

Middle East Committee of Medical Physics during COVID-19



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Editorial

Editor-in-chief

Dr. Hanan Awadh Aldousari



I began this second issue of the Journal of the Medical Physics Committee in the Middle East by expressing my gratitude and appreciations to my female colleagues from various countries in the Middle East for the active participation in this issue. Their active roles in articles and writings showed talents and creativity hidden behind scientific specialization.

We chose to publish this issue on the Day of Medical Physics, chosen by the International Organization of Medical Physics as it marks the birthday of notable physicist Marie Curie, giving a clear message of honor to the early role of women in this field.

The release of this issue comes while Corona pandemic continues to cast its shadow over all aspects of our personal and professional lives. As the waves of pandemic continue to create new challenges, enforced laws and regulations, there is no doubt that impact on women's lives was greater and deeper as work hours extended to their homes, and as they are more likely to bear the responsibilities of childcare and families, they no longer have the luxury of dedicated family time. The recent system of home- education through internet put extra burden on their shoulders as well. The more the

responsibilities the harder for female scientist or worker to cope with exhaustion and reduced productivity. However, there is always silver lining in the dark clouds, for some, the home quarantine holds the advantage to use this time for more reading and participating in scientific papers, on-line's lectures and conferences in interactive environment. These exceptional circumstances may as well bring work colleagues and specialists around the world closer to each other than before.

Perhaps many of us went through difficult situations during this period, disrupting some of their routine life and casting dark shadows on the social, economic or psychological side, but passing through it always makes us stronger and armed with deeper experience. Our scientific career is based on making hard academic and professional efforts as a basis for scientific development for a better life, and on a way or another, it has helped us to overcome these challenges as well, and to adapt, evolve as well as moving forward.

Many stories would be told and remembered for future generations and history will mark it as honorable and eternal event

Physics is the vaccine of life

Fatima Ayed Al-Rashidi

Founder, and President of "Humanists Without Borders"

International Relation consultant.

Human Rights expert.

Former UNHCR- International Protection

Former Researcher, Nuclear Medicine, Faculty of Medicine, Kuwait university

Qualification

Master political Sciences

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It all started with early years of childhood, when sciences ignite a satisfactory to some extend by giving, or finding some answers to my curious mind. In pursuing of facts beyond, and above this planet Earth, I found it obligatory to start by Sciences. Since; Physica as being the foundation of all Sciences, it had fulfilled my thrust with many reasoning, and proofing procedures, in an attempt to deny all fallacies human beings had put together since the rise of time, and the creation of this life.

Peace of humankind can be the vital key to prolongation of our race over this planet. It is only via sciences we may achieve such a unity, by the truth and facts sciences provide. The call for truth, which can lead humanity to peace was the only call rang into my mind, so the physics made sense to primarily step towards achieving this noble Cause-Peace making. Thus, I had chosen my studies accordingly, majoring into Applied Physics, and graduating at that time with both: Physics, and Multimedia Engineering as a combined award.

Ever since, I return home from many years of researches and studies, I was keen interested to find a job that enables me to make the changes in the world. Practicing what we learned at the university's lab. Yet, spending tremendous amount of time, and effort in applying for a post within the Physics field, with no avail, had not turned me off. Till I been offered a post at the solo Academia at that time: Kuwait University, ironically the post was not for the Physics degree, rather the Multimedia Engineering. While I tried to advocate for Physics degree within many more institutes, and ministries trying to convince them of the importance of the Physicists in the workplace to be granted a career in any of the opening they advertised, none had comprehended at that time any of my saying. Even though Kuwait is pioneer in scientific institutes, my attempts came to dead end. Still never gave up, and had harvesting my knowledge, and book keeper – by reading text books, and experimenting at the only window I found – Science Club. Maybe I found my common ground in Kuwait Science Club, which was partnering with MILST. I had flourishing

years spent teaching kids about the Science which I was ambitious about and believed that it is the only building blocks for their future. Even though it was a remarkable experience still the politics kills the Sciences in its living heart. So, we could not precede further, when politics, and it, from a state of privilege and welfare life. Idealistically; the membership was voluntarily, and gave me opportunities to teach, and train in

Restlessly I tried to find a physics post in this spot of the world, losing hope in working within the same field. So, I invested into my other major: Multimedia Eng. I referred the lack of the opportunities to two factors, physics was not well addressed in our region, and the pioneering in any walk of life needs further mile to walk, and many more struggles to do, previous scientist in the region neglected the awareness to pave the ground, perhaps after they had been faced with reality.

The challenges were massive as I was the first Kuwaiti with such a degree, double majors, Applied Physics and Multimedia Engineering. Consequently, it took me more than 7 months to persuade the Higher education of the translation I came up with from UAE academic's programs. Concluding that there are always going to be a tax for pioneer to pay.

Never the less, every now and then I put hand on the building atoms of any civilization, I found a big respect to scientists, and sciences, henceforth after long fight came usually with conflicts of interest with Churches, in analogy now days with politics fora.

sciences overlap each other's. We witnessed there, how shameful it could be to run for an office, not as a mission of life in such entities. We surrender as realistically by the end of the day it is a club for leisure time- not real vision for the country-, or that how they looked up at many branches of Physics: Astronomy, and theoretical physics; which I appreciated highly.

To exemplify that in a nutshell, Britain, and France had been blowing the ashes of the past, and attributing a huge respect to Scientists. And that is what we lack the respect to start with, and then the actual mobilization of sciences, which will needs allocating some of the national budget to lab's experiments to reach tranquility of qualitative living formula of life. How can we respect sciences if we often at an imprisonments of the bureaucracy of politics? For instance, early days I discovered that many ideas I wanted to put in paper for a research I was hit by policies that prevented me from doing so, in particular the one with adjacent referee to a friend country like - USA-.

In the other part of the world Germany granted all due respect to Science via appointing the experienced Scientists in decision making - such as electing Angelina Melkel- physicist with PHD in Chemistry-, to be prime minister for her party, and she never failed them, as the resultant was peace and power. Germany also show respect to education by granting the Higher education free for all, and lab's inventions are well represented in the market place.

It is in time of Corona that statement came to prove itself as Germany announced their manufacturing the cure to Covid-19, by a vaccine against Corona, which in fact against those ignorant minds of the benefits of science in our life.

