



WOMEN\_MEFOMP

# Middle East Committee of Medical Physics

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## EDITORIAL

### Editor-in-Chief:

**Dr. Hanan Awad Al Dousari**

Medical physics became important after Wilhelm Roentgen, in 1885, discovered the possibility of using electromagnetic radiation in medical diagnosis and treatment, or, what we now know as, X-ray. However, despite the widespread use of electromagnetic radiation in the diagnosis and treatment of patients, the number of physicists working in the medical sector remains low, which has created an urgent need for these professionals in this field.

As the technology developed and new laws were adopted to regulate the use of radiology, institutions that use radiotherapy were obliged to hire physicists to ensure quality control and radiation protection. The number of physicists increased to meet the need. Training, workshops and conferences have been necessary to enhance the capabilities and skills in cooperation with local and international organizations, in particular the International Atomic Energy Agency.

Despite the participation of women in the medical field in many countries and the leading role played by Marie Curie in the discovery of radioactivity, the number of female medical physicists is still below the aspirational target as it does not exceed 28% of the total positions in the Arab countries and in the world. Moreover, these women are rarely involved in the decision-making process. The number of female physicists has increased thanks to modernization and the education of girls with the reduction of social constraints. The United Nations resolutions that state that men and women



are equal also played a role. Due to their ability, women progressed into professional and leadership roles.

Mary Curie was the first woman to receive the Nobel Prize in Physics in 1903 and again in Chemistry in 1911 for her work on radioactivity.

Between 1901 and 2010, 40 women were awarded the Nobel Prize in Physics, Medicine and Chemistry.

Arab women, however, walk on a road full of obstacles; all sorts of customs, traditions, social stigma and even laws could restrict them from accomplishing their ambitions. Despite all this, women were able to achieve

a lot, both at the local and international levels. This is due to the increase of female education that allowed women to enter some professional domains that in the past, were reserved for men. Women physicists are the best example of women's success in overcoming obstacles and assuming professional roles side by side with men.

Women account for 25 percent of the board of the Middle East Federation of Medical Physics (MEFOMP). Moreover, female physicists chair the associations of medical physicists in Qatar, the UAE, and Iraq. In 2018, the MEFOMP suggested that a women's committee be created as a subcommittee of the International Organization for Medical Physics (IOMP).

The establishment of the committee was approved and Dr. Hanan Al Dousari was assigned to chair this committee.

It is my pleasure and honor to express my gratitude to His Highness Sheikh Sabah Al Ahmad Al Jaber Al Sabah, the great Humanitarian Leader, for his continuous support for women; empowering them in various fields to achieve multiple

successes. Kuwaiti women today have an integral role in state-building strategies, and their development has been placed at the top of the country's development priorities for being a key partner in building the future.

During the past five decades, Kuwaiti women have achieved many important accomplishments and participated in decision-making by assuming various key roles and positions. Kuwaiti women have been ministers and deputy ministers, elected members of parliament, and have served as ambassadors and diplomats. They have become key partners in the preparation and implementation of the New Kuwait 2023 Vision.

# THE WOMEN'S COMMITTEE OF MEFOMP - AN OVERVIEW

The Middle East Federation of Medical Physics (MEFOMP) was established under the umbrella of the International Association of Medical Physics (IAMP). The members of its board and committees are as follow:

- President: Dr. Huda Al Nuaimi – Qatar
  - Vice-President: Dr. Mishari Al Nuaimi - Kuwait
  - Secretary: Dr. Mohammed Hassan Kharita - Syria
  - Former President: Dr. Abdullah Al Haj - Saudi Arabia
  - Treasurer: Rabeh Hammoud - Lebanon
  - Head of the Education and Training Committee: Refaat Al Mazrouei - Saudi Arabia
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  - Head of the Public Relations Committee: Dr. Zeina Khattar - Lebanon
  - Head of the Awards Committee: Dr. Afkar Al Fares - Oman
  - Head of the Publications Committee: Dr. Anass Ababneh – Jordan
  - Head of the Media Committee: Nabil Aqilan - Jordan
  - Head of the Women's Committee of Medical Physics: Dr. Hanan Al Dousari – Kuwait
  - In 2018, the Women's Committee of MEFOMP was established to meet the demands of women in our professional community and obtain an official representation in the International Organization of Medical Physics (IOMP). Dr. Hanan Al Dousari has been appointed as the Chairman of this committee. Female medical physicists in the Middle East are currently being registered and encouraged to join the committee in the aim of accomplishing the desired goals.
- The most important tasks of this committee are:
- To develop, implement, and coordinate tasks and projects related to the role of female medical physicists, in the scientific, educational, and

practical domains.

- To organize international cooperation in medical physics and related specialized professions.
- To address the problems faced by female medical physicists in their work.

- To promote female leadership and career development.
- To raise awareness of women's scientific contributions in the field of medical physics.
- To explore ways to balance between career and family life.

**Board of Directors:**



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## NOBEL PHYSICS PRIZE 2019

Author: Hanan Al Arouj

October 8, 2019, was a special day for many physicists, astrophysicists, and astronomers. On this day, the Canadian-American astrophysicist Jim Peebles was awarded half the Nobel Prize in Physics for his contribution to physical cosmology, especially the understanding of the evolution of the universe after the Big Bang and the place of Earth and humanity within the cosmos. He shared the other half of the prize with Swiss physicists, Michel Mayor and Didier Queloz, for their 1995 discovery of an exoplanet orbiting a sun-like star.

The Nobel Committee reported that Jim Peebles' research and calculations more than half a century ago, focused on determining the temperature of early-universe radiation left after the Big Bang. For this purpose, he used a Dicke radiometer; a radio receiver named after scientist Robert Dicke. Peebles' detailed calculations led to confidently trace a light radiation that propagated through space almost since the beginning of the universe. Previous scientists had attempted to provide calculations, however, Jim Peebles' were more recent and

accurate, and they led to the conclusion that; if there was a Big Bang, the universe would be filled with a sea of microwave background radiation with a temperature below 10 degrees Kelvin. Consequently, the construction of an advanced radio receiver was undertaken to reveal the existence of this faint radiation. During more than half a century, these calculations were improved. They proved the existence of microwave background radiation, which was no longer a hypothesis, and revealed its impact on the place of the Earth within the universe.

"My advice to young scientists: you must do it for the sake of science, you have to enter this field because you are fascinated by science," said physicist Jim Peebles by phone to reporters at the Royal Swedish Academy of Sciences, minutes after he was awarded the Nobel Prize.

## INTERVIEW WITH FARHA AL ANZI

In this interview, Farha Al Anzi, the first Kuwaiti nuclear medicine specialist working at the Ministry of Health in Kuwait, talks about the nature of her work and her most important achievements.



### Subtitles

- I would encourage specialists to pursue their studies and obtain higher degrees.
- A specialization in medical physics is important for career advancement.
- Special tools were provided in the same department to meet the purposes of quality control tests.

**Would you give us a brief overview of your university studies?**

I graduated from the Faculty of Allied Health Sciences in Nuclear Medicine Technology in 1987 at the University of Kuwait. I was one of two female students selected for the first class of the nuclear medicine education program. A scholar from an American university was hired to design the curriculum and teach nuclear technology students. After graduation, I worked at Mubarak Al Kabeer Hospital and was the first Kuwaiti nuclear medicine specialist to be appointed to

work at the Ministry of Health. I participated in training graduate students to become physician assistants under the supervision of the department's head of specialists. In December 1989, I was appointed to work at the Department of Nuclear Medicine in the Military Hospital. There, I was assigned to supervise the installation of equipment at the imaging and X-ray departments, as well as the hot laboratory. I supervised quality and acceptance tests as well as developed protocols for patient imaging, use of computers, radioactive materials, measuring devices in the hot laboratory, and processing the radioactive materials for analysis.

