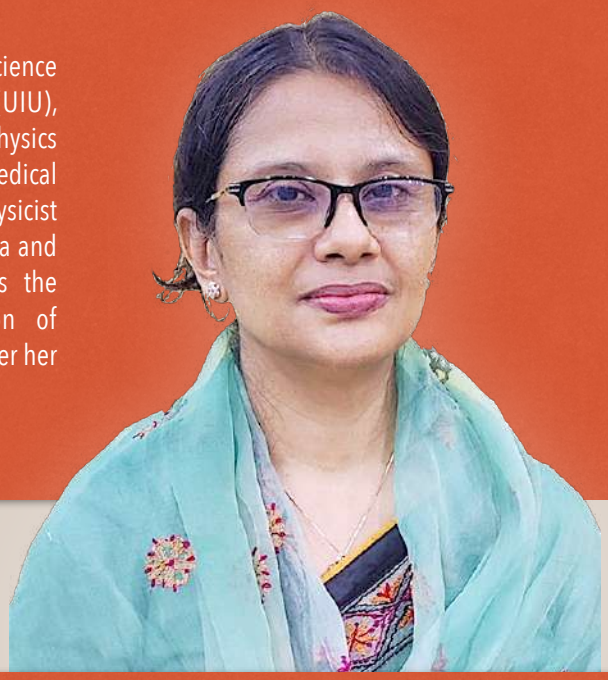
"Prof Azhari is the Director of the Centre for Biomedical Science and Engineering, United International University (UIU), Bangladesh, since July 2021. Her exemplary medical physics career turned out to be a beacon for not only women medical physicists but also everyone who aspires to be a medical physicist in Bangladesh, crossing borders to south Asia, Asia, Oceania and across the globe spans over about 2 decades. She is the upcoming Vice President of Asia-Oceania Federation of Organizations for Medical Physics (AFOMP) (2023-2025) after her commendable services as Secretary General for two terms."



Medical Physics Professional Development in South Asia: Pathfinder and Proponent

Bangladesh

The challenges faced by medical physics professionals across South Asia are diverse in themselves and in their complexity. Actions are being taken at various levels to resolve the problems and uplift the professional status. One such initiative is South Asia Centre for Medical Physics and Cancer Research (SCMPCR), established in 2018 with the motto 'Quality education and health science for patient benefit'. The major activities of SCMPCR are to produce skilled manpower and enhance health education to maintain high standards and higher efficacy till date through various activities. For this issue of the newsletter, we are privileged to have Prof Hasin Anupama Azhari, the honorary CEO of the organization. Here is a snippet of the chat with Prof Azhari by Dr. Mary Joan regarding her vision and mission for medical physicists of South Asia and Asia Oceania, especially for the strongly developing women medical physicists' community in the region.

MJ: Congratulations and best wishes for your upcoming Vice Presidentship of AFOMP. We would like to hear about your personal journey as a medical physicist in the last two decades.

HAA: Thank you Dr. Mary Joan. I am honoured to have the chance to lead the AFOMP, one of the biggest, most active, and oldest medical physics communities in the Asia-Oceania region, as vice president from 2023 to 2025.

My interest in human services has always been piqued. I always wanted to help people by providing health-related services. After a long career in the medical field, I found that medical physics is a subject that is essential in cancer treatment. It did not exist in Bangladesh. Also, when I heard that only Gono University had started this subject, I went there to learn everything I could about it. I learned that German professors led by Prof. G A Zakaria were conducting numerous seminars to establish this subject in reputable universities in Bangladesh, to later collaborate for student exchange and teacher development at Gono University. I also checked the website and tried to find out about the subject. Also, I came to know the Medical Physics history of Bangladesh. I heard that some people tried their hardest to establish MP under the guidance of Prof. Zakaria, Germany. Still, it was challenging to make it understandable to medical doctors. Recognizing the significance of this profession, I left medicine to pursue an MSc through a DAAD scholarship and a PhD in MP from Italy through an OWSD scholarship. It was extremely difficult for me to study physics and math as a prerequisite for the course once more. Then I joined this profession to help develop medical physics in Bangladesh. I travelled to several countries, including India, China, Italy, and Germany, to gain practical work experience.

