Article

Skilling up medical laboratory technologists for higher roles in biomedical sciences: A needs analysis

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Abstract

Introduction: Uganda is in short supply of biomedical scientists with competencies in research and professional services. To date the educational system for medical laboratory technologists in Uganda has produced many technologists with diplomas that do not qualify them for entry into postgraduate education. One potential way to address the problem is to offer medical laboratory technologists, who have a diploma, further training to bridge the gap between the diploma qualification and a higher qualification such as a Master's degree. We would like to propose the development of a postgraduate diploma programme in medical laboratory sciences that will form a link between the diploma and a Master's degree programme.

Methods: To develop a curriculum that will address this need, a nationwide needs assessment was conducted to determine stakeholders' recognition of the need for the programme and the preferred modes of programme delivery. National stakeholders were identified and prioritised and a questionnaire was developed and piloted. The questionnaires were distributed to the stakeholders in Makerere University, Mbarara University of Science and Technology, and Kampala International University. Data were analysed using qualitative and quantitative methods.

Results: A response rate of 83% was recorded; 96% agreed that the programme was needed, and 93% wanted it developed immediately. Reasons given for this need included scaling up of manpower, production of better-qualified scientists, more opportunities for medical laboratory scientists, technological development, and improving health care services.

Conclusion: This study has demonstrated the need for further training of medical laboratory technologists in Uganda. This will address the manpower shortages in biomedical sciences and empower the technologists to become biomedical scientists.

Introduction

The educational system for medical laboratory sciences in East Africa, which began about 1960,[1] has resulted in the production of a pool of medical laboratory technologists with the responsibility to carry out routine diagnostic laboratory tests in hospitals and health centres. Many of these technologists have the Diploma in Medical Laboratory Technology awarded after 3 - 4 years of intensive studies and hospital training, in line with the legacy of the former Institute of Medical Laboratory Technology of London (now the Institute of Biomedical Science), which oversaw the training of medical laboratory technologists in most of Anglophone Africa in the post-colonial era.[1] The majority of these technologists do not possess the research skills and competencies required to advance in the biomedical sciences profession or in a health care career. Access to postgraduate education is also limited because they are often required to undertake undergraduate education that does not give recognition to their prior learning and experiences.

The need for highly qualified personnel with clinical laboratory orientation to manage pathology laboratories in East Africa and contribute intellectually to health science research in a region challenged by many epidemic diseases,[2] led to the development and introduction of Bachelor's degree programmes for medical laboratory sciences by several universities in the region. The graduates of these programmes were expected to be better prepared to address the issues and challenges facing health care in Eastern Africa. Shortages in the supply of qualified biomedical scientists persist in most parts of East Africa as a result of the chronic phenomenon of 'brain drain'.[3] Based on the call for educational curricula that are relevant to societal needs[4,5] and on the general need for manpower scale-up in the health sector in developing countries,[6] this study proposed that medical laboratory technologists with diplomas could be skilled up for higher roles in biomedical sciences in Uganda by the introduction of a bridging postgraduate diploma programme in medical laboratory sciences. This would serve as a link between the diploma and a Master's degree.

Methods

A needs assessment was carried out to determine the credibility of this proposition as a means of scaling up human resources in the biomedical sciences, the need for the programme in Uganda, and the preferred mode of programme delivery. To achieve the desired objectives, a survey of the stakeholders was undertaken using a self-administered questionnaire. Approval for the study was obtained from the Institutional Review and Ethics Committee of the Kampala International University, Western Campus, Ishaka, Uganda. Stakeholders were analysed and prioritised using a power interest grid.[7] The list included members of regulatory bodies such as the Allied Health Professionals Council (AHPC), the Ministry of Health, university administrators and academic staff, technologists working in hospitals and universities, and medical laboratory sciences students in the diploma and Bachelor degree programmes. A questionnaire addressing the specified objectives was developed and standardised with the assistance of faculty and fellows of the Southern Africa FAIMER Regional Institute in Cape Town, South Africa. A pilot study was then conducted to validate the questionnaire. After obtaining informed consent, the questionnaires were self-administered to the study participants, who included all medical laboratory technologists in Uganda that the investigators could access, academic staff of the Kampala International Uni-