The department was equipped and started admitting patients in 1990 without nurses nor administrative staff. We were only three physicians and myself. I had to assume administrative and nursing tasks starting with preparing order lists through to receiving pharmaceutical materials, preparing patient rooms, patient admission and registration. In addition to preparing radioactive materials and cameras, quality testing, and

submitting patient results.

In 1991, I returned to Mubarak Hospital; the equipment of the Military Hospital had been stolen during the Iraqi invasion of Kuwait.

In 1995, I moved to the Kuwait Cancer Center where I was appointed Chief Nuclear Medicine Specialist in the Department of Nuclear Medicine. In 2008, I moved within the same institution to the Faisal bin Issa Center. Since 2013 I have been working at Jaber Al Ahmad Center for Molecular Imaging.

### **Have you studied medical physics in the Department of Nuclear Medicine, at the Faculty of Allied Medicine?**

Yes, I followed all the medical physics courses at the Faculty of Medicine. Among my professors were Dr. Kypros, Dr. Jaber Ziada, and Dr. Adel (for radiology). The courses were divided between lectures and scientific experiments where we learned how to use lab equipment, mostly to perform quality control tests, learn how devices work and measure their efficiency. We studied the physics of magnetic resonance, CT scans,

and fluoroscopy, and the chemistry of radioactivity; how the body organs absorb and dispose of them. We experiment on animals in the laboratories of the Faculty of Medicine.

Training included preparing protocols for patient imaging and results and how to handle radiation and protect ourselves against its effects. Lectures were provided by the University's Radiation Protection Officer, in coordination with the Department of Radiation Protection from the Ministry of Health.

### **Who carried out the acceptance tests for the devices in the Department of Nuclear Medicine?**

At that time, the company's engineer would submit the acceptance test reports to the chief specialist, and then specialists re-test the device to ensure the accuracy of the reports. In 2002, the acceptance tests were designed and a specialist in medical physics from the Faculty of Allied Medical Sciences of the of Kuwait University was called to perform the acceptance tests using tools he prepared himself. His

students participated in training on performing these tests. In 2007, two nuclear medicine specialists from the Kuwait Cancer Center were trained to conduct acceptance tests for new devices installed at the Faisal Bin Isa Center. In the absence of tools to carry out acceptance tests, department-specific tools were devised to do the job.

### **Who was the radiation protection officer at the time?**

The chief specialist was in charge of the duties of the radiation protection officer. In 2012, a physicist with a master's degree in medical physics was recruited from abroad to carry out the duties and functions of a radiation protection officer: changing the employees' radiation measurement instruments, decontamination, receiving radioactive material generators used in the department of nuclear medicine, measuring the effectiveness, and analyzing radioactive materials.

In 2013, Dr. Mishari Al Nuaimi, Head of the Medical Physics Unit at the Faisal Sultan Bin Isa Center, received his PhD in Medical Physics. He initiated

the procedures for establishing the Medical Physics Unit, which was officially inaugurated in 2014. Many physicists joined the unit, which later undertook all radiation protection tasks.

### **Would you advise specialists to study nuclear medicine?**

I encourage specialists in medical physics to pursue their academic studies and obtain higher degrees in the field of nuclear medicine. By doing so, they will contribute to the development and enhancement of the level of work for the benefit of patients and the field itself, and the distribution of work among the specialized units. They will also introduce and generate new ideas in each discipline and participate in scientific research, worksheets, posters, and articles in specialized journals and lectures in conferences. They would also organize specialized scientific seminars.

A higher specialization in medical physics will advance the work undertaken provided there is no overlap between the subjects studied and given that the aim is to improve the service quality and provide more accurate test

results for the patient.

## INTERVIEW WITH DR. HANAN AWAD AL DOUSARI

**Dr. Hanan Awad Al Dousari was the first Kuwaiti woman to obtain a doctorate in medical physics in the field of nuclear medicine and positron imaging. She was also the first Kuwaiti woman to obtain a doctorate in medical physics in the field of nuclear medicine and positron imaging.**

I was surprised by the lack of recognition and appreciation for this specialization, so I was frustrated at the beginning.

I hope to develop a clear and functional role for medical physicists, as is the case at both regional and global levels.

I will use my scientific and practical expertise to serve Kuwait because Kuwait deserves every effort.

**How was it at the beginning of your career in nuclear medicine and how medical physics became your specialization?**

I graduated from the Faculty of Allied Medical Sciences majoring in Bachelor of Radiology and Nuclear Medicine in 2004. The same year, I received a scholarship from the Kuwait University to pursue a master's and doctorate degrees in medical physics. But, for reasons beyond my control, I was unable to benefit from this

opportunity. I worked then in the Department of Nuclear Medicine at Mubarak Hospital, and during my four years there, I didn't let go of my dream to continue my studies in medical physics. It was a very rare specialty in Kuwait and almost non-existent in the departments of nuclear medicine at that time. It was also a branch very close to Nuclear Medicine Technology as we followed many courses in applied physics, radiology and nuclear physics.

In 2008, I was awarded a scholarship from the Ministry of Health and the Civil Service Bureau to complete my studies. I received a Master's degree in Medical Radiography from the University of Surrey in the UK in 2009 and a PhD in 2013; I became the first Kuwait female with a PhD in medical physics in the field of nuclear medicine and positron imaging.

**What was your experience after getting your doctorate in this rare specialty? What were your most important accomplishments?**

After my return from the UK, I was surprised and frustrated at the lack of academic recognition of the specialization, and the lack of appreciation. I found that the majority of co-workers did not value my specialization, most likely because they had no knowledge about the importance of the medical physicist. I found it hard to believe that after four long years of hard work abroad and my dream of fulfilling an important role, there was a lack of appreciation and recognition as well as no clearly defined role for my specialization. In addition, there was a lack of opportunities for training and gaining hands on experience after receiving a higher degree in medical physics.

In 2013, I started my work in the Department of Nuclear Medicine at Mubarak Hospital as the Chairperson of the Continuing Education Committee for Nuclear Medicine Specialists. We organized many lectures and workshops, and published the

first Journal of Nuclear Medicine Specialists. In 2014, I joined the Jaber Al Ahmad Center for Nuclear Medicine and Molecular Imaging that was established in 2013 by the Kuwait Foundation for the Advancement of Sciences (KFAS), the Ministry of Health, and the Kuwait University. I was appointed medical physicist, Radiation Protection Officer, and Chairperson of the Continuing Education Committee. In 2015, the Ministry of Health established a medical physics unit at Jaber Al Ahmad Center and I was appointed president of the unit.

I began to hope that I would be able to use my scientific and practical expertise to enhance the role of medical physicists in various relevant fields, especially in nuclear medicine and molecular imaging, as well as serving my home country by developing the health-care service and helping elevate it to the level of the more developed countries and ensure that it excels among the countries of the region.

**Would you tell us about your work for the Association of Medical Physics, at the local and**

### international levels?

Working for the association is voluntary and requires a lot of time and effort. It also needs one to work around many obstacles and difficulties. The scarcity of physicists in Kuwait made it even more difficult to establish an association.

In 2014, I was elected as the head of the Protocol Committee of the MEFOMP and in 2018, I became the Chairperson of the Women's Committee of Medical Physics, which is a subcommittee of the MEFOMP and of the International Organization for Medical Physics (IOMP).