At that time, there were no hospital medical physicists as well as academic faculty in this field. I started my medical physics profession as an academic faculty at Gono Bishwabidyalay as a junior faculty. I worked tirelessly to convey this department's institutional form and trends with the cooperation of all. I deeply involved myself in the formidable challenge of establishing and excelling in the subject of medical physics in the country. I devote myself as a craftsman to building a unique academic program to develop human resources necessary for cancer treatment for the country's welfare.

I, with a team, have contacted all hospitals, health directorates, and health ministries to make them understand the importance of medical physics, created posts, regularly wrote about the

In various activities of Medical Physics Department at Gono University

subject in national newspapers, and undertook various activities like national and international conferences to promote this department in public and private hospitals and arranging jobs for the students who passed out.

In 2009, as the founding president, we established the Bangladesh Medical Physics Society, a professional body of medical physicists, to give an organizational form to the promotion and expansion of Medical Physics and to improve the recruitment process of medical physics at public and private levels. In 2010, with the students of this department, we contributed to the Bengali dictionary of medical physics in the International E-Encyclopedia Dictionary of Medical Physics (A project of IOMP). We have collaborated with the institutes and hospitals of Germany, India and China, where the students and early career physicists from Bangladesh had the opportunities for training and research. Medical physics education has been developed through all these activities and can achieve success and sustainability.

Almost all medical physicists currently working in Bangladesh have graduated from this institution. This example of developing medical physics in Bangladesh is widely appreciated internationally. African country Rwanda is requested for cooperation in establishing medical physics. Later, in the context of discussions with the Ministry of Health of Rwanda, the cooperation program started in Bangladesh regarding the establishment of medical physics there. As a result, two Rwandan students are contributing to cancer treatment in their country by getting a Master in Medical Physics from Gono University. They are the first medical physicists in the history of Rwanda. Moreover, 5 Medical Physicists from Nepal have completed their Master's. They are now working in various government and private hospitals in Nepal. They were the first students in their country to complete their Master's in Medical Physics.

International Medical Physics Certification Board (IMPCB) has developed a certification process for the courtiers where no certification systems exist. According to international norms, since medical physicists are directly related to the treatment of patients, 2 years of clinical training is required after a Master's degree. To become a Certified Qualified Medical Physicist, the physicists should have passed the certification exam. I organized the examination of IMPCB in 2018 and 2021 in Bangladesh. Few physicists from Bangladesh and other South Asian countries have been certified through the IMPCB certification process.

There is no recognized accredited training hospital for residency programs, and a shortage of senior supervisors in Bangladesh. Also, it is only possible to train some students abroad for 2 years. To address these issues, with the initiative of Prof. Dr Golam Abu Zakaria, we established the South Asia Centre for Medical Physics and Cancer Research (SCMPCR) under Alo Bhubon Trust in 2018. SCMPCR regularly organizes various accredited training (Hands-on workshops, in-service training, e-learning programs) for medical physicists and other cancer care professionals. So giving accredited training through this program increases their Continuous Professional Development (CPD) points. As a result, he/she will have the opportunity to become a Clinically Qualified Medical Physicist by achieving CPD points.

MJ: I am exhilarated to hear the story of your perseverance in establishing a medical physics training program in Bangladesh, serving not only Bangladesh but also neighbouring countries and even Rwanda. Also, you have worked tirelessly to develop medical physics as a profession in Bangladesh and South Asia. What are your comments on the current status of affairs around here?

HAA: The South-Asia (SA) region, with its eight countries, has approximately one-fourth of the world and 40% of Asia's population. Only five countries (Bangladesh, India, Nepal, Pakistan, and Sri Lanka) out of a total of eight from the region have radiotherapy services. Cancer patients from Afghanistan,

At a celebration of Encyclopaedia EMITEL.