I reckon that states can be measured only by the achievements of the scientists' outcomes, and

scientists to the higher hierarchy. Would the Corona's lesson have given succeeded, that is the concern? If not, no stronger lesson than that

It was a truly sad moment that made me accept an offer at the United Nation, as I could not find my scientific freedom at my first job. Maybe for a good reason to try the best in taking decisions for those who want to build peace through science.

At the time of Corona, I was pleased that some governments around the globe realized that only scientists- by the will of Allah- can take us from this pandemic as they are the one who would know the how, and work it all the way to cure. Delightfully I had read a piece of comment by a Spanish scientist who claimed that if you praised us as footballer, we would all win. Also, I think we need trust, not discrimination against women -gender equality- in this path to

manufacturing cycle as well as marketing it to the humanity. This can be reached when their strategic plans they sat and conduct to this world as one given map. Needless to say, it needs extraordinary politicians who believes in scientists and activate the road map scientists put, and then to walk accordingly. All of which can be accomplish if and only if they allow more

may influence our governments in these parts of the world.

succeed, let alone we men and women as a scientist needs much more sponsorships. We had a long way to walk, yet the beautifully great statement had been written by Covid -19 itself, and the need of scientists had alarmed most alive governments. It is not only development countries problem, but worldwide, and I trust as physics taught us, we can always have a solution for any given problem; we may only need a fine adjustment in the systems as we may change a bit the routine of the way we tackle things, experimenting one after the other; sure will leads us to an advance victory. Stay physicist, it is the only way to prove you right.

Abeer ... a medical physicist at the heart of the Corona crisis

Dr. Huda Al Naemi
MEFOMP President



I have known Mrs. Abeer Alattar for twenty years. She had just graduated from AL Zarqa University in Jordan as a medical physicist when we meet for the first time. She knew that her future profession was medical physics and she could not imagine herself in another profession, despite the unclear importance of this specialty for the hospitals at that time, and it was not easy to obtain a job that fits this qualification, however, Abeer decided to work voluntarily for two years without any financial compensation to get a good experience in this field.

Since that time, we have worked together to establish the first unit for radiation protection in the medical field at Hamad Medical Corporation in Qatar, which consisted of three hospitals at that time, then the institution expanded to include today fifteen large hospitals today. Myself and Abeer started building the first basic building blocks from radiation protection in radiology departments and for radiation workers, this is including doctors, technicians and nurses, together, we have developed an integrated program for radiation protection, including and not limited to individual monitoring of workers, inspection of lead shield and other protective tools, and quality control programs for radiation devices.

Likewise, the radiation protection program in nuclear medicine, as well as the educational training program for radiology workers, even before this training became legally mandatory and a prerequisite for obtaining a government license to work with radiation in the medical field, as stated in the Qatari law issued in 2002, then numerous legal annexes followed that explain and amend some provisions of the law. Abeer followed all these developments with the profession of the medical physicist that she chose, with all love, courage and dedication to work.

Abeer's marriage, pregnancy and childbirth, and the subsequent care of her three beautiful children, did not prevent her from being present in the radiometric laboratory and following up on individual radiation

doses for workers at Hamad medical Corporation, despite the fact that the number of radiation workers has increased to hundreds of workers, in different number of Medical specialties, Abeer did not let her daily follow-up of the details of work in the laboratory, even during times of caring for the babies.

When the Qatar Medical Physics Society was founded, Abeer was one of the first to join, I see her smiling and happy with the establishment of the Society, and with large number of fellow physicists who joined us during the past years, so that the medical physicist takes different specialties, as it should be, to distribute the colleagues according to their specialties and their previous experiences, such as radiotherapy, nuclear medicine, diagnostic radiology, health physics, in addition to non-ionizing radiation such as laser, MRI, ultrasound. Abeer became responsible for the laboratory of radiation measurements, she follows up measurements of the individual doses using TLD technology, she outperformed herself in the maintenance of TLD readers, with expertise comparable to that of the maintenance engineers themselves.

Abeer was awarded the Physicist of the Year 2017 from the Qatar Society for Medical Physics, for her dedicated work and loyalty to her profession as a medical physicist.

In the first months of 2020, complications from diabetes increased with Abeer's mother. The lady had been suffering from diabetes for years. Abeer informed me of this without complaining, but she needed to accompany her mother to the doctor on fixed appointments without violating her obligations at work, but diabetes a ruthless disease for those afflicted with it, and despite the persistence of medication and periodic checks, diabetes chose to implant the injury in the feet of the lady, to become admitted to the hospital's intensive care, and Abeer to become her first companion, as the mother trusts Abeer as one of the medical staff, since she saw her daughter wearing the white dress every day for years in the early morning, to print the morning kiss on her cheek, arriving at the hospital wearing the physicist figure

Women Views on COVID-19 from Omani Medical Physicists Sultan Qaboos University, Sultanate of Oman



Ibtesam Al-Maskari
Sr. Medical Physicist (MSc.), RSO
Superintendent, Medical Physics Unit

They say, we don't grow when things are easy; we grow when we face challenges. I believe, with each challenge there are many opportunities to develop and change for the better. Where the whole world is experiencing a new challenge, which is the pandemic COVID-19, we are all forced to adjust with the so called "new normal life". Remember, as medical physicists, behind each woman's mask, there is a heart to serve her family, patients and society. Investing our time well in balancing and overcoming the challenges is what makes us special.



Amaal Al-Rasbi
Sr. Specialist Medical Physicist

COVID-19 is a coin of two sides. Although it has affected our life badly, but it has drawn our attention to appreciate blessings that we used to take for granted. Such as, spending joyful times with our beloved ones and going out at any time without any precautions. At a personal level, it has impacted on my perceptions and expectations towards individual and professional life. I feel more content, satisfied, and I became more conscious and considerate to any potential unexpected changes that could happen in life.



Naema Al-Maimani
MSc. Medical Physics

The outbreak of the COVID-19 pandemic period gives us an opportunity to change work environment and style. One of the examples is to conduct online lessons and discussions in medical physics field. Thanks for the technology that now allows us to connect anytime, anywhere, to anyone in the world. Create your positive work environment for better achievement and together we can improve today for tomorrows.