In 2015, I co-founded the Kuwait Association of Medical Physics (KAMP) under the IOMP umbrella, to promote the application of medical physics, raise the interest and encourage training, as well as the preparation and dissemination of related technical information. The KAMP is the comprehensive framework of medical physics professionals; its main mission is to promote this field locally, regionally, and internationally. The KAMP's main objectives are as follows:

- To achieve the highest quality

of medical physics services in all its branches inside Kuwait and in the Gulf region in general

- To disseminate scientific and technical information and promote education and professional development
- To promote cooperation and communication among medical physics associations regionally and internationally
- To encourage the exchange of expertise and information in the field of medical physics and the organization of regional conferences and seminars

### The Board of Directors:

- Dr. Mishari Al Nuaimi, President of the KAMP and Vice President of the MEFOMP
- Dr. Hanan Al Dousari, Vice President of KAMP
- Dr. Sheikha Al Obaidly, Secretary



- Talal Salahuddin, Treasurer

### What about medical physics unit in the center and its important tasks?

The unit comprises:

- Dr. Hanan Al Dousari – PhD in Medical Physics
- Maryam Ezzeddine – Master's in Medical Physics
- Zikra Al Shimmari - Physics
- Razan Da'as - Physics
- Dr. Mohammed Saqr – PhD in Medical Physics - Delegated from Kuwait University
- M. Sharif - Radiation Protection Officer in the Cyclotron Unit

The Medical Physics Unit performs several main tasks, including:

- Quality control of the devices: Beginning from preparing a study of specifications in accordance with international standards and work requirements, undertaking acceptance tests for new devices and regular quality control tests and calibration, through to the following up of maintenance and after-maintenance tests.
- To prevent radioactive



contamination; to ensure the proper disposal of radioactive waste; to assess patients' radiation doses before and after injection; to work on reducing radiation doses and regularly check employee radiation doses; to follow-up procedures for the issuance and renewal of licenses and radiation measurement kits of the unit's employees.

- To design and publish radiation awareness leaflets and posters; to supervise the implementation of safety and security programs for radioactive materials; to implement the fingerprint access system to radioactive areas and the monitoring system outside working hours. To receive radioactive incidents and emergency reports

and follow the necessary procedures; to separate radioactive waste in accordance with adopted policy, including the decontamination of patients' clothes.

- The Cyclotron Unit: to check the radiation doses and exposure of the Cyclotron Unit personnel; to supervise the handling of radioactive positron and of the radioactive waste storage room together with the proper implementation of the disposal policy.
- Education and Training: to organize training workshops with the participation of experts hired under the cooperation agreement between Jaber Al Ahmad Center for Molecular Imaging and the International Atomic Energy Agency (IAEA); to coordinate regular consultancy visits to review the plan for radiation safety and security; to supervise the continuing education program for the Center's employees through providing radiation protection courses; to provide theoretical and practical courses for assistant medicine students;

to participate in training the students of the Institute of Public Authority for Applied Education and Training; to train the personnel on the use of radiation detection devices. It also prepares awareness and scientific posters and publications and updates the Radiation Safety Guide and the internal laws regarding radiation protection.

- Research: to conduct scientific research and participate in lectures, as well as prepare scientific poster presentations for local and international conferences. The unit has already published several scientific articles in international refereed journals. The unit is keen to participate in the study of new radioactive materials and their feasibility before using them in molecular imaging. It also compares between different radioisotopes and is keen to use the latest technologies.

### **What are your aspirations and wishes for the future of medical physics?**

I wish to develop a clear job description and role title for



the medical physicist as is the practice in other countries of the region and the world, and to have a dedicated section for medical physics in every hospital that has a department of nuclear medicine, diagnostic radiology and radiotherapy. I also wish to establish an accredited academic program of medical physics in Kuwaiti universities to obtain better results at the national level and nurture Kuwaiti graduates because we have a shortage of physicists in Kuwait. It is worth mentioning here that Kuwait occupies now a leading position in medical physics in the region and this indicates that our

national medical physicists are highly qualified.



Medical Physics Unit Team - Jaber Al Ahmad Center for Molecular Imaging

## DR. SHEIKHA AL OBAIDLY THE FIRST KUWAITI WITH A PHD IN MEDICAL PHYSICS IN RADIATION THERAPY

### Would you tell us a little about yourself?

After obtaining a Bachelor of Science from the USA, I became very interested in medical physics. I continued my post graduate studies in the UK in medical physics where I got my doctorate in radiation dosing using functional imaging and synthetic analysis of tumors in radiation therapy. After receiving my PhD in January 2017, I started working as a medical physicist at the Kuwait Cancer Center. In 2018, I became the Head of the Medical Physics Unit at the Department of Radiotherapy and Oncology.

### What are your responsibilities as a physicist in radiotherapy?

The role of medical physicists is very important in radiotherapy; they define the radiation fields and calculate the doses needed for the treatment of cancer patients. Medical physicists regularly calibrate radiation therapy devices and equipment and ensure they are safely

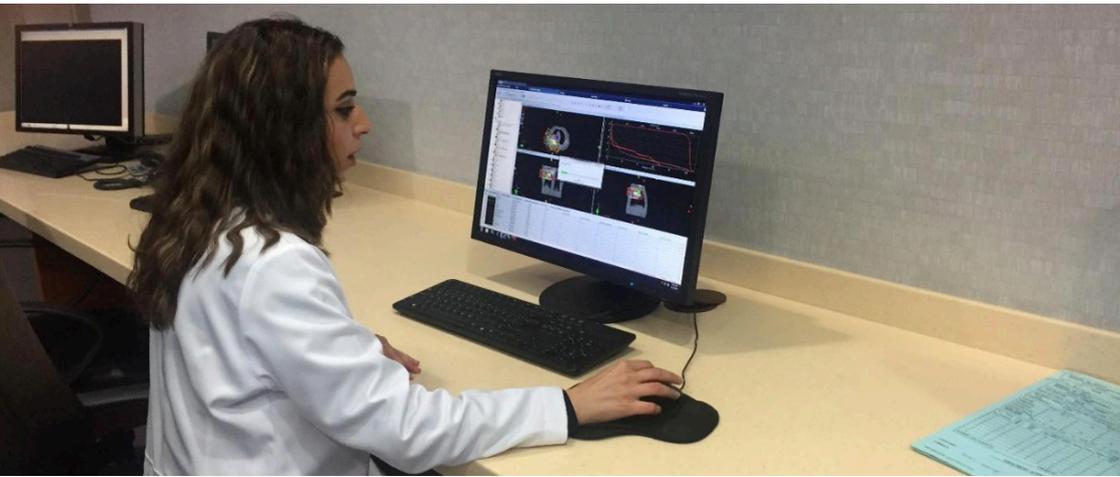
used. They are responsible for programming the radiation calculation systems that are used in the treatment planning devices and in calculating patients' radiation doses. They are responsible for all aspects of quality assurance with respect to radiotherapy machines, patient treatment and radiation safety.

### How would you describe your experience as the first Kuwaiti who received a PhD in medical physics in radiotherapy and the only Kuwaiti clinical radiotherapy physicist?

Frankly, it is never easy to be the first in any field because there is usually too much pressure and you cannot rely on others' previous experiences, so you will have to pave your way all by yourself. But at the same time, because I am the first Kuwaiti to have a PhD in this field, I have the opportunity to apply what I have learned of new methods and techniques and serve my country Kuwait.

Personally, I was fortunate in my





experience as I had the support and encouragement of my fellow physicists in radiotherapy and oncologists at the Kuwait Cancer Center.

**What are the main challenges you encounter as a medical physicist working in radiotherapy?**

The field of medical physics, especially in radiation therapy is a rapidly evolving field; it is becoming more interdisciplinary and a medical physicist must be trained continuously to keep up with the latest methods and techniques, which is a challenge in our region because education and training programs in medical physics are very rare, while in Kuwait, we suffer in particular from the shortage of

radiotherapy staff due to the lack of national educational programs, as well as the lack of sufficient incentives to work in this field.

**What is your advice to young women working in medical physics, especially at the beginning of their careers?**

I would advise them to focus on and work towards realizing long-term career goals. I would also advise them to continue in this wonderful field and work on raising the level of their expertise by participating in scientific activities and showing interest in research. I would also recommend them to be patient and not to lose hope when challenges arise on their career path.

# INTERVIEW WITH DR. JAMILA SALEM AL SUWAIDI

## "THE EMBODIMENT OF A DISTINGUISHED EMIRATI"

### Who is Dr. Jamila Salem Al Suwaidi?

Medical Physics Consultant, at Dubai Health Authority, UAE, holder of a bachelor's degree in Physics and Mathematics from the United Arab Emirates (UAEU) in Al Ain (1984), and an MSc in Medical Physics from the University of Surrey, UK, 1988. She also received a PhD in Medical Radiation Physics from the University of Surrey, UK, in 1995.

