Medical Physics and the Challenges Faced in Africa

by

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Introduction

• Individual medical physicists have presented many challenges
• This has greatly inhibited their input in patient care and management.
• To improve the role and recognition of medical physicists in Africa, FAMPO was established.
• FAMPO is the Federation of African Medical Physics Organisations.
• Its main role is to bridge the gap between individual medical physicists, existing medical physicist bodies and the International Organisation of Medical Physics (IOMP).
• This will address the challenges faced by medical physicists in individual countries in Africa and islands in the region.
• It is a non profit making organisation.
Although the use of ionising radiation in medicine is justified, unsafe use can lead accidental exposures to the patients, radiation workers and members of the public. To eliminate deterministic effects and minimize stochastic effects, the role of a qualified medical physicist and other related specialities is very crucial. Currently, there is growth in the number of radiological and therapeutic facilities in Africa, with an increase in the training of other relevant personnel like radiologists, oncologists and radiographers, however, these centres still have very few qualified medical physicists. Non-growth or stunted growth in trained personnel may work against justification of the recognition and existence of medical physics profession in the civil service in Africa.
Who is a medical physicist?

• Medical physics is an applied branch of physics concerned with the application of concepts and methods of physics to the diagnosis and treatment of human disease.
• A qualified medical physicist is an individual who is competent to practice independently one or more of the sub fields of medical physics.
• i.e. therapeutic radiological, diagnostic radiological, medical nuclear and medical health.
• Their time should on average be distributed equally among three areas, clinical service and consultation, research and development, and teaching.
• He or she should have a minimum degree in Physics honours or Medical physics with additional clinical training from recognised designated training centre.
Quality Assurance Programme

- All diagnostic and radiotherapy centres should have a well established comprehensive quality assurance programme in place.
- This should involve machine installation and calibration, source delivery and safety, operational procedures, clinical dosimetry and the whole treatment planning process.
- It should be followed according to national and international recommendations.
- As part of the quality assurance programme, the role of the medical physicists is very crucial.
Challenges faced by medical physicists in Africa

A study was carried out to identify the challenges faced by medical physicists in Africa and the objectives of the study were;

• To identify the number of qualified medical physicists and their working experience in hospitals in African countries.
• To identify the level of involvement of medical physicists in the three areas of Nuclear medicine, Radiology and Radiotherapy in hospitals in African countries.
• To identify countries with recognised professional bodies governing medical physicists in African countries.
• To identify the challenges faced by medical physicists in African countries
Methods and materials

• The study was conducted on thirteen medical physicists from seven African countries.
  • i.e. Nigeria, Kenya, Libya, Tanzania, Zambia, Uganda and Ghana.
• A questionnaire was used to collect data inline with the objectives.
• The data collected was analysed to identify the correlation between the challenges identified and the objectives of FAMPO.
Results and discussions

1. Qualification and working experience of medical physicists in Africa

- 54% of medical physicists working in hospitals in Africa do not have any additional clinical training.
- These cannot work independently.
- However, working experience shows that some of these have kept working for about seven years without access to clinical training.
- This is a challenge of using unqualified medical physicists to Mann patient’s care and management.
2. Area of interest and practice in medical physics

- Results indicate that most medical physicists have been trained in Radiotherapy and participate more in this area.
- The level of involvement of medical physicists in radiology and Nuclear Medicine is minimal.
- Aspects of radiation protection and quality assurance has been unattended too.
- Qualified trained medical physicists in these areas are very few or don’t exist at all.
3. Existence of recognised professional body governing medical physicists in African countries

- 85% of African countries do not have a recognised body governing medical physicists.
- This has presented a challenge of ineffective communication among individual physicists and related fields.
- Non-representation on hospital and government boards has left financial support to this field minimal.
4. Challenges faced by medical physicists in African countries