Table I. Responses to questions on the need for a postgraduate diploma programme in Uganda

	Strongly disagree	Disagree	No opinion	Agree	Strongly agree
Introduction of the programme will scale-up human resources in health	0	2	1	21	51
The programme is needed now	0	3	2	33	37

versity, Western Campus, staff and students of the Mbarara University of Science and Technology, Mbarara, staff working in and students training in the Mulago Hospital diagnostic laboratories, Kampala, students and staff of the Makarere University, Kampala, and staff of the AHPC and the Ministry of Health. No calculation of sample size was undertaken as the study intended to include every accessible stakeholder. Follow-up on the questionnaires was by personal visits and phone calls. The returned questionnaires were then analysed quantitatively and expressed as percentages, and qualitatively to categorise the opinions expressed by the respondents. Two independent analysts used open inductive coding to generate descriptive codes. These were harmonised by the two analysts and sorted into frames and used to deductively recode the original texts. These identified coding frames were then reorganised into themes.

Results

Ninety questionnaires were sent out and 75 were returned, giving a response rate of 83%. Fifteen of the respondents were from Mulago Hospital, 9 from Makerere University, 22 from Mbarara University of Science and Technology, 25 from Kampala International University, 1 from AHPC, and 1 from the Ministry of Health. Due to logistic reasons, stakeholders from the University of Gulu in Northern Uganda and the School of Health Technology in Jinja could not be reached. By occupation, 26.7% of the respondents were academic/managerial staff, 38.7% were technologists, and 34.6% were students in medical laboratory sciences. The academic qualifications of the participants in the study are shown in Fig. 1. As can be seen, more than one-third of the respondents were diploma holders and about one-quarter each were postgraduate degree holders or certificate holders.

Quantitative analysis of the questionnaires, as shown in Table I, indicates that the vast majority of respondents (96%) agreed that the postgraduate diploma programme would be an effective way of scaling up human resources in biomedical sciences. Altogether 93.3% of participants agreed that the programme should be developed and implemented immediately. With regard to the mode of programme delivery, 32 participants wanted a full-time programme, 36 preferred a part-time programme, and 12 favoured distance education, while 2 welcomed online studies (Fig. 2).

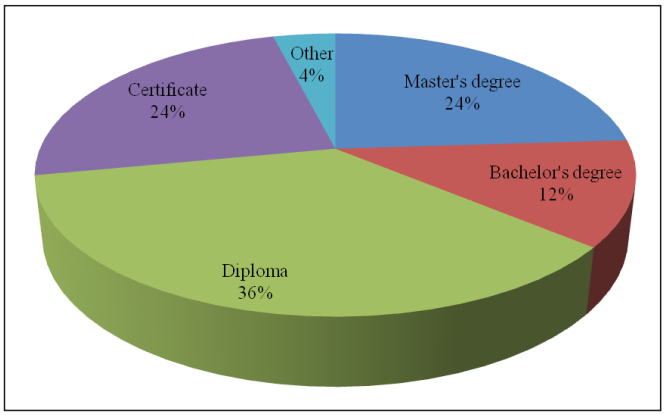

Fig. 1. Qualifications of the respondents (%).

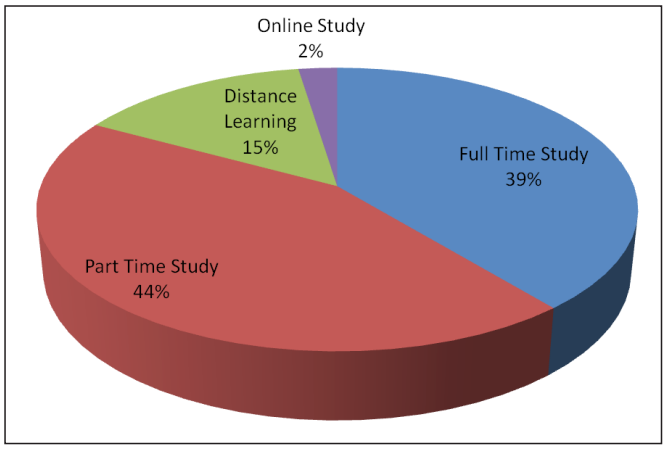

Fig. 2. Preferred mode of programme delivery (no. of respondents).