Noura Al-Makhmari
Medical Physicist, RPS

From this rostrum, I salute all medical physicists who are working hard and patiently, with the

outbreak of Covid-19, which benefits our patients and society. As you are enriched and important to ensure the continuity of providing health care, keep safe, maintain your physical and psychological health and follow the methods for preventing the disease.



Amal Haji
Medical Physicist

The corona pandemic has aroused concern all over the world due to its rapid spread and the ferocity of the symptoms accompanying a number of infected people. As a Medical Physicist working in the hospital, I have same concerns. My main fear is the possibility of transmitting the infection to my family and loved ones which keeps me away from them for long periods. We are an integral part of the society and awareness is an essential part in preventing the disease. I always try to play my role in giving awareness by educating friends and family.

Impact of Covid 19 on Lebanese Woman

Dr Zeina Al Kattar El Balaa

A Lebanese Mom, Medical Physicist and Professor



In March 2020, a new concern came to occupy the mind of Lebanese woman, which is the general lockdown of the country due to the Corona pandemic.

As if the economic crisis in the country and the living challenges and problems are not enough on this woman, who struggled constantly with the heavy burden of the unjust inequality between man and woman in the country of creative chaos. Add to that the political conflicts and the economic crisis that became a destructive daily routine.

I found myself as a medical physicist, assistant professor at the Lebanese University, and mother of three children

at home 7D/7. Not to rest this time, but to start a new type of work!

“I have to work for home and from home”.

The task list was filled quickly:

- Maintaining house tasks: make the house clean
- Disinfect the house and the objects coming inside home.
- Cooking
- Watching my children, memorize their online class schedules, and supervise their homework's.

AndREMOTE TEACHING!

How can I continue to give the courses to my radiologic sciences and medical physics students and find the best way or best method to succeed in my online course?

How to convince my students to continue their practical work with me in hospitals while Covid 19 risks?

I no longer have a fixed work schedule, going from 8 hours of work a day to 24 hours a day was exhausting.

How do I find the best time to record my lectures without being disturbed by the kids? How can I get their silence during my Zoom sessions?

It was not obvious; sometimes the solution was to work at night while they were sleeping.

Even though, remote teaching was and still a

“temporary shift of instructional delivery to an alternate mode due to crisis circumstances, the primary objective

remains to quickly provide temporary, reliable access to instruction and support during a crisis. However, there are disadvantages to online teaching. Professors need the right tools and support to teach online: Because of the COVID-19 pandemic, I had to rethink my classes entirely and struggled under increased workloads while

Today, I think that I have succeeded our confinement, my family is safe and I have finished all my academic

learning new techniques. Teaching online was not as simple as uploading and delivering content. Covid-19 erased a line between my work and my home, but I learned to teach remotely while watching my kids. It was essential for me to be positive and it was imperative to see this crisis as an opportunity to learn, to move forward...

duties for the 2nd semester, thanks be to God! My classes are even more organized than before. Covid 19 taught me how to do things even better!

Medical physicist captain

Huda Hasan Alqahmani
Medical Physics Specialist

My article is going to be read by the first one who inspired me in the airport of life
 A lounge was crowded by travelers
 Captain and his crew were heading to their trip
 Announcement: Toot toot toot
 Dear passengers on my life trip, please proceed to your future gate.
 You are the one who decide to be a pilot and lead the passengers to your destination and prohibit who don't want the same destination to be in the flight. At the end of the journey, all the passengers will move toward their destination and leave you alone or you might be the only passenger who goes home to have a rest due to hassle of the journey.
 As regard to a medical physicist captain, the journey will be ON.
 Your first checkup will be on a runway to ensure the aircraft is safe (your choice of specialization), passenger instructions (basic knowledge in our your choice of specialization), readiness of your presence (Your continuation of specialization and your struggles), and don't forget your bags full of gifts (help others with what you know), and waiting for permission to take off and the permission is issued (graduation certificate).
 Then you are totally free. You owned the runway. Either you waste more time in the runway and waste fuel (your energy and your life) or to go at your maximum speed to go up in the air.

Whether the takeoff signed is ON or OFF, the air plane will not be flying unless the pilot is completely ready and willing to takeoff.
 You are the pilot of your life and it is fully controlled by you. It will not move to any stage without your decision. Whatever circumstances and incentives around you, the changes will not happen unless you say so.
 I always say that, the only thing you see is the runway when you are down and you don't know what happens inside the airplane.
 When you are inside the airplane, you can describe what is happening onboard and the runway.
 Likewise, your brain, it is impossible to think for an idea that is higher than your level.
 Your passport (GPA) and the visa entry (your experience and achievements)
 Passport and customs officials in the countries you arrive, they determine if you will be allowed to enter the country (job) or not ... Depending on your passport and your visa.
 Dear my customers make sure to have them valid.



Highlighting women role during COVID-19 pandemic

Sarah Farhood , CNMT, RSO.

PET/CT specialist

Molecular Imaging Center, King Abdulaziz University, Saudi Arabia (Jeddah)

In the wake of the situation of COVID-19 pandemic, it is highly important to highlight the role of women not only in the healthcare field- but on many other aspects. Women in the whole world are playing an outstanding key role in the battle against coronavirus. In the article published by UN WOMEN “Covid-19 and women’s leadership: from an effective response to building back better”, Freizer stated that across the world, women are considered the helm of institutions and organizations for effective COVID-19 responses, from level of decision making to frontline service delivery.

In the Molecular Imaging Center (I-ONE) at King Abdulaziz University in Jeddah, female employees account for 55% with excluding on-hand trainees and medical trainees. Therefore, female workers are considered a crucial weight in daily operation and normal workflow. Women in healthcare field globally make up over 70 percent of workers. They are working in the frontlines in fighting against the virus. As a result, women are facing a double burden in term of: longer shifts and additional work at home which leave them with work, family and home related obligations.

As a medical center Manager, my experience with the female staff was different and hard and at the same time. Being in charge to make decisions in dealing with the outbreak in the workplace, I had to implement the right actions for preventions and containment strategies while respecting the difficulties faced by my team members.