- There is a shortage of qualified skilled medical physicists to man all the activities the three areas of Radiotherapy, Radiology, and Nuclear Medicine.
  - There is a lack of local training centres.
  - The cost involved to obtain clinical training from the recognised training centres is high.
  - Training of qualified medical physicists has been done by the International Atomic Energy Agency (IAEA).
- Little or no support is given to training medical physicists by individual governments.
- Access to such training information is very difficult.
- Lack of recognised bodies governing medical physicists
- Lack of coordination among medical physicists in a particular country and between countries in Africa.
- The law governing the use of ionising radiation is still weak in some African countries. Respect and financial support to the users from government officials is minimal.
- Ignorance about the role of a medical physicist from the hospital managers and health ministries.
- Lack of equipment has inhibited the execution of their duties especially in areas of dosimetry, dose assessment, and radiation monitoring.
- This has limited their participation in research and publication.
- Hospitals have no budget for continuous education to fund conferences or congress attendance. Most of these conferences are commonly supported by international organisations like IAEA. WHO.
What is FAMPO?
FAMPO is the Federation of African Medical Physics Organisations

Background of formation of FAMPO

• To improve and solve the challenges faced by medical physicists in Africa, FAMPO was established.
• After the 48th SAAPMB meeting held in Durban, the urgent need to have a regional body in Africa to be affiliated to the IOMP was espoused.
• In a bid to carry these suggestions to the next level, a short meeting with the IOMP Vice President, Prof. Nusslin-and representatives of 5 African countries was held on 7th June, 2008 afternoon at Hotel Elangeni, Durban.
• It was suggested that the members present reach out to various countries via the email to galvanise opinions towards the establishment of a virile regional chapter the pride for all medical physicists in Africa.
• Thanks to Dr. WID Rae the host, Prof. F. Nusslin the convener and Dr. Taofeeq. A. Ige for compiling.
FAMPO Constitution and Executive Committee

- First draft of FAMPO’s constitution made on Friday 13th June 2008
- Final draft on Wednesday, 25 March 2009.
- The first executive committee of FAMPO organisation was elected on Friday 11th December 2009 in Harare during the AFROG conference.
- Prof. W.A. Groenewald from South Africa chaired the meeting with 15 delegates from 12 countries and Dr. Meghzifene of the IAEA attended as an observer.
- Dr. Ahmed Ibn Seddik of Morocco is the president.
- Ms. Rebecca Nakatudde of Uganda is the Vice President,
- Dr. Khaled ELShahat of Egypt is the Treasurer.
- Dr. Taofeeq A Ige of Nigeria is the Secretary-General.
- The IOMP council approved FAMPO’s application as the new regional youngest organisation of IOMP.
- 48 individual medical physicists in addition to GAMP, NAMP, SAAMPS, SAMP and MPST of Ghana, Nigeria, South Africa and Tanzania have expressed interest to register with FAMPO.
Aims and Functions of FAMPO

• To promote improved quality service to patients and the community in the region.
• To promote the co-operation and communication between medical physics organisation in the region, and where such organisations do not exist between individual medical physicists.
• To promote the profession and practice of medical physics and related activities in the region.
• To promote the advancement in status and standard of practice of medical physics profession.
• To promote and improve the training of medical physicists.
• To promote research and development in the field of medical physics.
• To promote appropriate use of technology to the benefit of rural populations.
• To organize and / or sponsor international conferences, regional and other meetings or courses.
• To collaborate or affiliate with other scientific organisations
Membership to FAMPO

Membership of the Federation should consist of:

- Organisational membership of IOMP members.
- Individual membership as explained in article 7 of the constitution.
- Honorary membership as explained in article 7 of the constitution.
- Additional categories of membership created according to article 8 of the constitution.
Conclusion

• The challenges identified in the study can be solved by effective execution of FAMPO’s objectives.
• Governments of African countries should support, train, employ and recognise more medical physicists to handle all radiation dose safety issues pertaining to all departments using ionising radiation in medicine.
• There is need for training more qualified medical physicists in Africa and their role should not be ignored.
• Effective communication among the family of medical physicists in Africa should improve to solve the challenges faced in our countries.
• With the establishment of FAMPO, which is a virile regional chapter, the pride of all medical physicists in Africa, support and hard work of all FAMPO members will make medical physics in Africa shine and many lives of Africans saved.


AAPM Task Group 61, (March 2001). A protocol for 40-300 kV x-ray beam dosimetry in radiotherapy and radiobiology.


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Acknowledgement

1. AFIRPA 2010 organizing committee.
2. Dr. Ahmed Ibn Seddik President to FAMPO, Dr. Taoeeq A. Ige General Secretary to FAMPO and Dr. Khaled El-Shahat Treasurer to FAMPO.
3. Makerere University College of Health Sciences.
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