Analysis of the qualitative responses in support of the introduction of the postgraduate diploma programme yielded seven themes, which included manpower scale-up in medical laboratories, production of better-qualified and more competent medical laboratory personnel, creation of more opportunities for medical laboratory technologists, improved medical laboratory and health care services, professional development in medical laboratory sciences, more technological development in the biosciences in Uganda, and aligning Uganda with current trends in other countries. Those who disagreed with the introduction of the programme stated that undergraduate degree programmes were already in place and should be strengthened, and diploma holders should compete with high-school leavers to obtain a place in undergraduate degree programmes. Other opinions expressed by the stakeholders were that the programme should be open to both diploma and first degree holders in other biological sciences who may wish to join medical laboratory sciences, that it should also address issues of professionalism and specialisation which the available undergraduate programmes do not sufficiently address, and that it should cater for the needs of Bachelor of medical laboratory sciences degree holders whose performance in the undergraduate programme may not qualify them for entry into Master's degree programmes.

Discussion

The importance of a well-educated and motivated workforce in the health care sector is well recognised. In 2008, the world gathered in Kampala, Uganda, to discuss issues and challenges facing the health workforce globally, and to identify strategies to address the workforce crisis.[8] Among the conclusions and recommendations of that global forum were '… the expansion of education and training for all groups of health workers…' and 'education and curricular focused on the health needs of the country…'. The results of this survey support these recommendations and highlight the need for further training of medical laboratory technologists in Uganda. The stakeholders are calling for an immediate scaling up and skilling up of human resources in the pathology laboratories and in biomedical sciences. They believe that the development and implementation of a curriculum for the postgraduate diploma programme

in medical laboratory sciences would be a credible means of achieving this goal.

There was substantial support for the development of the programme, with 68% of the stakeholders strongly supporting it. This could be interpreted as a yearning for postgraduate education by this underrepresented group of health care workers. That 93% of the respondents supported the immediate development and implementation of the programme should interest the education and health ministries and the educational institutions in Uganda who should embrace the programme and create the much needed access to higher degree programmes for these technologists. By doing so, they would be responding to the clarion call for unrestrained access to higher education by all groups, and help further development of the skills of this category of health workers.[9] This will also increase the number of qualified and specialised faculty in the biomedical sciences, and create an educational curriculum that addresses the relevant needs of this sector of the health care industry.

The qualitative aspects of the study provided useful insights into other potential benefits of the programme. Staffing the health care laboratories with highly qualified personnel would result in higher-quality laboratory services, and promote innovation and the creation of appropriate technologies suited to the country's needs. The expected end result would be a significant improvement in health care services.

A limitation of this study could arguably be related to the failure to sample some sections of the country. This may raise validity questions if these findings are generalised to those sections. However, when these results are interpreted with the understanding that the majority of the stakeholders in the country reside and work in the areas sampled, then these findings could be seen to validly reflect the views and opinions of the average stakeholder in Uganda. We are therefore recommending that the Ugandan government set up machinery for the immediate development and implementation of a postgraduate diploma programme for medical laboratory sciences in Ugandan universities.

Summary and conclusion

The results from this study demonstrate the perceived need for a postgraduate diploma programme in medical laboratory sciences in Uganda and support the development of a curriculum for such a programme. The majority would like immediate development of the programme in Ugandan universities in the hope that it will improve health care services, provide better opportunities for medical laboratory sciences, and which could result in technological development in Uganda. The preferred modes of study were full-time and part-time, although a minority would still welcome distance learning and online studies.

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