### Would you give us a brief overview of your contributions in the field of medical physics?

In the late 1990s, I founded the Academic Program in Medical Physics as part of the Bachelor of Science program at the UAE University in Al Ain. I taught the medical physics course in the program.

My contribution to this program allowed me to define the path for being a physicist in nuclear medicine, diagnostic

radiology and radiotherapy (in medical imaging and radiation protection). A number of graduates pursued their higher studies (master's and PhD), especially in Australia, the United Kingdom and Ireland. Subsequently, a number of UAEU graduates made a career for themselves in medical physics in the UAE government hospitals and the Federal Authority for Nuclear Regulation (FANR) of the UAE as physicists in the field of medical physics. They covered the requirements of control and licensing in nuclear, industrial and medical applications of radiation sources.

In the mid-1990s, I assumed various roles, including the development of nuclear medicine services at the Dubai Health Authority, where I held senior management positions. I was the Director of the Medical Affairs at the Dubai Hospital between 2002 and 2010. Since

then I have participated and managed a number of the IAEA's national and regional technical cooperation projects. My role was:

- To ensure quality assurance and control in medical imaging in nuclear medicine and diagnostic radiology
- To measure patient safe radiation doses
- To teach and train medical physicists, local doctors, radiation workers and radiation protection personnel

In 2000, I contributed to the establishment of iodized

radiotherapy treatment services for cancer and hyperthyroidism patients and participated in the Arab Health Conference and Exhibition in Dubai in 2017 to launch the Radiation Protection Campaign in the Arab World. Thus, I contributed to the establishment of the Arab Safety Campaign in cooperation with colleagues from Arab countries and International Organizations (WHO).

I participated in research and studies both at the national and international levels and contributed to the dissemination



of the results of research, studies and scientific articles through local, regional and international conferences.

I conducted radiation safety campaigns for staff and school students with the Arab Radiation Safety Team in Dubai. In 2005, I participated in founding the Emirates Medical Physics Society (EMPS) under the umbrella of the Emirates Medical Association. I was the president of the society between 2005 and 2009, and was re-elected to this role in December 2018.

The EMPS joined the International Association of Medical Physics from its beginning and I was a member of the Women's Committee of the IAMP.

The quality of radiology services has advanced significantly to enhance the safety of patients, employees and the general public. Since 2012, I established and managed DHA's educational programs for radiological safety in hospitals to promote a culture of radiation safety among professionals working in medical imaging and other related clinical fields within the UAE. The aim of the programs was

also to contribute to ensuring the implementation of the Federal Nuclear Regulation Act. In the state-run hospitals and in the private medical sector. Nearly 3,000 specialists in medical radiation were trained under these programs.

In 2017, I contributed to the UAE's accession to the United Nations Commission on the Biological Effects of Atomic Radiation (UNSCEAR)

**You were awarded many prizes, would you tell us about some of them?**

I received many honorary awards and certificates including:

- Sheikh Rashid Award for Science (Government of Dubai) in 1989
- Sheikh Rashid Award for Science in 1995
- Dubai Government Excellence Program Award (Distinguished Employee) in 2001
- Dubai Government Excellence Program Award in 2008. I am also a member of the team that won the award of the best project of picture archiving and communication system for electronic radiology practices -

known as PACS

- Certificate of Appreciation from the International Atomic Energy Agency (project to strengthen radiation safety in medicine in 2011)
- Medal of the President of the State in the field of science in December 2012
- Sheikh Hamdan Bin Rashid Al Maktoum Award for Medical Sciences in December 2014
- Award of the United Arab Emirates as the first medical physicist in 2015
- The International Organization of Medical Physics Award 2018

their dreams and aspirations in various areas of excellence so that the UAE keeps pace with the scientific and technological developments at both the regional and global levels.

### **What are the medical physics services offered in the UAE?**

Medical physics services are provided within the UAE by independent departments in two hospitals: the first medical physics unit in the UAE was established at Tawam Hospital, Al Ain, Abu Dhabi, to provide radiotherapy and medical imaging services since the late 1970s. In mid-2005, the Medical Physics Unit was established at DHA. It is worth mentioning that the UAE has always encouraged creative and distinguished Emiratis and helped them achieve

## **WOMEN AND PHYSICS** **DR. HUDA AL NUAIMI, QATAR**

During our meeting with Dr. Huda Al Nuaimi, the President of the MEFOMP, she talked about her accomplishments in the field, as well as the beginning of her career, the challenges she faced and her ambitions.

### **Can you give us a summary of your academic studies?**

I graduated from the physics department at Qatar University then immediately joined the radiology department at Hamad Medical Corporation. This made me realize that there were other sections of physics that were not taught at the university. I opted to pursue my postgraduate studies to obtain a master's and then a PhD in Medical Physics. I became the first medical physicist in Qatar, and now I am the President of the Qatar Medical Physics Society, in addition to being the current president of the Middle East Federation of Medical Physics.

### **Why did you choose physics among other sciences and why medical physics in particular?**

Physics is about nature and the nature of things always seeks answers to an endless number of questions: why and how? I began

to search early for those answers in all directions, starting from the book of science in first grade to choosing science subjects in high school. I had in my mind then that applied sciences would give the answers to interconnected questions. Sciences were my first choice, and among those sciences, physics was always my favorite. Physics overlapped with most applied sciences, especially mathematics, chemistry and engineering. I felt it was my key to other sciences and I did not hesitate to specialize in it. As for my post-graduate studies, I joined a radiology department where I had a wonderful opportunity to apply what I had studied about X-rays. When I realized that the radiology department in Qatar lacked a medical physicist, I decided to enter this field without hesitation.

### **How about practicing medical physics in a medical institution?**

It was one of my first beautiful surprises. The radiation that we do not see and do not feel with our five senses turns, here in the radiology department, into pictures that help diagnose patients' conditions. Doctors depend on these pictures to diagnose and then treat the case. I was happy to be part of this important work which could bring about goodness and happiness to mankind, and part of an integrated medical team that aims to alleviate the suffering of the patients. This has always motivated me to continue the learning process from new scientific discoveries and research because my work is based on pure science. A scientific idea is put into practice when the intelligence and knowledge of an engineer, a physicist, a physician and an inventor are combined.

**How did the medical team you worked with in hospitals receive you as a medical physicist? Did they consider medical physics relevant and welcome you? Did they doubt the relevance of a medical physicist in their team?**

At the beginning, the role of a

medical physicist was not clear for everyone, and until now this role remains ambiguous to the medical professionals as long as they haven't been exposed to the latest progress in research and to the recommendations of scientific bodies, especially regarding the obligatory requirements of security and radiation safety. In fact, my colleagues encouraged me to put more effort and raised my ability to face challenges. This does not mean that my path was an easy one, but thankfully, it meant that I was able to collaborate well with colleagues in all medical fields. Those who initially did not appreciate my specialization are now keen to collaborate with medical physicists, whether in radiation protection, radiation risk assessment or quality control of radiological equipment in medical imaging. Today, I can say that all colleagues in the various departments of radiology believe fully in the importance of having a medical physicist among them. Today, doctors need the opinion of physicists in various aspects of hospital work as well as research; this is why there is a necessity to increase the number of medical

physicists to meet this need. Consequently, we have been working to attract high calibre candidates in this field and we are proud to say that we have a distinguished and integrated team today.

**What was the purpose of creating the Qatari Medical Physics Society and how did your scientific and administrative role evolve to become the president of the MEFOMP?**

As I mentioned earlier, the medical team quickly adapted to the useful role of medical physicists and this helped increase their number. As the number of medical physicists increased, we saw a need to create an entity to represent us in the regional and international forums, and enable us to cooperate constructively with similar organizations. As a result, I worked to organize all medical physicists in the country under the umbrella of the Qatar Medical Physics Association. This association is now an active member of the MEFOMP and the IOMP. In 2018, I was honored to be elected as the president of the MEFOMP after serving as the vice-president for

three years. The elections were organized under the auspices of the IOMP. Therefore, I have both a responsibility to promote this important scientific discipline and to assist medical physicists develop their knowledge and expertise.