Some preventions had to be done in order to keep the staff safe and satisfied like: managing the working hours, controlling the center entry, managing patients flow, keeping up with the best quality services provided and transferring to working-from-home for staff that are not required to be physically available. Regarding the difficulty faced by female employees like their obligations toward their families and kids, we were more flexible in term of working hours and the tasks given to them. Most important is the safety of female staff who are mostly considered as caregivers to their families, we were following the international PPE requirements and encouraging a periodic COVID-19 check for them in case of first-contact with a known positive COVID-19 case.

In conclusion, I would like to highlight the role of women in fighting against COVID-19 in the healthcare field and in all other fields. The unfolding of the health crisis in the past few months clearly revealed the importance of women in maintaining work-life-balance in case of such a pandemic



Women in radiology department during COVID-19(in king abdulaziz university hospital, saudi arabia)

Taghreed Ayidh Alsulami
Medical physics specialist



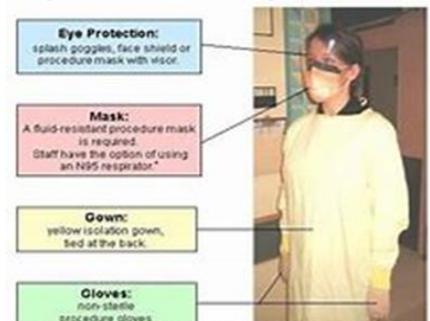
Radiology department use imaging to diagnose and/or treat diseases seen within the body by using a variety of imaging techniques such as

X-ray, ultrasound, nuclear medicine including positron emission tomography PET, computed tomography CT, magnetic resonance imaging MRI. Medical imaging plays an important role in the diagnosis of COVID-19 patients. Which is make the radiology department workers in the frontline, and they should be aware of the potential risks associated with COVID-19 and they should know the safe strategies to minimize the potential risks of transmission of the virus. I went to the radiology department in king abdulaziz university hospital to ask a few questions about the women who works there during this pandemic and how did they deal with it. There are 25 women works in radiology department, 2 of them are medical physicists, and 5 of them works in x-rays, and 4 in nuclear medicine, 1 in CT, 4 in MRI, 7 in ultrasound, 2 in mammogram. The hospital was prepared and has an organized plan or a guideline for the COVID-19 patients, which is an important thing to do to deal with anything. According to the guideline all patients should be undergo the examination in the emergency section, to determine the



suspected or confirmed COVID-19 patients to take the precautions. and then when they feel the need of take an image of those infected patients they send them to the radiology department for imaging after they contact with the radiology department, the department is already known that this patient is COVID patient. they prepare the patient and prepare them self for this case. To avoid the transmission of the virus, the patient should be covered in special way and the staff should be wearing a medical mask, and yellow isolation gown, gloves, eye protection (face shield or procedure mask with visor). Once the image is taken the room should be cleaned. infection control procedures must take place within the radiology department.

They clean the room with 75% ethanol, and after decontamination the room must be closed for 1-2h for ventilation and air circulation, this cleaning process has to be done after every COVID patient. Sometimes they placed the COVID patients in the last because ventilation and air circulation are taking time. The most important question is did COVID-19 effect the work in the department? in the beginning of the pandemic the people was scared of this virus and they were canceling their appointments without telling or contacting with the hospital. At that time, they were working 2 weeks/month until Eid al-Fitr, after that everything is return to be near normal and people start to commitment to their appointments with taking the precautions. In general, COVID-19 didn't



Physicists test coronavirus particles against temperature, humidity

Sources : <https://retractionwatch.com/>
<https://www.ft.com/coronavirus>

Hanan Youssef AlArouj
Physicist



Since the beginnings of the Corona virus Covid-19 propagation around the world, which has become the worst epidemic virus for a century, and there have been numerous research and scientific studies on what the disease is and how to

prevent it in many websites and in the media as well as in academic journals, but what attention attracted is what happen in the last month of June and within a week was 3 articles was retract from prominent medical journals due to the quality of its data, Although many scientific studies have been published in various medical and academic journals in response to the Corona crisis, but the New England Journal of Medicine (NJEM) and The Lancet, within a week, retract reports on trials of the malaria drug hydroxychloroquine as a treatment for Corona virus. After that, a research study was published saying that the drug, hydroxychloroquine, increases the risk of death when taken as a treatment for the Corona virus, but fears about

the accuracy of the data prompted the researchers to withdraw that study as well, as three of the researchers based on that study are no longer able to defend its accuracy, Because SurgiSphere an American company that provided the data without providing a database for this data to be reviewed independently, adding that they can no longer accurately determine the sources of the primary data, and the risks of rushing to publish scientific studies and research on Covid-19 disease were highlighted unless their results were confirmed. A third magazine Analz of Internal Medicine also retract a study about the effectiveness of face masks in preventing the transmission of the Corona virus, Ivan Oransky, one of the founders of the database - Retract Watch - and a scientific integrity activist commented on that event that he had never seen such a week before. The latest Covid-19 storm exposed All weaknesses in the publishing system, since the beginning of last February, 15 studies on Covid-19 have been withdrawn, of which two were temporarily retract, And two studies that were retract by the editors of the journals to express their concern until last September, a study was published in

the French journal *Revue Neurologique* on the incidence of deaths from multiple sclerosis in Iranians who were treated with disease-modifying treatments then it had been retracted in this October, and according to the data collected by Irfinity Co, which specializes in analyzing data, that the rate of studies on the emerging corona virus has increased, and some are published without reviewing similar studies, "Their analysis indicates that the journals, including the best ones, applied different scientific criteria for what they deem appropriate for publication in relation to Covid-19 compared to other areas of treatment," said Rasmus Beck Hans, CEO of the company. Scientists from all disciplines have flocked to study every aspect of the disease and many of them present the results in the scientific literature, Walid Jallad, an associate professor of medicine at the University of Pittsburgh, University of Pittsburgh, said, "When renowned journals publish this type of article and then retract after 10 days, this reinforces suspicion." Walid Jallad was among the first to notice deficiencies in the data used in my journal studies. The Lancet and The New England Journal of Medicine which were retracted, there is a rush among editors, journalists and researchers to publish

research and studies on the emerging corona virus - Covid-19 since the outbreak of the pandemic * Under normal circumstances, it usually takes between three to four months to publish a research or study at a minimum, but in the current circumstances the period has been reduced from two to three weeks due to the exposure of scientists to pressure from a rush to publish as an author or researcher, Azra Ghani, a professor of epidemiology and infectious diseases at Imperial College London, commented and said that we are all struggling to publish our study as quickly as possible and this is considered a challenge with the usual daily sciences. Before publishing any study or research, it must be reviewed by scientists specialized in the same field to assess the quality of the research, identify errors and suggest improvements. "When reviewers rush to finish their own research, it is not surprising that some work goes through a process that lacks sufficient quality," said Jeremy Sanders, a professor of chemistry at the University of Cambridge, "when everyone is working on Covid-19 very quickly." He added that it forces publishers to speed up their operations, which could lead to more poor and bad research. Hanes believes that "good scientific research that includes reviewing similar works takes time. Journals have a responsibility to be slow in doing things."