Various Activities of BMPS

Bhutan, and Maldives depend on other countries to access radiotherapy services. South Asia needs 2338 megavoltage teletherapy units, 706 HDR brachytherapy units, 4676 radiation oncologists, and 2923 medical physicists by 2030. This well-known fact indicates that this region of the world requires improvement in its strategies for cancer management.

Regional cooperation and more initiatives to develop knowledge and expert knowledge transfer are needed to face the current challenges in South Asia. Although medical physics is progressing gradually in South Asia, compared to the global context, even with South East Asia, there is a massive disparity in the medical physics profession and a lack of QMP. As EXCOM of AFOMP, we may overcome this disparity if we can decentralize through the collaboration of small, underdeveloped countries with one/two developed countries under AFOMP.

MJ: The most admirable aspect of your career is you have not limited your scope to classrooms or TPS. You have taken active leadership roles not only in Bangladesh but also internationally. We would like to hear about your most exciting experiences?

HAA: Since 2009, as the founding president of the Bangladesh Medical Physics Society (BMPS), I have begun to interact with the international medical physics communities at several international conferences. I also became a member of AMPI while studying MSc in MP. The reason is to learn about medical physicists in India for research and publication, as there is little research and work in this field in Bangladesh as the subject is new.

Many national and international colleagues inspired and helped me along the way, especially Prof. Dr. Golam Abu Zakaria, Germany, who introduced my activities in Europe as well as in Bangladesh and aided me greatly in my career, and Prof. Dr. Arun Chougule, India, who assisted and supported me during my tenure as SG AFOMP, and Prof. Slavik Tabakov, Former President IOMP, who gave me the opportunity to be a project coordinator for Bengal translation at EMITEL e-Encyclopaedia of Medical Physics and Multilingual Dictionary and Terms, a project of the International Organization of Medical Physics (IOMP), and which made BMPS an affiliate member of IOMP during my tenure as president, BMPS; Prof. Raymond Wu, who assisted me greatly in establishing BMPCB and holding IMPCB examinations in our country.

For me receiving the "International Day of Medical Physics award 2018" from IOMP and taking the role of AFOMP General

SCMPCR Hands on workshop program organized for medical physicists working in various hospitals in South Asia including Bangladesh.

SCMPCR In-Service Training Program for Oncologists and Medical Physicists working in National Institute of Cancer Research and Hospital (NICRH), Dhaka, Bangladesh

Secretary (2019-2022) has been an exciting experience. During those years, I have been in close contact with all my colleagues serving as officers on the AFOMP board and with the national member organizations through their presidents, council delegates, and individual members.

MJ: It is clear that you have taken a special interest in uplifting and promoting women medical physicists for their career and personal development. What are your comments on the current professional scenario for women medical physicists worldwide, especially in South Asia?

HAA: As an executive member of the Organization for Women in Science for the Developing World (OWSD), I have been actively involved in developing women in science since my early career. I have worked in the IOMP women's group as well.

Women are underrepresented in the field of medical physics. In developing countries, women face many unanticipated challenges caused by jealousy and patriarchal society, and naturally due to family responsibilities, childbearing and others. As a result, we can see many women graduates who need help to grow themselves in research and higher education. Adequate Support from family and colleagues and self-awareness for developing knowledge and skills could help to improve the scenario for women medical physicists in South Asia. Throughout my academic and administrative careers, I have always counselled my female students for research and guided them as a mentor on how a female can be a leader, and I continue to do so.

MJ: We would like to hear about your action plans for your tenure as the AFOMP Vice President?