**Can you tell us about your recent scientific accomplishments?**

I recently contributed two scientific papers presented at the World Congress of Medical Physics in the Chilean capital Santiago in September 2019. This was important because the research was conducted in my home country so that we can show that we as medical physicists are active contributors at an international level. I am also honored to tell you that I was awarded the 2018 Qatar's State Award for Appreciation and Encouragement in Allied Medical and Nursing Sciences. For this, I had to compete with fellow academics and it was not easy as it required conducting a certain number of joint and individual research projects in addition to having made achievements that serve both the state and the patients. During

2019, I received the gold medal from the UK-based International Institute of Physics and Medical Engineering. This is an institute of high achieving members in their respective fields. I was honored to become a member of this exclusive institute three years ago, and even more honored to receive the gold medal this year after competing with such illustrious colleagues.

**You also write stories and articles. Please tell us a little about this.**

Both reading and writing literature has been a passion of mine since childhood, and this interest has stayed with me throughout my life, despite my choosing science as a career. On the contrary, it has continued to grow and during my postgraduate studies in Cairo, I dedicated a lot of time to developing this hobby. I carefully chose the books I read and the cultural events I attended. In Cairo my first and second collections of stories were published in 2008. My latest work is a children's play called "The Golden Spring," which I wrote because I believe in the importance of children's

education and that new generations see life differently. Children are now born in a time that is different from ours and we have to prepare them for a better future, and make them better citizens who appreciate science and responsibilities. By doing so, we would have fulfilled our duty towards our future generations.

# **MEDICAL PHYSICS IN SAUDI ARABIA** **HASNA BASHIR AL BANDAR**

- **Medical physics is making important contributions to the achievement of Saudi Arabia's 2030 Vision**
- **Saudi universities have a role to play in developing medical physics**
- **Saudi women have an important role to play in the Saudi Association of Medical Physics**

During our interview with Hasna Bashir Al Bandar, a medical physicist from Saudi Arabia, she talked about the development of medical physics services in her country.

Medical physics is a branch of applied physics that focuses on the application of physical concepts and methods in medicine and the health-care profession. It is a science that combines biophysics and biomedical engineering, but differs in the method of objective treatment. Medical physics also deals with the physical concepts of devices used in both the diagnosis and treatment of diseases.

The Department of Medical Physics is an important and prestigious department that has been of great national value for over more than 40 years.

Over these many years and until now, specialists in this field have been, and are still carrying out, important work and research.

For more than forty years the Kingdom has been developing medical physics by opening specialist departments in Saudi universities. In addition, the Saudi Commission for Health Specialties has required those who wish to enter this field to undergo training for at least three months in a medical physics department at one of the major hospitals in the Kingdom. They were also required to obtain a radiation protection license from King Abdullah City for Atomic and Renewable Energy to work in radiotherapy, diagnostic radiology and nuclear medicine. The Department of Medical Physics is also looking to be at the forefront of scientific

departments, both at the local and the global levels. It seeks to excel academically both in teaching and in scientific research, as well as in serving the community. To support the progress and advancement of the Kingdom, the department is committed to supporting the research and ongoing projects, as well as cooperating with medical physics departments, hospitals, and national bodies both locally, and at the Arab and international levels.

### **How did medical physics develop in Saudi Arabia?**

In the late 1970s, two hospitals began providing medical physics services in Saudi Arabia; King Faisal Specialist Hospital & Research Center (Biomedical Physics), and the Military Hospital in Riyadh [Prince Sultan Military Medical City]. The most important departments that were established at that time were the departments of medical physics, health physics, and gamma rays.

In 1985, the three departments were joined together to become the Department of Biomedical Physics within the Research

Center.

The Military Hospital in Riyadh had several departments including medical and clinical physics, and bioengineering (radiation therapy, radiation protection, nuclear medicine, imaging, non-ionizing radiation, clinical and biological engineering). In 2008, bioengineering became an independent department.

In the early 1980s, many Saudi students completed their postgraduate studies abroad in medical physics at universities, military hospitals and international centers.

In the mid-1980s a radiation protection department was established. Its main task was to manage the film badge dosimeter for radiation workers in the hospitals under the umbrella of the Saudi Ministry of Health.

In the mid-1990s, this department was transferred to the Occupational and Preventive Health Section. This section expanded its services to include quality assurance tests for general X-ray devices. The rapid expansion of radiological services in MOH hospitals made it difficult

for this department to extend its services to all diagnostic radiological equipment used in the country.

In 2006, the role of medical physicist became an official job title. Now, there are about 120 medical physicists at different locations under the Ministry of Health umbrella. Most of these positions are held by people with bachelor's degrees, with some filled by holders of master's degrees and PhDs.

In 2013, the Department of Medical Physics was established under the General Directorate of Radiology at the MOH.

### **Would you tell us a little about the medical physics program in Saudi universities?**

In 2001, a team from King Fahd University visited several hospitals to consult with medical physicists. Following this, the medical physics program was approved and it started enrolling students in September 2002.

The program started with two students. The first class graduated in January 2005. In 2007, a first review of the modules was undertaken and the program was modified. In

2011, an agreement was signed between King Fahd University and King Fahd Specialist Hospital. In 2015, the study plan for the medical physics program was again reviewed and updated.

It is worth mentioning that the program of medical physics at King Fahd University of Petroleum and Minerals has also produced 32 foreign all male graduates, as follows:

During eleven years, 823 students enrolled in the program, and, surprisingly, women were awarded 563 of the total places (68%), while men only filled 260 places (32%).

At King Abdulaziz University, there was an independent department of Nuclear Engineering within the faculty of Engineering. Then in 2007, a program of medical physics engineering was created, as well as a course in radiation protection, followed by a doctoral program in Medical Physics Engineering in 2015. This program, within the Physics Department, was acclaimed for its teaching and training of medical physicists. In 2012, the Medical Physics program MEF became a specialization.

### What about the Saudi Medical Physics Society?

All medical physicists in the Kingdom have always been looking for an association that supports them and protects their rights. In the late 1990s, a group of medical physicists began searching for an umbrella organization for their intended association. They encountered many difficulties in

the Saudi Medical Physics Society (SMPS) under the umbrella of King Fahd University of Petroleum and Minerals (KFUPM). However, the application was rejected for administrative reasons. In 2005, the Saudi Commission for Health Specialties started receiving applications for the establishment of clinical professional associations.

The SMPS, which was created in

Countries	Graduates
Saudi Arabia	9
Nigeria	4
Sudan	4
Pakistan	3
Palestine	2
Bangladesh	2
Jordan	2
Egypt	2
Yamen	2
Syria	1
Uganda	1

establishing such an association, as professional scientific associations communities were only allowed under the umbrella of academic and university institutions. They were eventually able to establish

2006, is one of the first clinical scientific societies established under the umbrella of the Saudi Commission for Health Specialties. Its mission was defined as both clinical and educational. It was officially

launched during the opening ceremony of the Second Saudi Medical Physics Conference at the Military Hospital in Riyadh. Its Board of Directors was composed of:

Dr. Ahmad Atef (Chairman), Dr. Abdullah Al Haj, Dr. Jazi Al Mokhlis, Dr. Saleh Ba Majbour, and Dr. Mubarak Al Shammari.

The number of the SMPS registered members is 400, made up of medical physicists with subspecialties such as radiotherapy physics, imaging physics, nuclear medicine physics, and health (medical) physics.

The current members of the SMPS are Dr. Abdullah Ali Al Rashoud, Dr. Abdullah Hamad Al dousari, Dr. Hasna Bashir Al Bandar and Dr. Wamid Tarek Abdel Rahman.