Joint Safety precautions for patients of Iodine 131 treatment during COVID-19 pandemic

Hasna Bashir AlBandar
Senior Medical Physicist
Prince Sultan Medical Military city
Department of Medical Physics

The main purpose of that essay is to shed more lights on the joint precautions given between COVID-19 and the ones for radiation safety after treatment with radioactive iodine (also called radioiodine), radiations before, during and after treatment as there are many common procedures that can be taken especially if they are synchronous. Because your body retains the radioactive material and then you will need to follow certain precautions to ensure safety to the patient and others. Patients will be given detailed instructions about what they should do for several days following the treatment. This essay starts with a case statement of a female patient that should be treated with iodine 131 and was COVID-19 positive.

Case Statement

During COVID-19 pandemic and have a greater understanding of the disease and its pathway, we had revised one female patient that was treated with Iodine-131. As we were following our routine procedures for all the patients, we had screened the patient for COVID-19. It was confirmed that she was COVID-19 positive. We

are taking into account both the risk patients face from cancer and from COVID-19 infection. It was required from the team to have the priority to resume the treatment with Iodine-131 or to start treatment of

COVID-19. That was our situation. The case was tested many times to assess the degree of the symptoms and to recognize the seriousness. The patient is COVID-19 positive. However, she was without serious symptoms that was easy for the treatment team to decide. We recommend that radioactive iodine treatments can be restarted provided the local prevalence of COVID-19 is low. Meanwhile the patient was isolated during the treatment of Iodine 131 and in parallel with the treatment of COVID-19.



From the above statement we can conclude certain joint precautions between COVID-19 and Radioactive Iodine patients to protect frontline healthcare workers and people around. In addition, they can face additional burdens and hazards as they respond to the current COVID-19 pandemic and radiation. These burdens include exposure to pathogens, psychological distress, fatigue, long working hours, burnout, and physical and psychological violence.

All employers need to consider national and international best practices to reduce the transmission of COVID-19 and radiation amongst their workforce, maintain business operations, lower the disease impact in their workplace, and maintain a healthy work environment.

Our aim is to provide guidance to assist healthcare workers to maintain their safety as a top priority, and we highly recommend the adherence to all COVID-19 and radiation as follows:

First, Prior to treatment from COVID-19 and admission of the patient:

1. Ensure all necessary preventive and protective measures are implemented to minimize occupational safety and health risks.
2. Provide daily technical protection, updates infection prevention and control information with providers, patients and the public via electronic platforms.
3. Provide all employees with the appropriate tools to assess and treat patients. (e.g., masks, N95 masks, gloves, goggles, gowns, hand

sanitizer, soap and water, cleaning supplies) in sufficient quantity. These workers (include but not limited to: Healthcare workers are individuals who deliver care and services to the sick and ailing either directly as physicians, nurses and respiratory therapists or indirectly as aides, helpers, laboratory technicians, housekeepers and medical waste handlers as well as medical, nursing, allied health, cleaning and ward assistants) with enough infection prevention and control and personal protective equipment (PPE) supplies.

4. Employees who are ill should follow the established guidelines with regards to self-isolation and testing for COVID-19.
5. Avoid transport of patients throughout the facility except for medically essential purposes and develop a dedicated transport route and routes of entry involving source control for the patient, PPE for workers, and environmental cleaning.
6. Hand hygiene is a standard precaution before and after contact with patients or potentially infectious material, and before applying and after removing PPE. Healthcare organizations should ensure that hand hygiene supplies are available to all personnel in every care location. All workers should receive individual N95 mask fit checking.
7. Provide personnel with instruction and training on occupational safety and health using and up to date COVID-19 materials and resources from trusted resources, including: In-person training and education, hands-on training and education, educational videos, and virtual learning tools. Appropriate use, putting on, taking off, and disposal of PPE.

8. Movement in and out of the hospital

Intra-hospital transfers

- a. Restrict the transfer and movement of patients under isolation precautions for medically essential purposes, and ensure selecting low traffic time short route, whenever possible.
- b. If the transport/movement is necessary, offer the patient a surgical mask to be worn during transportation, to minimize the dispersal of respiratory droplets when this can be tolerated.
- c. Develop a dedicated transport route and routes of entry involving source control for the patient, PPE for workers, and environmental cleaning. Suspected and confirmed COVID-19 patients must not wait in public areas.

Secondly: Joint Precautions – post Covid-19 & Radioactive Iodine Therapy

Because the patient's body retains and then gives off radiation after treatment with radioactive iodine (also called radioiodine), the patient will need to follow certain precautions to ensure safety to him /her and others. As well as the Covid -19 patient

These precautions also pertain if a family member or friend is driving you to your

treatment. You will be advised to maintain a distance of three feet from others for several days following radioiodine therapy. You also will need to wait several days before traveling on a prolonged automobile trip with other people.

In general, there are three basic principles to keep in mind to reduce radiation exposure to others:

Distance

The greater the distance the patient is from others, the less radiation they will receive. He/ she will be advised to sleep alone for the first few days after your treatment. During this period, He/ she should avoid kissing or sexual intercourse. Also avoid prolonged physical contact with others, particularly children and pregnant women.

If He/ she has a baby, be sure to get instructions from doctor. He/ she can probably do all the things necessary to care for your baby, except breast feeding for the woman but it is preferable not to have the baby too close, such as sitting in lap, for more than a short time during the first two days after treatment.

