

MEDICAL PHYSICS PROFESSIONAL DEVELOPMENT AND EDUCATION IN NIGERIA

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Abstract — The evolution of medical physics profession and its awareness in Nigeria is developing at a rate faster than it was fifteen years ago. Notwithstanding, the profession as well as its development is facing challenges both in the academia and health sector. The aim of this project is to highlight challenges in the academia and in the health sector, and to give an overview of the number of institutions running the medical physics programme and its related fields. Sources for this project were from universities and pioneers in Medical Physics in Nigeria. Currently, there are only seven universities running the post-graduate academic curriculum (Masters of Science – M.Sc and Doctor of Philosophy – Ph.D programmes) in Medical Physics. The International Atomic Energy Agency had partnered with the country’s Ministry of Health in the year 2012 to start up a residency training program but it has experienced several challenges due to slow government policies in passing the Medical physics bill which would have necessitated the establishment of a Postgraduate College for Medical Physics in Nigeria.

Keywords— Nigeria Nuclear Regulatory Authority, Medical Physics, National University Commission

I. INTRODUCTION

Nigeria, popularly called the “giant of Africa” is situated on the Gulf of Guinea in West Africa, with a population of well over 188 million people and has Abuja as its Capital city based on the latest United Nations estimate¹. The first Department of Radiology started as far back as 1953 at the University College Hospital in Ibadan Oyo state under Professor Alexander Brown who was the first head of department². Also, first radiation therapy and nuclear medicine services in West Africa was established in Nigeria at the College of Medicine of the University of Lagos in 1968 and commenced radiation therapy work in 1969 with a superficial X-ray machine. A Theratron 780 Cobalt-60 machine was later donated by the Canadian government in 1975 for the treatment of cancer and other malignancies. It was also the first department to offer courses in Radiation Biology, Radiation therapy and Medical Physics in Nigeria and West Africa at large. Since the emergence of these specialties (Radiology and Radiotherapy) in Nigeria, it has raised the quest to have adequate man power like

Radiologist, Oncologist and Radiographer with Medical Physicist being at the tail end due to its non popularity. In a bid to improve health services, the then President Olusegun Obasanjo in 2003 launched the VAMED Hospital Equipment Project, in which fourteen (14) teaching hospitals acquired up to date equipments through the project³. However, the increase in the number of imaging equipment has not resulted in commensurate increase in additional training as many government hospitals especially the specialist and teaching hospitals do not have these facilities. The activation of the Nigerian Nuclear Regulatory Authority (NNRA) in 2001 and the National Institute of Radiation Protection and Research (NIRPR) in 2006 (which is a body under the former), has brought to limelight the importance of medical physics in the country especially in the health establishment as well as the implementation of radiation protection in industrial sector with particular emphasis on the petroleum industry where a substantial amount of radioactive materials are in use⁴. The ongoing medical physics residency programme with training only in radiotherapy due to national exigencies commenced in 2012 and has been plagued with challenges primarily due to funding and delayed legislative instruments. The registered professional body of Medical Physicists in Nigeria is the Nigerian Association of Medical Physicist (NAMP). This association includes Clinical Physicists and other Medical Physicists working in the academia and the industries. Figure 1 shows the distribution of Medical Physicists in Nigerian Hospitals.

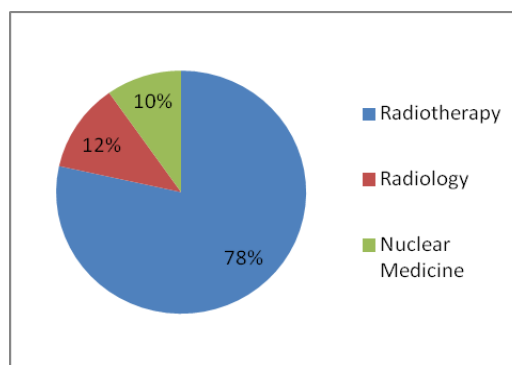


Figure1. Distribution of Medical Physicists in Hospitals in Nigeria

II. MATERIALS AND METHODS

Materials for this write up was gathered from various universities in Nigeria with respect to institutions that run the medical physics program: through their academic prospectus, and first-hand information from colleagues who are currently lecturers in those institutions. All the Medical Physics courses in Nigeria are post-graduate programmes and their organisation is vested in the senate of the various universities running them with the National University Commission (NUC) providing some bench-marking criteria and some oversight functions. Other closely related fields like Radiation and Health Physics, Biophysics, Nuclear and Radiation Physics among others are not reported in this project.

III. RESULT

Table 1: Institutions in Nigeria that offer Medical Physics program

	Institution	REGION	STATE	DEGREE
1	University of Lagos	South-West	Lagos	MSc/MPhil/PhD
2	Benue State University	North-Central	Benue	MSc/ PhD
3	Obafemi Awolowo University	South-West	Osun	MSc/MPhil/PhD
4	University of Nigeria NsuKka	South-East	Enugu	MSc/MPhil/PhD
5	Nasarawa State University	North-Central	Nasarawa	MSc
6	Nnamdi Azikiwe University	South-East	Anambra	MSc/MPhil/PhD
7	University of Benin	South-South	Edo	MSc/MPhil/PhD

MSc = Master of Science, MPhil = Master of Philosophy, Ph.D = Doctor of Philosophy

No university in Nigeria offer Medical Physics at undergraduate level, it can only be done from the Masters level. The results in Table 1 show Universities currently offering the Medical Physics course. All the Universities, except Nasarawa State University, offer the course at Masters and PhD levels, simultaneously. A student can opt to do an MPhil program directly, if the student did not qualify for PhD directly based on his or her grade point.



Figure 2: Map of Nigeria showing areas where Medical Physics is done at M.Sc/MPhil/Ph.D.

Also, figure 2 show regions where the Medical Physics course is done. Two in the South-west, two in the North-central, two in the South-east and one in the South-south.

IV. DISCUSSION

Figure 1 shows a distribution of clinical Medical Physicists in Nigeria with 78% in Radiotherapy Department, 12% in Radiology and 10% Nuclear Medicine. The above distribution is an estimated figure obtained from hospitals with radiation facilities. The institutions running the Medical Physics program are presented in table 1. General courses for this program Include: Radiotherapy Physics, Diagnostic Physics, Radiation Protection, Nuclear Medicine among others. Most of the Universities have now added Anatomy and Physiology to their curriculum. Medical Physics program in universities in Nigeria are administered in the faculty of science, only College of Medicine, University of Lagos offers the course in the faculty of Medicine. Nasarawa State University offers it as Radiation and Medical Physics only at Masters level. Most of the courses taught appear to lack real practical sessions due to lack of appropriate facility, equipment and manpower. Generally, Medical Physicists with Masters in Nigeria have increased with an average turnover of seven (7) graduates every year. Currently, there are over seventy (70) Medical Physicists in Nigeria with only few employed in the twenty-one Federal Teaching Hospitals and less than six (6) in the twenty-three Federal Medical Centres across the nation. A preponderance of these physicists is in the academia.

CONCLUSIONS

Medical Physics academic program is currently available in 7 (seven) Universities in Nigeria. To a large extent, most

Medical Physicists in Nigeria are not clinically qualified and this necessitated the IAEA supported medical physics residency programme which currently has 4 (four) residents preparing for their Part II undertaking in Radiotherapy stream. Only few were employed with Bachelor of Science in Physics. A large number have Master of Science in Medical Physics. The current challenge is in the delayed action at the national parliament (assembly) on the Medical Physics bill which will fully compliment the academic program when it is finally passed into law and diligently implemented.

V. ACKNOWLEDGMENT

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