

Developing Research Competencies of Undergraduate Medical Students in Sub-Saharan Africa

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Abstract

There is a global demand for physicians; this demand is even higher in Sub-Saharan Africa (SSA) where individuals suffer significantly more from the global burden of disease but have a significantly higher healthcare workforce shortage. Since the introduction of the traditional medical education curricula by Abraham Flexner over 100 years ago, there have been major pedagogical changes globally with respect to Basic Medical Education (BME). Over the last few decades, medical education in SSA has undergone changes, however, there has been little innovation with respect to the field of research and capacity building. Medical education in SSA has largely focused on the basic medical sciences and clinical training with minimal attention being paid to developing research competencies amongst students. In developing research competencies of medical students, a multidisciplinary approach is needed. We recommend a reform of the entire BME curricula to make it more research oriented or alternatively, a reform of the research component of the curricula.

Key Words

Undergraduate Medical Education; Medical Research; Medical Curriculum; Medical Career; Sub-Saharan Africa

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Introduction

There is a global demand for physicians; this demand is even higher in Sub-Saharan Africa (SSA), where individuals suffer significantly more from the global burden of disease but have a significantly higher healthcare workforce shortage¹. Many countries in SSA are catching up with the rest of the world when it comes to reducing the deficits in the healthcare workforce by investing in medical education². Such deficits in the healthcare workforce serve as a major hurdle to achieving the Sustainable Development Goal Three (SDG 3) and ultimately improving healthcare in SSA. Over the last few decades, medical education in SSA has undergone many changes³, however, there have been few innovations in medical education, especially in the field of research and capacity building. Scientific authors from SSA are also under-represented in the global publication of medical and scientific literature; this serves as a significant barrier to solving medical problems indigenous to SSA⁴.

In SSA, medical education has largely focused on basic medical sciences and clinical training, with minimal attention being paid towards developing research competencies amongst students. In a significant number of medical schools in SSA,

doctors are trained with limited knowledge and hands-on skills to conduct research and sparingly use research findings for evidence-based practice⁵. The curricula of many medical schools in SSA have elements of research methodologies but a limited scope of practical research training. This is grossly inadequate for the training of medical doctors with developing careers in medical research and the development of capable scientific minds to read and appreciate medical literature.

Since the introduction of the traditional medical education curricula by Abraham Flexner over 100 years ago⁶, there have been major pedagogical changes globally concerning Basic Medical Education (BME)⁷. SSA has, however, struggled to keep pace with the rest of the world. This has led to significant deficiencies in medical research and the use of advanced technologies⁵.

Literature on the Importance of Incorporating Research into Medical Education

A competency/outcome-based medical education (CBME)-informed curricula reform is the current recommendation of choice in redefining medical education, and it is practiced in many advanced countries⁸. The World Federation for Medical

Education stipulates clearly in its standards the need for medical research in the basic medical education curriculum⁹. The focus of health care and medical education has transitioned from individual to community-based with the aid of appropriate technology and research⁸.

The Japanese incorporated research into their undergraduate curriculum as early as 1960, and as of 2014, 86% of the students had a research-oriented curriculum¹⁰. In the United Kingdom (UK), a survey done before and after a compulsory critical enquiry in 2nd year in Queens' University revealed a significant increase in students who expressed interest in pursuing a career in research¹¹.

In Germany, it is a requirement for students to complete a dissertation in order to attain the academic title of doctor. A study was conducted involving 437 5th-year students in a German university. Those who completed their research expressed a better appreciation for research methodology and had a better hold on the analysis of literature¹².

Another study, completed in five medical schools in the United Kingdom analysing 905 projects, revealed that only 13% of the projects were achieving a holistic approach to research methods¹³. Even though the majority of students are motivated to pursue research, students generally have a narrow definition of what research entails, according to research conducted amongst 317 undergraduate medical students in an Irish University¹⁴.

Many medical schools are making an effort to incorporate research methodology into their curricula. However, a lot of finetuning is still required to achieve the optimum results of producing research-oriented graduates.

The Current Situation in SSA and Its Deficiencies

The medical school curriculum in SSA is designed to emphasise on community-oriented medical practice in most cases. Many medical schools still use the curricula of their colonial masters¹⁵ and are hence out of touch with the current realities and challenges of the African health care system. In order to review and reform the curricula of medical schools to meet the current needs of the society, various stakeholders need to be consulted.

Issues ranging from admission criteria to teaching models need to be addressed as a matter of urgency. The traditional medical curricula in most schools have stood the test of time and emphasise

the strong bedrock of basic medical sciences without much emphasis on medical research. Despite strong theoretical knowledge, there are arguably some deficiencies in knowledge integration and application. There have been calls to develop a competency-based curriculum that will involve producing medical graduates with sound knowledge in research best suited for the 21st-century generation⁴. A survey of sub-Saharan medical schools revealed that medical schools reported inadequacies in skills, research laboratories and research funding even though a majority of schools required students to engage in research activities before they can graduate¹⁶.

There is currently a scarcity of research support, and the impact of research for faculty development has been largely ignored in the training of medical doctors¹⁶.

Recommendations

As the twenty-first century unfolds, medical school curricula should undergo regular reviews to reflect the changing health needs of our contemporary society⁴. Regular reviews of curricula for training medical doctors are recommended every five years, according to Olopade and others⁴. We recommend a curricular reform of the entire BME curricula to make it more research-oriented. Alternatively, a reform of the research component of the curricula that follows a clear vision and mission could be implemented and evaluated after careful planning and monitoring.

When developing research competencies in medical students, the importance of incorporating research training very early into medical education cannot be overstated. Students should be given training in medical research and fieldwork from the first year of schooling. Teachers should primarily be research scientists to make it easier to link concepts to clinical medicine⁷. Students need rudimentary skills in research methodology that will enable them to read, understand, and appreciate medical literature.

Students should also be introduced to the various medical and educational technologies and software that aid in questionnaire development, data collection, analysis of data, interpretation of data, referencing and citations, and plagiarism checks. This will improve their research competencies if introduced at the beginning of their medical education.

There is a need to set up medical education research centres that can support medical education research. These departments will be responsible for teaching and promoting research in medicine and the use of medical technologies in research

education. They will expose students to competent scientific journals and provide seminars and conferences on how to publish and write peer-reviewed papers. Through this avenue, students will be taken through the processes needed to produce high-quality scientific papers for publication in competent journals.

We also recommend the setting up of research departments in the various medical schools with special emphasis on the training of research-oriented medical professionals.

Conclusion

To produce medical practitioners best suited to solving the contemporary challenges of the African community, attention needs to be paid to motivate, train, and equip medical students to explore the field of medical research.

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