

AFRICAN JOURNAL OF MEDICAL PHYSICS (AJMP): VISUALIZING THE FUTURE OF HEALTHCARE IN AFRICA

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Abstract— This paper information on African Journal of Medical Physics (AJMP), the official journal of the Federation of African Medical Physics Organizations (FAMPO). The paper presents sneak preview on the motivation for the formation of AJMP, the publication methods, history of the journal and proposal for an Africa model of the ICTP medical physics

Keywords— healthcare, medical physics, journal

I. BACKGROUND

Africa accounts for 13% of the world's population and 24% of world's disease burden but only 3% of the world's healthcare workforce [1]. This imbalance creates vulnerability and may as well define the enormous responsibility and reward faced by the very few medical physicists in Africa. Medical Physics plays critical role in the modern healthcare delivery system. The term medical physics traditionally means the physics used to diagnose and treat diseases. Originally, this was often primarily the physics of X-rays; as ultrasound was developed for diagnostic purposes, it also became part of medical physics.

The areas of interest to medical physicist have expanded as still more diverse and sophisticated instruments are used for diagnosis and treatment. For example, the American Board of Medical Physics (ABMP) decided to start a board certification program in magnetic resonance imaging physics (MRI Physics). The first written examination in MRI Physics was held on August 8th and 9th, 1998.

This motivates the need to ensure the production of highly competitive Medical Physics journal that will be able to contribute meaningfully to the global healthcare system. It is of great concern to note that the uptake of Medical Physics in sub-Saharan Africa is very low because of the costs and expertise involved in acquisition and operation of medical imaging technology. In order for Medical Physics to be a sustainable technology for developing countries, some of the support structures are needed to be in place.

Pivotal among those support structures is the development of local expertise. Therefore, the development of training software to simulate Medical Physics experiments and provide visual training tools to help understand medical imaging technology is critical. The software should be a good way of starting to develop expertise and training that might provide support for the development, maintenance and operation of appropriate Medical Physics devices for developing countries. Our goal is to develop the African Journal of Medical Physics that will be intellectually fascinating and powerfully serve as invaluable link between research, health authorities and medical institutions in Africa and beyond.

II. PUBLICATION METHODS

The African Journal of Medical Physics (AJMP), (ISSN 2643-5977), the official scientific journal of Federation of African Medical Physics Organization (FAMPO), is published by the Harvard University Press. It is published in both print and electronically as a transitional strategy in moving from print to online and as an attempt to gain the benefits of both methods.

III. MOTIVATION

Recently, the cost of disease diagnosis and treatment has been on the rise. Unfortunately, the rising cost is not translating to significant reduction in disease related deaths. Recent disease management strategies are now gradually shifting from the traditional “one drug fits all” approach towards personalized medicine, in which drugs are specifically administered to a patient at the right time. Although the possibilities and prospects of personalized medicine are undoubtedly impressive, its potential is yet to be fully explored because the physics needed to understand the molecular undertone of personalized medicine and drug management is still not available [2].

African journal of medical physics can answer many complex questions related to personalized medicine and drug management by publishing researched articles on advanced techniques and computing methods that can positively improve the quality and efficiency of healthcare. Use of these medical physics models can benefit entities for which the models are applied, and healthcare worldwide through the dissemination of the methods and applications. The superior understanding of disease and its effects on tissue will allow new therapies and surgical procedures to be developed that can be tuned to the specific needs of the patient. Finally, thick-tissue imaging will lead to breathtaking insights into the working mechanisms of organs. In particular, imaging brain activity will be fascinating. The advances that have been seen in the 20th century may seem incremental and predictable in comparison with the advances that will be made in the 21st century.

HISTORY OF THE JOURNAL

The concept of a Medical Physics journal was conceived as a product of a proposal to The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste Italy in 2006 [3]. Through interactions with the leadership of Nigerian Association of Medical Physicists (NAMP), the concept of The Nigerian Journal of Medical Physics was adopted at the Annual Scientific Conference of the Nigerian Association of Medical Physicists held in November 2017 at the National Hospital, Abuja, Nigeria where “The Nigerian journal of Medical Physics” was officially announced as the official journal of Nigerian Association of Medical Physicists.

