

Re-writing Pre-Clinical Medical Textbooks to Reflect Local Content - A Prerequisite for Building Better Clinicians in Africa

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Abstract

Textbooks are vital tools in the training of medical students. In Africa, there is a huge deficit in terms of literary medical works compared to the western world. Ultimately, this leaves the aspiring African clinician at the mercy of the western authors when it comes to acquiring knowledge about local health issues. The textbooks we use in teaching pre-clinical medical students in Africa are by foreign authors which fail to adequately capture the local content. Poor funding of biomedical research by governments of African countries has left the output of local authors dismally low. Reliance on foreign authors in writing our pre-clinical textbooks has left some disconnect between the pre-clinical and clinical stage of the medical training in African medical schools. Paying close attention towards bridging this gap by stimulating African biomedical researchers towards developing pre-clinical medical textbooks that reflect the African peculiarities; is of topmost importance. The current pre-clinical textbooks used for training medical students will need to be re-written (to fully reflect local content) if the quest for high quality clinicians in the continent will be realized.

Keywords: Textbooks, Preclinical, Medical education, Physiology

Introduction

During the 44th session of the international conference on education, the ministers of education came up with a declaration which was later endorsed by the General Conference of UNESCO at its 28th session stating that: "We shall strive resolutely to pay attention to improving curricular, the content of textbooks, and other educational materials including new technologies, with a view to educating caring and responsible citizens, open to other cultures, able to appreciate the value for freedom, respectful of human dignity and differences, and able to prevent conflicts or resolve them by non-violent means" [1]. Textbooks are core learning media composed of text and/or images designed to bring about a specific set of educational outcomes. They have the power to transmit knowledge, develop skills and shape the learner's world view. They can also function as valuable resources in the process of education for sustainable development and disease prevention. Therefore, writing textbooks with these themes in perspective will form the basis for quality education; bearing in mind also, that a good textbook must engage students and relate to their realities [2,3].

Preclinical medical training forms the basis for clinical training and also sets the pace for the crop of physicians that the medical schools will produce eventually. It has been reported that the performance of students in the basic medical sciences can be a relevant predictor of clinical science performance as well as subsequent licensure examinations [4]. One of the commonest complaint from clinical teachers in Nigerian medical schools is that, the pre-clinical graduates resuming clerkship in the hospital are poorly equipped. These students are often the best from their secondary schools and it is expected that they should learn faster. Many reasons have been proffered for their poor performance at the clinical school. The authors however are of the opinion that the structure of the textbooks and curriculum is not made in such a manner as to properly equip pre-clinical students for clinical training.

The Challenge

The authors of this article had their medical training in Nigeria and many times they would search fruitlessly for elaborate presentations on sickle cell anemia, tropical ataxic neuropathy, yellow fever, Lassa fever,

etc. in the recommended popular textbooks. This is so because, the books are written by scientist and clinicians from a different part of the world where these 'important' health conditions are quite rare, if not inexistent. So, little wonder that their style and emphasis in writing are tailored as such to their diseases. The popular textbooks employed in the teaching of medical students in most African countries are written by European, American and Indian authors. These books though voluminous and elaborate on most subjects, are quite poor in others. These 'others' which may appear not so relevant to the Caucasian authors are actually very relevant to the African academic. According to a recent study, only less than 1% of global biomedical publications are from Sub-Saharan African authors, yet the disease burden in this region leads the rest of the world [5].

A beautiful medical book- Principles of Medicine in Africa, written by non-African authors came under criticism by Bridget Farham when the latter did the book review. The reviewer said:

"Like all Cambridge University Press publications, the book is laid out well, with easy-to-read text, plus text boxes, illustrations, tables and graphs where these add to the text. Colour photographs are used to aid understanding and diagnosis, and are of high quality. My only criticism is the make-up of contributors to the book. Africa is poorly represented. The sections of HIV and tuberculosis, for example are provided predominantly by authors from the UK and Europe. This is strange when there is such expertise in these common infections right here in Africa. I would urge the publishers to look more broadly for authors when putting together the next edition of this excellent book [6]."

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Received November 18, 2016; Accepted November 25, 2016; Published November 30, 2016

Citation: Abi I, Ibu JO (2016) Re-writing Pre-Clinical Medical Textbooks to Reflect Local Content - A Prerequisite for Building Better Clinicians in Africa. J Health Educ Res Dev 4: 201. doi: [10.4172/2380-5439.1000201](https://doi.org/10.4172/2380-5439.1000201)

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This is the true story. Africans are poorly represented in issues that directly concern them. It is a huge challenge stirring us Africans in the face.