HAA: I have served the AFOMP community as the organization's Secretary General from 2019- 2022. I am fortunate to have had the opportunity to work with Past President, Prof Arun. Now I'm with Prof. Eva Bezak, the current President. Both are visionary leaders who want to incorporate new ideas and themes into the existing AFOMP mission, standing, and contributions in a rapidly changing environment. We began and completed a first draft of a unified medical physics curriculum for the AFOMP countries in the previous term. Now I will attempt to complete it under the supervision of Prof Eva. As VP, I will also assist in all activities requested by the President to achieve all of the great AFOMP objectives that lie ahead of us. If the AFOMP ex-com permits, I would like to form an AFOMP women's group to address the challenges and promote female medical physicists in this region. As chair of the Award and Honor Committee, I'd like to encourage medical physicists in this region to work on research and other development projects.

MJ: SCMPCR is also striving hard to fulfill its objectives with the highest standards and are successful so far. Your take on goals to achieve for the coming year?

HAA: Cancer patients are on the rise in South Asian countries such as Bangladesh. Cancer patients in some South Asian countries are not receiving accurate and precise treatment due to inadequate manpower and medical facilities, resulting in their transfer to other developed countries.

Closing the gap in radiotherapy facility availability and developing human resource capacity are major challenges for cancer management in South Asia. The fight against cancer is a long-term effort, and success largely depends on strong government commitment. Regional cooperation can complement national efforts. Engagement and collaboration among governments, various international organizations, academic and research institutions, and non-governmental organizations are also crucial.

All the countries of South Asia are incorporating the latest equipment and techniques for cancer management. As a result, the need for highly skilled manpower in cancer treatment is undeniable. Hence, it is needless to say that SCMPCR can create skilled manpower - which has already been proven. Already, the steps taken by SCMPCR in developing medical physics in cancer treatment and research have been appreciated at the national and international levels. The main objective of SCMPCR is to share medical physics knowledge among all the countries of South Asia, including Bangladesh.

IOMP Women Group

SCMPCR is working as a training center not only for working medical physicists but also for students and trainees and cancer treatment related personnel.

MJ: Your advice/ suggestions to medical physics students and young professionals to fit best for the requirements and overcome the tests of times?

HAA: Medical Physicist is a very rewarding profession. We shall never forget that there is a human being, a sick person with all kinds of mixed feelings, placing his or her faith in our hands. This profession comes with a bundle of rules, routines, and regulations. We are the person behind the machine who ensures safe and effective treatment and diagnosis for cancer patients. A single mistake of us can lead to severe effects and death to the patient. I would like to request that students and young professionals to be a lifelong learner to adopt with the evolving technologies and take on the challenges of this noble profession. They should involve themselves in clinical work, research, and other professional leadership roles from early career under the supervision of qualified mentors.

MJ: Any special advice to women medical physicists?

HAA: There are two main obstacles we must overcome. Firstly, we must understand how to tackle all the hurdles in the family, society, prejudice, and gender discrimination. Secondly, once women start working in STEM fields, a lack of mentorship and insufficient family-friendly legislation all contribute to the pipeline's leakage. Everyone needs a mentor to guide women properly. The young female generations need to inform about the importance of STEM through seminars and workshops at different levels of education. We must establish a special partnership between radiation oncologists, clinical medical physicists, and academic medical physicists. The care and treatment of cancer patients must be improved; thus, we must put in the time and effort necessary. Let's not wait to let the broken pipeline wipe out another generation. Let's fill the pipes jointly, men and women. The time has come to act. Together, we can make a difference.

MJ: Yes, indeed, ma'am. Thank you very much for sparing your time to share with us the enthralling story of medical physics in Bangladesh, which also can be called your story. I am delighted to know about your action plan for the coming years, which will empower not only physicists of Bangladesh and Asia-Oceania but also worldwide. The upcoming generations of women medical physicists also have a nurturing mentor and a role model to look up to in you. Yes, it's time to act and let us all stand together in supporting each other beyond any barriers. Together we can make a difference, and together, everyone achieves more.

Dr Mary Joan is Associate Professor and Radiological Safety Officer at Christian Medical College and Hospital Ludhiana, India. She is Chair, Professional Relations Committee AFOMP, Member- Science Committee IOMP and Executive Committee AMPI-NC and Co Editor-in-Chief of SCMPCR Newsletter.