Time

Over time, the amount of radiation in his /her body will diminish and eventually will go away. Depending on the dose of treatment you initially received, you may need to stay in the hospital for several days to allow the level of radiation in your body to fall before returning home. Once you are at home, you may need to curtail certain activities such as having contact with children and pregnant women, and going back to work right away, so that radiation levels can fall to safer levels.

Radiation exposure to others depends on how long you remain in close contact with them. You will be advised to minimize the time spent in close contact with others. Drink plenty of liquids, such as water or juices, to help you urinate frequently. This should help to flush out the radioiodine, thus lowering the amount in your body.

Hygiene

Good hygiene lessens the possibility of contaminating others. Guidelines are to wash your hands with soap and plenty of water each

time you go to the toilet. Keep the toilet very clean. Also, flush the toilet two or three times after each use. Rinse the bathroom sink and tub thoroughly after using them to reduce the chance of exposing others to the radioisotope in your saliva and sweat. Use separate eating utensils for the first few days and wash them separately to reduce the chance of contaminating other family members with radioiodine in your saliva.

Pregnant women & nursing mothers

If you are pregnant, or think you are, tell your doctor because radioiodine should not be given during pregnancy. If you are planning to become pregnant, ask your doctor how long you must wait after the treatment.

If you have been breast feeding your baby, you must stop because radioiodine is secreted in breast milk.

If the patient has been breast feeding, radiation exposure to breast tissue will be significantly reduced by discontinuing breast feeding two (2) weeks prior to radioiodine therapy.

Medical physicists and the challenges during Covid-19

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This report intended to investigate the effect of the COVID-19 pandemic period in the work and activity of the department of radiology especially the medical physics department, indeed this virus was attacking all humans worldwide where multiple people have died from its severity and effect especially those who work in the medical field as general.

Multiple questions and variables (questionnaire) was designed to do so for 232 responses in the period from August to October 2020. where it included multiple responses in medical physics and another radiology department, in which 62.9% of the study population are female gender, 37.1% were male. In which 58.2% of responses stated that women are most careful about precautionary measures of COVID-19 in which 45.7% disagreed that women have a higher risk of COVID-19 than males.

Women globally make up over 70 percent of workers in health, including those working in care institutions. They are on the front line of the fight against COVID-19. Moreover, this study cross-tabulates (correlate) the gender difference effect in the study variability in which 121 out of 146 female states that the COVID-19 period affects the workload in contrast to lower figures in men. Also, women were more affected in time management than men in which 64 out of 146 females were affected compared to those 41 out of 86 male frequency as in table (1). While 32% of the female has no problem in managing time between work and home but indeed this figure was lower for male

because the majority of female worker are home servers also. The pandemic of the Covid-19 virus has without a doubt inflicted the lives of people worldwide, men and women alike, however, women seemed to have more complicated challenges in the face of new regulations and radical changes that affect almost every aspect of our lives.

Different levels of education were targeted those who working in radiology and medical physics departments which include (34.5% B.Sc., 29.7% M.Sc. holder, and the rest was 29.7% Ph.D. and 6% diploma holders) this indicate that there was more experienced personal that interacting with COVID-19 effect more effectively. With the job title of (40.9% medical physicist, 17.7% technologist, 29.7% physician and 4.3% nurses and other including more than 7% of response) was major category scanned here, in which distributed in four major department and subspecialties. An also according to the result of this study the most vulnerable to COVID-19 was diagnostic x-ray, nuclear medicine, radiation therapy, and general Health physics department representing 20.3%, 35.3%, 12.5%, and 14.2% respectively.

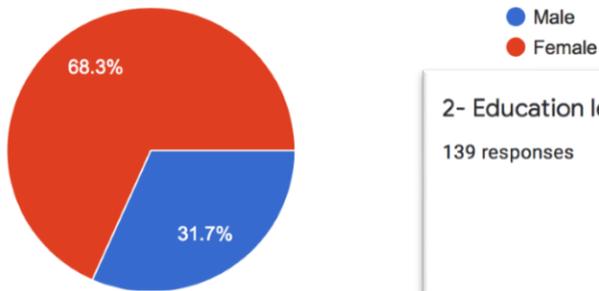
Radiology was one of the cornerstone departments that were affected by the COVID-19 pandemic in which was considered as one of the most important tools for the COVID survey and diagnosis, as CT and X-RAY respectively. This survey was distributed in four major subspecialty departments in radiology (24.1% in NM, 56.4% diagnostic radiology, 17.2% in radiotherapy, and 2.2% in radiation protection department) in which are categorized in the most frequent age group 31-40% representing about 40.1% of the survey population.

The pandemic has rapidly changed the way we work, showing that workplace flexibility is just one way to keep all of us working productively. Other profound changes to workplace culture should follow, or we risk yet another decline in women's workforce participation. COVID-19 Affect the working effort in all filed of life including the medical field in which is considered to be the first line of defense for such type. Where this study reveals that 84.5% answer that COVID -19 was affected the workload of the radiology and medical physics department, while the majority was working remotely from home. Which can affect the workload negatively and positively as in 29.7% and 37.1% respectively. With schools and day cares closed in many places, lots of parents are struggling to work effectively from home, although this information is indicated that female cannot able or struggling in facing this crisis we found that; Female was predominant gender in this survey as it works more effectively in the x-ray and nuclear medicine department as 78 and 41 females Vs. 52 and 14 compared to male gender respectively.

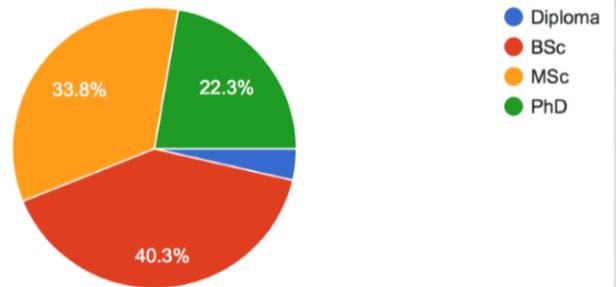
Indeed, one of the major objectives of this study was to investigate the participation of radiology and medical physics workers in COVID-19 activity including educations, prevention, practical research, and distribution of prevention supplies also. Where the result reveals that 63.8% didn't volunteer in the COVID-

19 prevention and treatment team, 65.1% actively participated remotely in education activity (lectures, training, and seminars), 25.9% participated in practical paper and posters while 77.6% of the responses stated that COVID-19 reduced the number of patients attended the radiology department. In which 47.8% of scientific conference attendance was female compared to 29.7% from male distribution. This possible due to the too high frequency of the female working in this part of the survey. from the overall survey in the articles and research conducted and activity noted of COVID -19 pandemic we found that the number of male preprint authors is currently growing faster than the number of female preprint authors. In other words, on average, women are not advancing their research as much as men during the pandemic.