In our efforts to ensure high quality and regularity of the new journal, extensive consultations with International professionals, experts and colleagues were made. We were advised to broaden the scope of the journal to cover the entire African region. We consented to this advice and

change the name of the journal to African journal of Medical Physics (AJMP). Prof. Wilfred Ngwa, a Professor of Radiation Oncology at Harvard and University of Massachusetts USA, officially launched the first edition (Volume 1, Number 1, 2018) of African journal of Medical Physics at the annual conference of Nigerian Association of Medical Physicists held between November 22nd – 24th, 2018 again at the National Hospital Abuja, Nigeria. The second edition (Volume 2, Number 1, 2019) has been published. The Volume 2, Number 2, 2019 issue will be published in December 2019. Two special editions have been scheduled to be published in 2020 in addition to the regular editions. One of the special editions will focus on

PROPOSAL FOR AN AFRICA MODEL OF ICTP MEDICAL PHYSICS RESEARCH AND TRAINING

All countries should cooperate in a spirit of partnership and service to ensure primary health care are obtainable for all people since the attainment of health by people in any country directly concerns and benefits every other country. [4]. Primary health care is by no means universal, both infectious and non infectious diseases commonly threaten the health of billions of people on earth especially in Africa. Even with the best intentions, health authorities find themselves handicapped in their fight against diseases.

Based on the proposal made to International Centre for Theoretical Physics (ICTP), Trieste Italy in 2006 [3] “The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste *Italy*, a multinational meeting place can be proposed as the ideal centre for MEDICAL PHYSICS research and training...”. It is of great interest to note that ICTP has successfully maintained the training of Medical Physicists since 2012. It is strongly proposed here that a model of Medical Physics research and training in ICTP be reproduced and hosted in Africa to be responsible for manpower development of Medical Physicists in collaboration with the Universities and tertiary hospitals in Africa. The centre when established will also be responsible for all aspects of disease models which may include: Developing mathematical formulations (through mathematical modelling, algorithm development and computational analysis and simulations) of disease models based on the human physiology and patho-physiology, finding relevant data about the initiation and progression of diseases, all current treatments for the disease and side effects.

Cataloging a complete set of processes associated with the detection and treatment of diseases. Programming, in the appropriate computer languages, diseases and testing the results as well as documenting the programming. Validating, updating and documenting diseases models. Advising on the application, strengths, limitations and

interpretations of disease models and raising awareness of the power and value of a particular disease. Directing the application of the model to forecast medical care outcomes, relevant to these and related disease models. Publication, dissemination, presentation of the disease model and its results will be the responsibility of the African Journal of Medical Physics.

ACKNOWLEDGEMENTS

The journal has benefitted immensely from the Association of Nigerian Medical Physicists. We salute the humility and maturity of the leadership of Nigerian Association of Medical Physicists that courageously with great foresight agreed to transform the “Nigerian Journal of Medical Physics” to “African Journal of Medical Physics” after extensive consultations with prominent colleagues nationally and internationally. The contribution of Dr. Michael Dada in the editorial office is invaluable and highly commendable. We deeply appreciate Dr. T. Ige the current FAMPO president and Professor M. Aweda the current NAMP president for their unquantifiable passion for AJMP. The cooperation of the reviewers has been unique and encouraging. The Editorial Board is ever grateful to The Global Health Catalyst, Harvard Medical School USA for the immense support and encouragement provided to ensure quality and making the visibility of the journal quite global and relevant.

May all of us jealously carry AJMP by the two hands, hold it dearly to our chest and carry it on our head so that it can take us to places and through generations.

IV. Conclusion

The editorial team encourages members of FAMPO to take advantage of the establishment of AJMP and submit high quality research studies for publication.

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