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Perspective

Perspectives on Challenges of Postgraduate Training in Basic and Biomedical Sciences in Two Kenyan Universities

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Keywords

Challenges; Postgraduate training; Basic health sciences; Kenyan universities

Abbreviations

MSc: Master of Sciences; PG: Postgraduate; PU: Pwani University; UoN; University of Nairobi; KEMRI: Kenya Medical Research Institute

Perspective

Perspectives on challenges of Postgraduate (PG) training at University of Nairobi (UoN) and Pwani University (PU) in Kenya reflect on institution establishment, laboratory infrastructure, funding, resources and available expertise in staff for postgraduate training in basic and biomedical sciences. Furthermore, the aspect of student motivation and scholarships and career options is another issue.

University of Nairobi is a long established university, where the medical school and biomedical department commenced in 1970. Presently it has Schools of Biological and Physical Sciences and Health Sciences which train students in postgraduate degrees. Pwani University is located in Kilifi at the Coast, started as an Agriculture College, and then a constituent college of Kenyatta University (another established University in Kenya) and got the full charter as a public university in 2013. First author has 40 years experience of PG training at UoN and is based at School of Health and Human Sciences for last 2 years at PU. Second author obtained MSc in Biochemistry at UoN, PhD in Biotechnology [1] and Postdoctoral fellowship from Sweden and has been based at PU since 2010.

The potential for conducting research in basic and biomedical sciences at UoN has increased in PG training with local and external collaborations. Specialized disciplines in basic and health sciences have established the Center for Biotechnology and Bioinformatics (CEBIB) and Institute of Tropical Medicine among others to enhance training opportunities and broaden the scope. With scholarships from international universities, students have obtained PG degrees, mainly PhD from countries such as Britain, Sweden, Germany and America. These are in disciplines in neuroscience, biochemistry, and basic sciences which require advanced laboratory techniques. As a new University, PU first needs to upgrade institutional facilities and academic staff to meet the challenge of PG training and supervision as the School of Health and Human Sciences is being established. The Kenya Medical Research Institute based in Kilifi, is a long established research centre, located close to PU. Collaboration with the KEMRI-Welcome Trust Research Programme (KWTRP) has provided opportunities for PG training in PhD and Masters including establishment of a modern, state of the art, joint research centre - Pwani University Biosciences Research Center (PUBREC).

There is research potential in both the sciences in the two universities. Overall, there are constraints of computerized equipment, electron microscopy, advanced tissue techniques needed for PG training. This is supplemented by very limited technical support, especially trained in advanced laboratory techniques. On the positive side, substantial research has been done on primate [2], rich flora and fauna, medicinal plants and neuroscience using innovative techniques within our resources in UoN ranking first in Kenya.

Regarding supervision of students, there is scarcity of academic staff with PhD and capacity to adequately supervise PG students. Academic staff has a heavy teaching load and administrative duties which deter supervision. In international universities, academic staff supervising PGs has strict schedules with periodic reports and limited academic load. In such universities, postdoctoral fellows support PG supervision. Additionally, research is conducted in close collaboration with industry, to address industry needs. In such countries, the presence of long established science parks and business incubation centers, spurs the research agenda of the industries and the countries at large. Industrial partners jointly apply for research funding and collaborate in PG training and supervision with the universities. This approach could be adopted in Kenya, where industry-academia partnerships are yet to be established. There is also need to introduce Postdoctoral fellowships in Kenya, to support the PG training and supervision.

PG student intake in Kenya is low, mainly due to lack of funds and available scholarships. Students who are on tenure with universities often have heavy teaching loads and struggle to complete on time. External students often come with other difficulties that lead to delay or deferment. Both universities encourage students to source for grant support from established agencies locally and internationally. Postgraduate enrolment in basic sciences in new universities is also very low. This is mainly due to lack of funding to support students tuition fees and research projects. Another bottleneck is the studentship residency in postgraduate programs, where students

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enrolled in a two year masters program; end up graduating after four years from registration.

Major challenge of student with PG degree in basic and biomedical sciences is being employed in Kenya with good remuneration and work facilities. The financial remuneration for individuals with PG in basic sciences may be lower if employed in Universities or public sector. Private sector pays better but in both the infrastructure facility to further research and be productive may be limited.

Public universities rely heavily on government funding for research. The responsibility for training of scientists rests with public universities and lack of funding is a big deterrent. Sustainable development in Africa can be attained with improved capacity in the sciences [3].

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