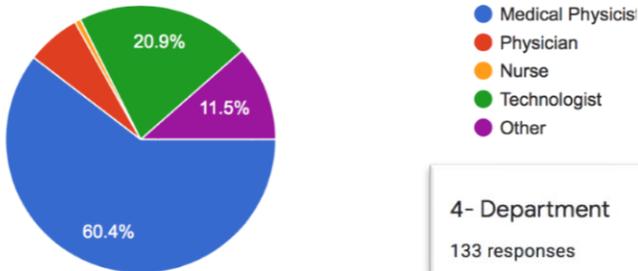
1-Gender
139 responses



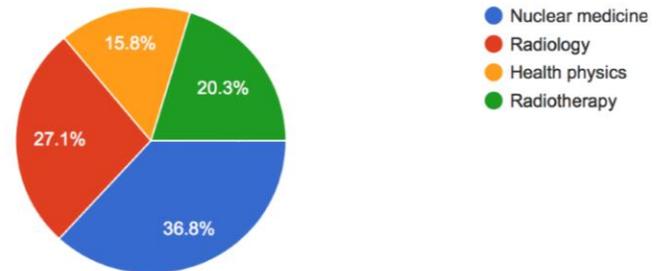
2- Education level
139 responses



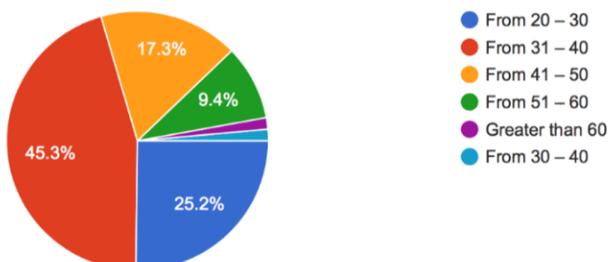
3- Job title:
139 responses



4- Department
133 responses

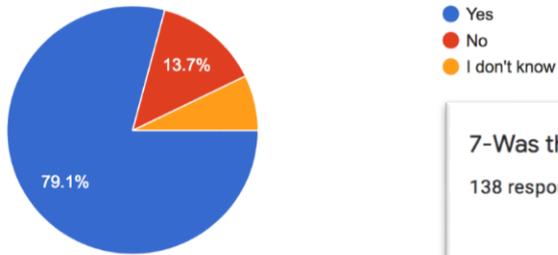


5-Age
139 responses



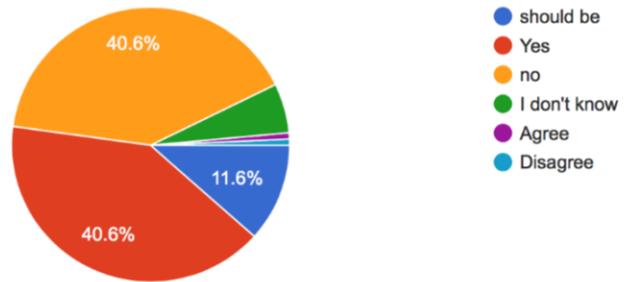
6- Has Covid-19 affected workload?

139 responses



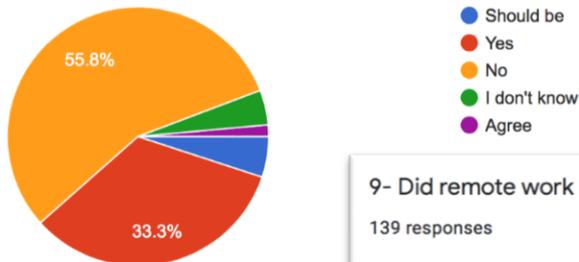
7- Was there a problem managing times?

138 responses



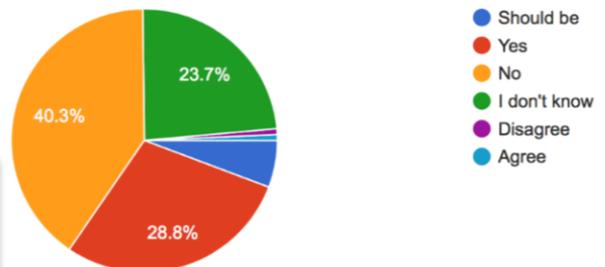
8- Is there a problem with the managing between work and home?

138 responses



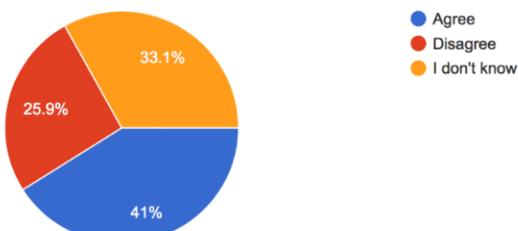
9- Did remote work negatively affect the performance of the medical physics departments'

139 responses



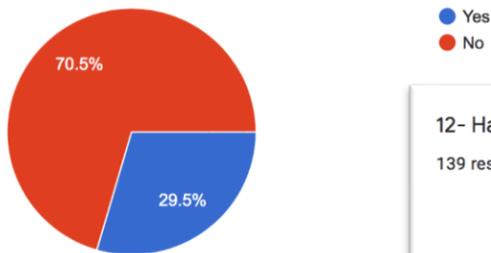
10- Did remote work have a positive effect on the performance of medical physics departments?