### **What are the Department of Medical Physics objectives in helping graduates advance in their careers and academic studies?**

1. To enable university students to develop their talents and scientific ideas; to meet the needs of the community and the work centers in various locations within the Kingdom; to award outstanding graduates

with scholarships to pursue their higher studies abroad; and to enable technicians to attend courses and develop their scientific abilities and keep abreast with the latest updates to their field.

2. To create a database of specialists in order to easily update them with the latest technologies in medical physics.

3. Provide a high quality education for both bachelor and master's degrees, using the latest available methodologies and high quality teaching materials, together with a continuous evaluation and development of the educational programs.

4. To cooperate with major international hospitals and universities to access the latest technology in this field.

5. To prepare trainees on the basics of physics and principles of analytical methods required for conducting medical physics experiments.

6. To provide the opportunity for physicists to study and apply all branches of medical physics, so that they can be aware of the latest current scientific research.

7. To provide trainees with hands-on experience on scientific

research and enable them to develop under the supervision of experts.

8. To provide trainees with the knowledge of a specific scientific technology to enable them to effectively participate in the scientific and technical aspects of development and planning programs.

9. To work on the implementation of fundamental and applied research, and conduct theoretical, experimental and applied scientific research.

10. To provide advice as well as training and short courses and contribute to solving specific scientific problems.

11. To ensure the continuous development of faculty members by facilitating their participation in relevant training courses in order to maintain a high degree of efficiency and performance.

12. To support and encourage scientific cooperation between the department staff as well as with other departments in multipurpose research projects.

13. To promote an atmosphere of healthy competition and encouragement, and provide the opportunity to all the members

of the faculty through scientific and material incentives to enable them to be creative in various fields of scientific research.

14. To prepare national specialists in medical physics who will contribute to serving the educational and health needs of the society.

### **What is the role of Saudi women physicists in contributing and participating in workshops to achieve the Kingdom's Vision 2030?**

Saudi women have been able to overcome challenges in this field. Many of them got scholarships to pursue their postgraduate education abroad and became specialist with advanced degrees in this field. This enabled them to become a part of the Kingdom's march towards achieving the Vision 2030. Thanks to this vision, the Kingdom has been able to modernize health practices and services to become on par with the highest international standards. It defines our objectives and plans, and sets our performance targets so that everyone can monitor the progress accomplished.

On the basis of the Kingdom's

belief that university courses are not enough and the field of medical physics needs practical experience to be able to handle medical problems and various devices, women have been authorized to participate in the establishment of specialized associations of medical physics with a board of directors consisting only of women. Female members of such associations would provide consultations and specific professional services in this field.

Saudi Female physicists participated in important workshops on applied physics technology, where they gained high research capabilities in physics that enabled them to establish a solid basis of expertise that would be useful in other scientific fields such as natural sciences, engineering and medicine, as well as to meet the needs of the Kingdom in medical physics. In addition, they became active in international cooperation.

Saudi women have been and will continue to work side by side with men to achieve the Vision 2030. Without exaggeration, Saudi women participated in workshops aimed at realizing this vision on time, and transforming the Kingdom's economy and developing medical practices up to the aspired level.

**How would you describe the important role of Saudi women in achieving the Kingdom's Vision 2030?**

## INTERVIEW WITH: DR. ZAKIA AL RAHBI

### PHD IN MEDICAL PHYSICS, SULTANATE OF OMAN

- Medical Physics in Oman
- Women make 80% of the medical physicists in the Sultanate.
- Dr. Zakia Al Rahbi was the first medical physicist in the Sultanate. She holds a PhD and fellowship in this field.
- Omani women have an active role in highlighting the important role of medical physics.
- Omani women have proved their efficiency in developing the practice of medical physics.

During our meeting with Dr. Zakia Al Rahbi, an Omani with a PhD in Medical Physics, she talked about the beginnings of medical physics in the Sultanate, as well as answering other questions:

**Would you please give us an overview about the history of medical physics in the Sultanate of Oman?**

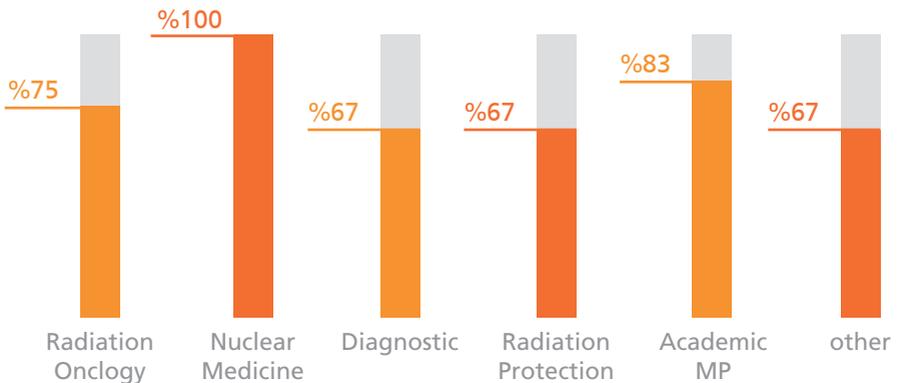
Globally, physics was a male-dominated profession. However, throughout history, there have been outstanding women who have been able to overcome the constraints of society and contributed significantly to the advancement of physics,



especially in the medical field. Women played an important role in the creation, development and application of medical physics. Medical physics is unlikely to be constrained by social standards and less susceptible to an inherent glass ceiling that limits female participation in science. Women such as Marie Curie, Harriet Brooks and Rosalind Franklin helped break through this glass ceiling, and their contributions had an effective influence on medical physics.

### Are there any statistics on the percentage of Omani women in medical physics?

In Oman, females represent the majority of Sultan Qaboos University graduates in physics/medical physics. Women currently make up nearly 80 percent of the workforce in all medical physics disciplines at the Ministry of Health and SQU. Moreover, the female Omanisation rate in this area is 100% as shown in the chart below.



### Percentage of female physicists in different divisions

### What is the current state of medical physics in Oman?

At this time, two Omani female medical physicists have been awarded a doctorate and eight

a master's degree. Three of those awarded a master's degree attended an accredited residency program or specialized training program.



Female medical physicists play an active role in this field, contributing in many national and international training programs, conferences and workshops in Oman. In addition, they engage in the activities celebrating World Medical Physics Day on November 7 each year and in the annual breast cancer awareness campaign held in October.

### **Are there role models among female Omani medical physicists?**

1. Dr. Zakia Bint Salem Al Rahbi, Senior Specialist in Medical Physics, at the National Center for Oncology, Radiotherapy

Department, in the Royal Hospital, and Lecturer in Radiology Residency Program at Oman Specialized Medical Council. Recently she was appointed to the post of Radiation Safety Officer. She is a member of the Women's Committee of the International Organization of Medical Physics (IOMP- W) and a member of the Women's Committee in the Middle East Federation of Medical Physics (MEFOMP-Women). She has presented several proposals to improve the quality of workflow and the state of medical physics in the Ministry of Health.

Dr. Al Rahbi is the first female

Omani medical physicist at the Royal Hospital. She received her PhD from the Australian University of Wollongong in 2019 and a master's degree from the UK in 2009.

Dr. Al Rahbi followed a residency program at King Faisal Specialist Hospital and Research Center in 2015. She attended several training courses and gained experience, especially in quality assurance of radiotherapy and brachytherapy plans, and in radiation safety for workers, patients and workplaces.

She published many scientific papers in international specialized journals. She participated in many international and national workshops and conferences, and contributed many presentations and poster presentations. In addition, she participated in many international planning competitions and obtained high marks.

Dr. Al Rahbi has been awarded several prizes including:

- "AOCMP-AMPICON 2017 Best Poster Award", at the 17th Asia-Oceania Medical Physics Conference "AOCMP-2017", which was evaluated by the

President of the IOMP.

- The first prize in Breast Summary Presentation, during the 5th Middle East Best of CTRC-AACR San Antonio Breast Cancer Symposium.