An Iranian study done by Khashayar et al. [7] showed that their medical students found it difficult to draw the relationship between the basic sciences and the clinical sciences. The study further revealed that students were dissatisfied with the basic sciences curriculum saying that the content of the basic science section (anatomy, histology, immunology, physiology, biochemistry, and social sciences) could not be applied in the clinical areas. In fact some of the students said the curriculum was overcrowded (particularly in the basic sciences) and that much of the content were useless. The researchers concluded that there was no curriculum development for years in Iran as reported by previous local studies, and they pointed out that the current Iranian curriculum does not equip doctors to meet the needs of the community they intend to serve. It is a similar story here in Africa. Take for instance a course like physiology (which is the authors' area of specialization), relevant topics necessary for a pre-clinical medical student who intends to practice as a doctor in his/her homeland are missing. This is so because the popular textbooks are written outside the shores of Africa. Subjects on blood physiology for instance lacks in-depth discussion on sickle cell anemia which is a very common problem in West Africa. Discussion on malaria as a cause of anemia is also missing. Yet this is a leading cause of anemia amongst African children that should not glossed over, but properly addressed. Topics on protein energy malnutrition i.e., Kwashiorkor and Marasmus are quite scanty and inadequate in foreign textbooks yet they are daily encounters in the poverty stricken and war-ravaged regions of Africa. River blindness as a relevant clinical correlates when discussing 'the eye' under the special sciences are also absent. Yet it is a peculiar problem. The list goes on. A large proportion of lecturers use western-tailored textbooks that give only scanty information on these areas. Of course, they are not so relevant to the western authors. On the contrary, topics like Hemophilia, Crohn's disease, Ulcerative colitis, Multiple Sclerosis etc. take a huge chunk of discussions in these foreign textbooks. A physician may practice his whole life in Africa and may never have to manage any patient with such diseases. They are not relevant to the African practitioner yet they are properly discussed in most textbooks used for training future African doctors. In fact the pre-clinical medical students are expected to know these topics and pass them excellently, even when they seem to know little or nothing about the endemic conditions in their own countries. So the choice of emphasis for these authors is based on the most important information at their disposal and what is of interest to them, which may not necessarily be the priority of the Africans.

Recently, the Ebola Virus Disease (EVD) epidemic reached alarming proportion, ravaging lives all around West Africa. Guinea, Liberia and Sierra Leone were the worst hit. This disease (EVD) has been with Africans for decades. Since its discovery in 1976 around the Congo river, the spells and cycles of its epidemics have claimed many lives. It is however appalling to note that this disease has very limited coverage in our medical textbooks. Many clinicians in West Africa (prior to the recent outbreak) know little or nothing about the disease. This also implies that no serious researches have been done on Ebola virus disease. The world health organization said there is yet no proven treatment available for EVD and no licensed vaccines available yet [8].

The weak anti-piracy laws in most African countries is another major setback to publishing of textbooks by local authors. Pirates freely reproduce intellectual properties of others without permissions and

make fortunes out of it, making the pirates richer than the original authors. This has discouraged many authors from even attempting to write. It is reported that piracy is a booming business in Nigeria and sub-Saharan Africa that is set to drain the nation's economy [9].

Misplaced Priorities

In 2011, the whole African continent produced the same amount of scientific publications as the Netherlands. Africa continues to lag behind other regions, including developing countries in Asia. There are many reasons for this lag: an over-reliance on unstable and inequitable international funding, governmental instability, and lack of resources – or recognition of the importance – to invest in higher education and research programmes [10]. Very recent findings prove that 160,000 people in Africa control personal fortunes in excess of US\$1 million (£642,000) which represent a twofold increase in the number of wealthy individuals since the turn of the century. By 2024, it is projected that the number of African millionaires will rise by 45%. Towards the end of 2014, the combined wealth of high-net-worth individuals (HNWIs) living in Africa was placed at US\$660 billion [11]. Africa suffers from a lack of an adequate, African-led, science, technology, and innovation (STI) system of indicators in support of evidence-based policy. Priorities are misplaced. Only three countries in Africa (Malawi, Uganda and South Africa) spends above 1% on research and development (R&D) the rest range between 0.2% and 0.48%. Only countries like Ghana, South Africa and Malawi have the business enterprise sector contributing up to 40% for R&D funding. Most other countries have the private sector giving less than 10%. Recent data also indicate that R&D activities in Africa are to a large extent financed by international donors and other foreign sources. Mozambique is currently the most dependent on foreign donors, with over 50% of its R&D being funded from abroad, followed by Mali (49.0%), Tanzania (38.4%), Senegal (38.3%) and Malawi (33.1%) [12].