139 responses



11- Did you volunteer for the COVID-19 team? (Combat, work and distribution of prevention supplies, protection, ets)

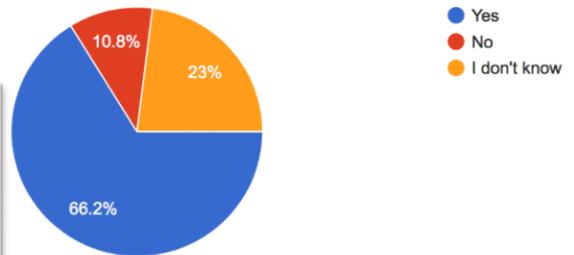
139 responses



● Yes
● No

12- Has Covid-19 affected the number of patients in the medical imaging and radiotherapy

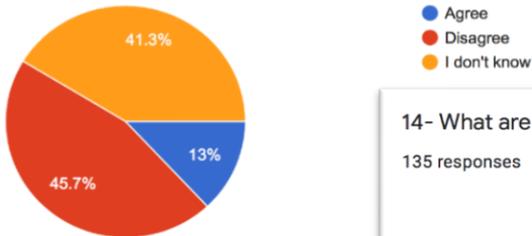
139 responses



● Yes
● No
● I don't know

13- The risk of Covid-19 is higher for women than for men working in medical physics departments?

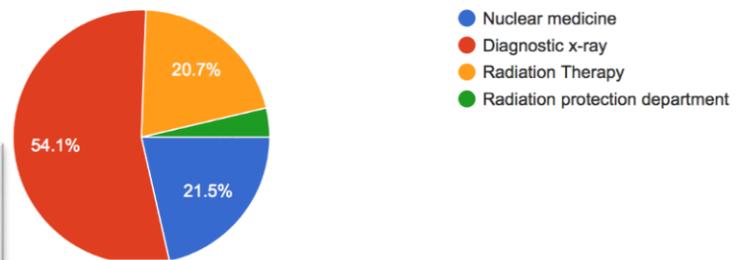
138 responses



● Agree
● Disagree
● I don't know

14- What are the most vulnerable to COVID-19?

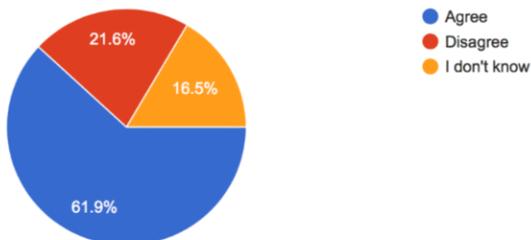
135 responses



● Nuclear medicine
● Diagnostic x-ray
● Radiation Therapy
● Radiation protection department

15- Women are more careful to follow the precautionary measures for COVID-19?

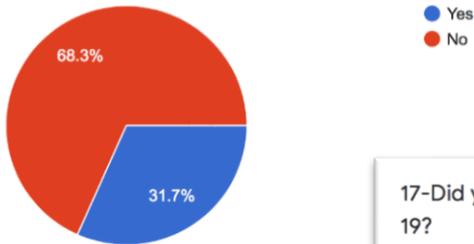
139 responses



● Agree
● Disagree
● I don't know

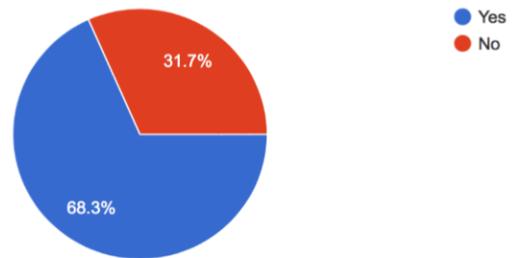
16- Have you participated in practiced research during COVID-19? (practical paper – posters)

139 responses



17- Did you involved in (lecture – training – seminars) by working remotely during the COVID-19?

139 responses



18- Did you attend (lectures – seminars – scientific conferences) during COVID-19?

139 responses

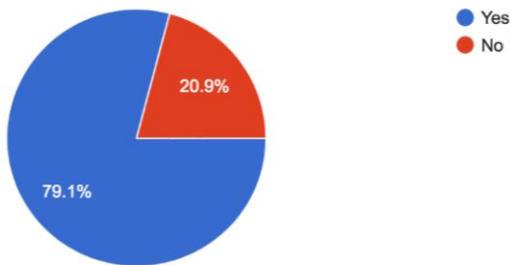


Table 1. Demonstrate the questionnaire variables and element with the *most frequent response*:

Variables & Questions	Response			
Gender	62.9% Female	37.1% Male		
Educational Level	34.5% B.Sc.	29.7% M.Sc.	6% Diploma	29.7% Ph.D.
Job title	40.9% M.physist	4.3% Nurse	29.7% Physician	17.7% Technologist
Department	35.3% NM	14.2% Health P.	20.3% Radiology	12.2% Radiotherapy
Age, (years)	21.6% (20-30)	40.1% (31-40)	21.6% (41-50)	12.1% (51-60)
Has COVID-19 affected the workload?	84.5% yes	10.8% No	4.7% I don't know	
Was there a problem with managing times?	45.7% yes	37.5% No	6.0% I don't know	9.5% Should be
Is there a problem with managing between work and home?	50% No	38.4% Yes	3.4% I don't know	7.3% should be
Did remote work negatively affect the performance of the medical physics department?	32.8% No	29.7% yes	29.7% I don't know	6.9% should be
Did remote work have a positive effect on the performance of the medical physics department?	37.1% Agree	22.8% I don't know	40.1% I don't know	
Did you volunteer for the COVID-19 team? (combat, work, distribution of prevention supply, protection. etc)	63.8% No	36.2% Yes		
Has COVID-19 Affected the number of patients in medical imaging and radiotherapy?	66.8% yes	7.3% No	25% don't know	
The risk of COVID-19 is higher for women than men?	45.7% disagree	14.7% Agree	39.6% don't know	
What are the most vulnerable to the COVID-19?	56.4% x-ray	24.1% NM	17.2% RT	2.2% R. protection
Women are more careful to follow the precautionary measure for COVID-19?	58.2% agree	21.1% Disagree	20.7% I don't know	
Have you participated in practiced research during COVID-19? (practical paper- poster)	74.1% No	25.9% Yes		
Did you involve in (lecture-training- seminars) by working remotely during the COVID-19 pandemic?	65.1% Yes	34.9% No		
Did you attend (lectures-seminars-scientific conference) during the COVID-19 pandemic)?	77.6% Yes	22.4% No		