2. Physicist Marwa Bint Sulaiman Al Amri, holds a bachelor's degree in physics, with a specialty in medical physics, and a master's degree in physics from SQU. She is a medical physicist at the Department of Nuclear Medicine at the Royal Hospital in Muscat. She was certified as a Radiation Protection Officer from RNA Safety International. She has an extensive experience in nuclear medicine, which includes operating the following devices: QC of Gamma Cameras, SPECT / CT, PET / CT.

- She also has experience in dose calibration, well control, radionuclide treatment, and radioactive waste management.
- She conducted a number of research in nuclear physics and medical physics, such as the radioactivity assessment of Ra226, Ra228, and Ra224 isotopes in selected groundwater sources in Oman and the extent to which optically-stimulated luminescence



(OSL) signals fade due to measurements, time, and exposure to light, temperature and humidity.

- She has a number of publications and was invited as a speaker to national conferences and workshops to present topics related to her experiences, such as radiation safety aspects in PET/CT and nuclear medicine, safe transportation of radioactive materials and quality control test of Gamma Cameras.
- She presented a number of poster presentations at national and international conferences on medical physics and nuclear medicine.

3. Ibtisam Al Maskary: Physicist Ibtisam Bint Nasser Al Maskari is a Senior Medical Physicist and the supervisor of the Medical Physics Unit in the Radiology Residency Program at the Oman Medical Specialized Council. She is a certified radiation safety officer and a lecturer at the program. She is also a proud and dedicated mother of four.

She graduated from high school in 2000, and her high grades enabled her to receive a scholarship to study at

Kuwait University and receive a bachelor's degree in nuclear medicine technology in 2004.

She pursued her postgraduate studies in the UK, where she received a master's degree with distinction in medical physics from the University of Surrey in 2005. As a medical physicist, she joined, in 2006, SQU Medical Physics Unit Department of Radiology and Molecular Imaging. Over the years, she has gained experience in quality assurance of radiological diagnostic imaging and radionuclide treatment methods, as well as in the safety of workers, patients and workplaces. She also gained experience in particle measurement analysis and personal gamma spectroscopy.

Her ardour does not stop here; she has stayed up to date with her scientific knowledge through research, workshops and conferences. Despite her hard work, she finds time to pursue her hobbies such as reading, interior designing and travelling.

## **MEDICAL PHYSICS IN BAHRAIN** **DR. EMAN MARDI, KINGDOM OF BAHRAIN**

- Medical physicist training requires at least 3-6 months under the supervision of specialists.
- The University of Bahrain offers a bachelor's degree in medical physics.

The Department of Physics at the University of Bahrain offers a bachelor's degree in Medical Physics. Graduates of the program gain knowledge and understanding of physics, medical physics and related fields.

Students study the courses that are offered in the bachelor of Physics program, but take 48 hours of medical physics that are credited towards their degree.

Some 30 female students have already graduated through the program. Two of them became medical physicists, whereas the others became members of the faculty at various universities and schools, work as researchers, or received scholarships to pursue their higher studies abroad, especially in Australia.

In the medical field, medical physicists currently receive a training that lasts for at least three to six months under

the supervision of specialists. This training takes place at the Department of Diagnostic Radiology and Nuclear Medicine, as well as the Department of Cyclotron (Linear Accelerator) at King Hamad University Hospital. They also train on protection from radiation and carrying out quality tests on modern devices such as: computed tomography (CT), endoscopy, proton imaging combined with CT, positron imaging combined with CT imaging, and positron imaging combined with MRI.

To ensure continuous training of medical physics personnel, some training courses are held locally in cooperation with the Ministry of Health and the Supreme Council for the Environment, under the supervision of the IAEA. They also attend conferences and training courses abroad.

It is not possible to undertake postgraduate studies in Bahrain

so students are compelled to study abroad.

Medical physicists are recognized by the Bahrain Society of Medical Physics and Bioengineering which was established in 2008.

# **MEDICAL PHYSICS IN THE KINGDOM OF JORDAN** **DR. IMAN DAAR**

**We met with Dr. Iman Daar who told us about medical physicists' experience in Jordan:**

## **First, tell us about your studies in this field:**

After graduating from high school in 2000, I joined the Jordan University of Science and Technology and graduated in 2004. Then I studied at the University of Surrey in the UK and obtained a master's in Medical Physics in 2006, followed by a PhD in 2010. I have a great passion for applying my studies in both the fields of health and physics. This helped me during studying for my doctorate and later study in the effect of radiation doses on various types of living tissues. In recent years, the scope of my research has expanded to studying elements and measuring radiation doses.

## **What are you currently working on?**

I am currently an Associate Professor of Medical Physics at the Department of Physics at the University of Jordan, where

I teach several courses in Medical Physics for postgraduate students. I am also involved in activities like, reviewing a number of indexed journals. I have published more than 20 papers as both principal and associate researcher, in addition to attending a large number of international conferences and being invited to be a guest editor of a special edition of an academic magazine.

## **What is the role of medical physics in Jordan, and the University of Jordan in particular, in the development of diagnosis and treatment?**

Medical physics aims to improve the quality of life of patients by developing different diagnostic and treatment methods. Here in Jordan, cancer is the second most important cause of death after cardiovascular diseases, so the role of medical physicist is one of the pillars of treatment

and diagnosis in this area. In addition, radiotherapy in Jordan is provided in public, military and private hospitals. Here at the Department of Physics at the University of Jordan, where I have been working for eight years, we offer a master's in Medical Physics. In this program, students come from different work environments, ranging from the health and educational sectors to radiology, which provides a productive atmosphere where experiences and practical problems are shared and discussed. The program also includes practical training during the summer semester in the aforementioned sections. Over the past five years, more than 40 students have enrolled in the program, most of whom already hold a bachelor's degree in medical physics, general physics or radiology. Most program graduates now work in the following sectors:

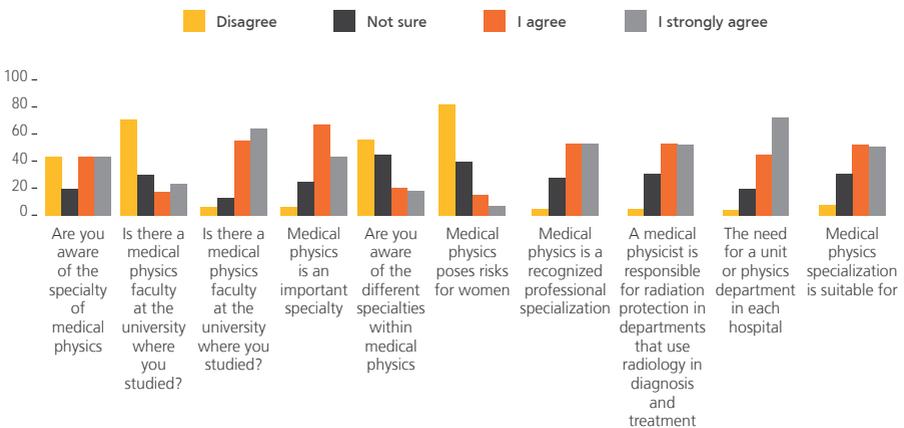
The public, military and private health sectors, the regulatory sector of radiology, and the educational sector in local and regional institutes, or are enrolled in doctoral programs at universities abroad.

# CONTRIBUTORS TO THIS ISSUE: DR. HANAN AL DOSSARI, MARYAM EZZEDDINE, ZIKRA AL RASHIDI

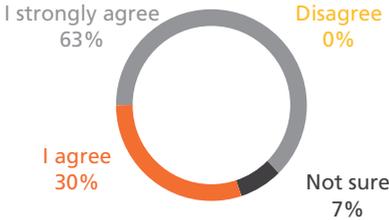
- There is a reluctance to specialize in medical physics.
- Medical physics is not offered at the Kuwait University.
- Working in the field of medical physics poses no health risks to women

In a questionnaire distributed to medical personnel regarding the current state of medical physics, the result was the following: The survey covered a total of 160 people between 20 and 62 years old, working in different fields. Eighty of them work in the medical field (physicians,

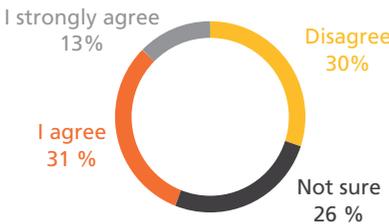
specialists, nurses, and medical students) and 80 nonmedical workers (teachers, housewives, etc.). The questions were similar, taking into account the fact that respondents from outside the medical profession may not be familiar with some of the themes of the questionnaire.



