges faced by mid-career researchers. Although funding gaps and transitional obstacles create significant barriers, these can be addressed through collaborative efforts centred on open communication and mutual understanding. By aligning expectations and clearly defining roles, both parties can build a more supportive and effective structure, ensuring that no researcher is left behind. Funding bodies should take the lead by designing tailored programmes that bridge the gap between early career and established researchers' support, enabling mid-career researchers to build strong track records and establish themselves as leaders. Strategic partnerships, including public–private partnerships, can enrich the research environment, while targeted investments in capacity-building – such as workshops on grant writing, data analysis, and research methodologies – equip researchers to manage career transitions effectively. Mentorship programmes further support mid-career researchers by guiding them in funding opportunities, career strategies, and research advancement. At the same time, researchers must actively engage with available opportunities, seek mentorship, expand their networks, and strategically plan their career paths. This cooperative approach will address current challenges and strengthen the entire research ecosystem, fostering a more inclusive environment that promotes research culture, innovation, and sustained growth. With the right support, South Africa can create a resilient and thriving future for its research landscape and enable mid-career researchers to reach their full potential and make meaningful contributions to the advancement of knowledge.

Declarations

We have no competing interests to declare. We have no AI or LLM use to declare. Both authors read and approved the final manuscript.

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