Lopsided Collaboration

At the turn of the twentieth century, European countries opened colonial research facilities to study tropical diseases and other African problems overseen by a central office. Often this was driven for solely economic reasons. It is pathetic to note that a 2014 survey revealed that nothing much has changed. Africans primary role in most western partnership research is data collection, with all the glory going to the western scientists. It is a known fact that a lot of research takes place in Africa but the leadership of the research teams is rarely African. Investigators from High Income Countries (HIC) secure most of the funding for global health research projects and often dictate the research agenda. Some HIC academics arrive in Africa, with their own funding, to conduct studies on topics that they have decided on without local input. If their values and objectives are different from African partners this can lead to inappropriate projects unrelated to local research needs, and derive conclusions that do not have any direct local benefit [5,10].

Lessons from the Egyptian Physiologist

When the authors of this article were both undergraduate students at the Ahmadu Bello University, Zaria-Nigeria, two Egyptian Professors were employed by the university to teach physiology. They came to the institution with variety of textbooks written by Egyptian authors. That is a clear proof that their academics are studious and meeting the local content need. In those books, some subject's peculiar to the Egyptian populace (e.g., bilharziasis) were well covered. Egypt and South Africa are currently dominating research in Africa with respect to scientific

publications. Of the total output, from 1999 to 2009, South Africa and Egypt contribute 37% and 27% respectively [13]. So, it is one thing to write a voluminous textbook with beautiful illustrations and yet another thing to write with the aim of satisfying peculiar needs of the target audience. When Africans begin to write textbook tailored towards meeting local content, only then are we sure of producing highly efficient and proficient clinicians who can meet the needs of the region.

Any Hope?

African countries are increasingly becoming aware of the need to invest heavily in science and technology. This sentiment was mutual at the Addis Ababa Declaration on Science, Technology and Scientific Research for Development at the African Union Summit in 2007. Heads of States in Africa strongly urged member states to commit at least 1% of gross domestic product (GDP) to research and development. They agreed that revitalizing scientific research institutions in African Universities is pivotal to development and pledged their commitment to it [14].

Recommendations

- Africans need to set their own research priorities. It is very necessary that Africans take charge, thus allowing for development of research ideas that reflect local needs and key priorities. They must take control of their research agendas and coordinate HIC collaborators. Otherwise, African countries risk repeating history and becoming victims of “scientific colonialism” [5]. If textbooks are not re-written from the scratch right to the top there will certainly be a big lag in the quality of clinical researchers and doctors to be produced.
- African academics should be proactive towards re-writing textbooks on basic sciences (Anatomy, Physiology, and Biochemistry) to fit peculiar needs. Clinical textbooks (Pharmacology, Medicine, Surgery, Pediatrics, Obstetrics and Gynecology and other subspecialties) should also be re-written. This will allow for proper training of medical students to have a good grasp of relevant regional health issues yet not missing out on other global conditions (pandemic or endemic).
- The government must heavily invest in education, particularly research. The developed nations should give a more African-centered collaboration to African scientists in order to strengthen local content. A special research intervention programme like the tertiary education trust fund (Tetfund) being run by the Nigerian government is laudable and should be replicated all over Africa. Such funds are set aside by the government to support publications by local authors and serves as a pool for research grants and infrastructural development in tertiary institutions [15].
- Strong anti-piracy laws should not only be passed by African governments but be fully implemented to encourage local authors.
- The private sector should be fully involved in supporting academics just the way the western philanthropists are doing. One of the major contributors towards the African Academy of Sciences (AAS) and New Partnership for Africa’s Development (NEPAD) is the Bill and Melinda Gates Foundation [16]. The African billionaires should also be committed to such partnership. Government must ensure that successful businesses give back to their immediate community especially in the support of quality research that will enhance quality of life.

- Successful Africans in diaspora can drive this engine of change too. Recently, Wole Soboyejo, a professor of mechanical and aerospace engineering at Princeton University in New Jersey, temporarily came back to Nigeria (his country of origin) to serve as vice-president of the African Institute of Science and Technology (AIST) in Abuja. His mandate is to train top students from across the continent, helping to establish them back in their home countries, where they can serve as seeds of excellence [17].

Conclusion

For years, African academics have left the foreign authors to write the medical books that are used to raise African doctors. The current disconnect between pre-clinical and clinical training in our medical schools can be attributed to these western-centered textbooks that fail to discuss relevant health issues that borders on Africans. The current textbooks employed to train pre-clinical medical students will need to be re-written to reflect more on meeting local needs. African Governments must show strong commitment towards development of medical research. They must also create favorable programmes and policies to that effect. Developed nations should support developing nations with balanced collaborative research rather than lopsided ones. Finally the private sector must come in to assist. By so doing, future clinicians in Africa will be better equipped to serve their local community and be key drivers for both national and continental growth.

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