Are you aware of the specialty of medical physics?  
(For medical personnel)



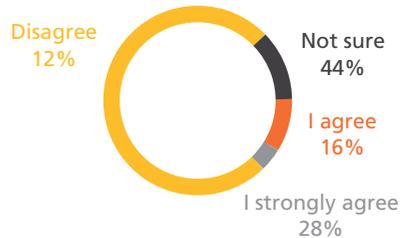
Are you aware of the specialty of medical physics?  
(For non-medical personnel)



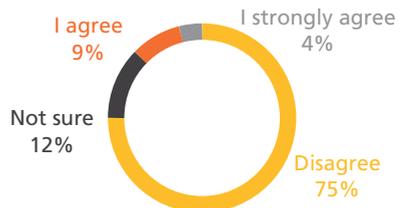
It is noteworthy that more than 50% of the respondents from outside the medical field have no knowledge of medical physics specialty, and even if among the medical workers 93% had heard of the field, 50% of them did not know much about the specialties of medical physics. This suggests that Medical physics, its importance and specialties, are still little known to a large proportion of the population. Therefore, it is

important to spread awareness and knowledge about medical physics and its fields and uses via pertinent associations and societies, through seminars, workshops and conferences, as well as the use of media and social networking platforms.

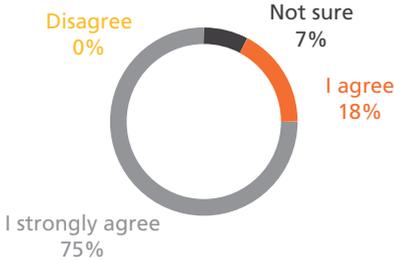
Is there a medical physics faculty at the university where you studied?  
(For medical personnel)



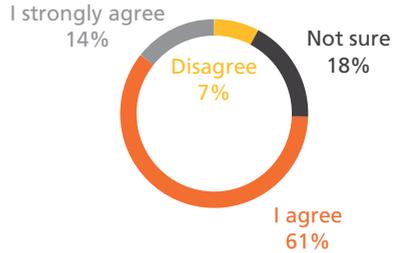
Is there a medical physics faculty at the university where you studied?  
(For non-medical personnel)



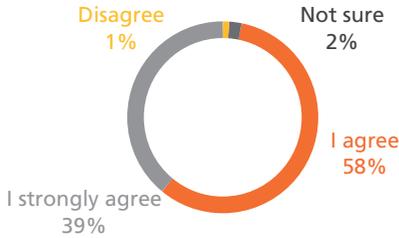
**Medical physics is an important specialty**  
(For medical personnel)



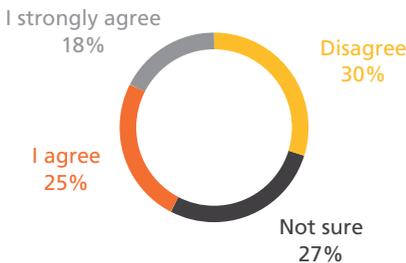
**Medical physics is an important specialty**  
(For non-medical personnel)



**Medical physics is a rare specialty**  
(For medical personnel)



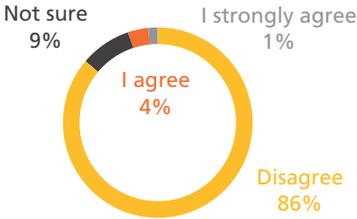
**Medical physics is a rare specialty**  
(For non-medical personnel)



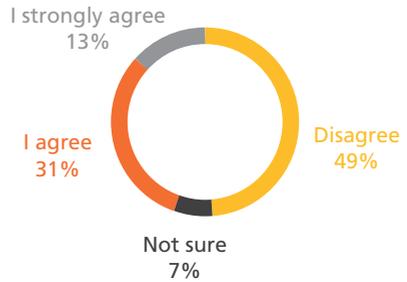
There is a specialization in physics at the Faculty of Science, but usually students enrol in this program then transfer to other fields, because of the difficulty of finding employment related to their studies after graduation. They also encounter difficulties in pursuing postgraduate studies, which prevents them from realizing their professional aspirations.

We hope that the Kuwait University will offer a medical physics program to obtain better results at the national level and reduce the burden of sending students abroad to pursue their postgraduate studies in this field.t

Medical physics poses health risks to women  
(For medical personnel)



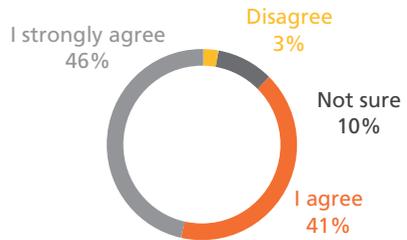
Medical physics poses health risks to women  
(For non-medical personnel)



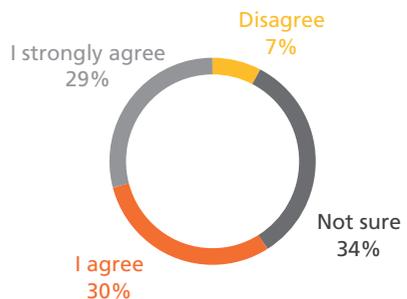
Ninety-three percent of the respondents among those working in the medical field and more than 57% of those from outside the field agreed that medical physics is one of the important and rare specialties, according to the survey.

However, the absence of role title and job description by the Ministry of Health was one of the most important factors that made Kuwaitis reluctant to specialize in this field. This has resulted in a severe shortage of medical physicists in the country. Therefore, we hope that the Ministry of Health and the Service Bureau in the State of Kuwait work on adopting a job description and title for the role of medical physicist.

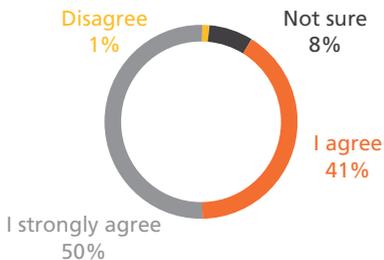
Medical physics specialization is suitable for women  
(For medical personnel)



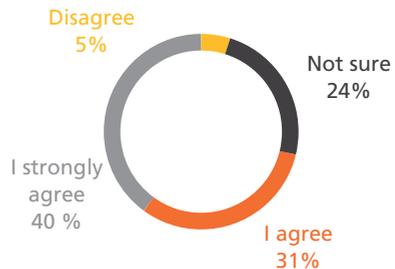
Medical physics specialization is suitable for women  
(For non-medical personnel)



It is necessary to have a unit or physics department in every hospital  
(For medical personnel)



It is necessary to have a unit or physics department in every hospital  
(For non-medical personnel)



The fear of radiation, the harm it could cause and the lack of understanding of the difficulty of the field have led some people to believe that the specialization is not suitable for women and could be harmful to their health, especially among those working in other fields as well as housewives. It is important to encourage female students to specialize in the field by reassuring them that it doesn't present additional harm to women and that there is a special radiation program to protect pregnant and breast-feeding women.

The number of women medical physicists has been increasing both in the Middle East and the World in general.

Women are now represented in every branch of medical physics as well as all activities related to this specialization. This tells us that it is a very suitable specialization for women and there should be no barriers preventing them from working in this field.

Since medical physics plays an important support role, it is essential to have a medical physics unit or department in a hospital. Throughout the World, the region and in particular the Gulf there are medical physics departments in every hospital that include diagnostic radiology, nuclear medicine and radiation therapy sections.



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