

The need for a Master of Science degree programme in microbiology in Uganda

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There has been an overwhelming explosion in student numbers in higher institutions of learning which has not proportionately corresponded with an increase in recruitment of staff.¹ A concern relating to the relevance of the tertiary education curriculum¹ to the country's development needs has been discussed. Most programmes offered in Uganda's tertiary education are theoretical with little practical application and hence irrelevant to the job market.¹ To implement cost-effective interventions, health workers must have the appropriate skills, competencies and training.

Underfunding of Uganda's higher institutions is so severe that expenditure per student is declining while enrolments are increasing rapidly in this era of technology and science.² Inadequate funding to train students in experimental sciences results in teaching programmes being dominated by verbal communication, undermining the quality of the technical training.³ Insufficient facilities have increased the training of graduates in arts and the humanities, whose fields of study are not critical to priorities of Uganda's development.

Knowledge and advanced skills are becoming critical determinants of a country's economic growth and standard of living. The high spread of infection in Uganda needs a balanced population of well-trained personnel. Science-based institutions needing well-trained microbiologists are rapidly increasing in East Africa but well-trained microbiologists are still very few. The efforts by Uganda's education ministry to provide for increasing student numbers entering tertiary education are faced with educational quality challenges. Over the recent decades, research output in Uganda has ultimately remained static because the shortage of senior academic staff meant that lecturers are overloaded, leaving little time for research.⁴ This study was designed to assess the stakeholders' need for an MSc degree programme for microbiology in Uganda.

Methods

This was a prospective descriptive cross-sectional study. Participants included were potential MSc Microbiology students, members of faculty with a microbiology background and organisations working on infectious disease. Standard epidemiological/multistage sampling processes⁵ were used to select 103 stakeholders. The study included 50 undergraduate students, 10 faculties and 43 potential employers (3 universities, 20 research institutions and 20 non-governmental organisations). Data were obtained from a semi-structured, close-ended self-administered questionnaire using on-line software. The questionnaires were piloted for content and face validity. Information obtained from participants included demographic data, knowledge about the programme, future potentials of graduates of the programme, the role of the programme in national growth and development and the impact of the programme *vis-à-vis* containment of an increasing pandemic of tropical infections. Ethical approval was obtained

from the Kampala International University research/ethics committee and participants gave informed consent. Data were analysed using Statistical package for the social sciences, and the chi-square test ($\alpha=0.05$) was used to test for statistical significance of the data generated.

Results

A total of 103 questionnaires were administered, of which 49 were returned, yielding a response rate of 47.6%. When focusing on the need for an MSc Microbiology programme, students (58%) and staff (100%) agreed that there was a definite need for the programme. All of the student participants indicated that they would like to further their studies and 64% want to further their studies outside East Africa. Of these students, 14% wanted a career path in microbiology and 47% strongly believed that the graduates of the programme have good prospects, would advise others to take it up as a career path and agreed that universities should begin the programme as soon as possible.

Out of the 8 faculties studied, 6 (75.0%) recommended an urgent and immediate need for the programme because it offers adequate research capacity building, science-based education and hands-on experience. In addition, 85.7% of the faculties strongly recommended the need to allow mostly microbiologists to participate in the programme implementation for quality and professionalism.

All the potential employers studied (100%) strongly agreed that there is an urgent need for the programme, are willing to participate in the training and said the graduates are employable both as researchers, health system managers and lecturers. The support for establishment of the programme was significantly ($p<0.05$) high among old experienced male Uganda microbiologists working in the East African region compared with young inexperienced female East African residents with allied science disciplines related to microbiology. Knowledge of East African community academia significantly ($p<0.05$) played a role in participants' decision to agree or not to agree regarding the establishment of the programme.

Discussion

Addressing the health crisis in Africa by means of relevant postgraduate modules is essential. The brain drain of health professionals has created a shortage in personnel needed for service delivery in the health care sector; hence the need for trained professionals. The positive response from all the faculty participants and 58% of the students towards the need for this programme is overwhelming as it will assist in capacity building in Uganda.

Short report

The challenge that 64% of the students want to further their studies outside East Africa points to a known chronic problem of health workers migrating to other African sub-regions.⁶ Establishment and awareness of different career paths such as this programme may be one way to address this migration and it may motivate potential students to enrol for this programme.

The fact that 75% of the faculty members supported the need for the programme could indicate a positive attitude towards a likely change in the educational system and curricula. The benefits of the proposed programme, which include adequate research capacity building, science-based education and hands-on experience, address the concerns raised by Kasozi¹ regarding the irrelevance of common theoretically based university curricula to Uganda's development needs.

Conclusion

An MSc Microbiology programme is urgently needed in Uganda in order to facilitate regional research and educational capacity, and this study highlights that key stakeholders support this need.

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