118
July – September 2022

التقدم العلمي

KFAS

AL-TAQADDUM AL-ILMI

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Kuwait Foundation for the Advancement of Sciences

Vision

A thriving culture of science, technology and innovation (STI) for a sustainable Kuwait

Mission

Stimulate and catalyse the advancement of STI for the benefit of society, research and enterprise in Kuwait

مؤسسة الكويت للتقدم العلمي
Kuwait Foundation for the Advancement of Sciences

KUWAIT PRIZE 2022 – Cycle 41
Invitation for Nominations

The Kuwait Foundation for the Advancement of Sciences (KFAS) awards distinguished Kuwaiti and Arab scientists worldwide the Kuwait Prize for their significant and outstanding achievements in research since 1979. While the main areas in various scientific fields remain consistent, the scientific subfields under these areas vary annually.
For the 2022 Kuwait Prize Cycle, KFAS invites universities, scientific and research institutions, and eligible individuals, to nominate Kuwaiti and Arab scientists for the Prize in the following scientific subfields:

Fundamental Sciences	In Basic Medical Sciences (including but not limited to): Anatomy, Physiology, Human Genetics; Cytology, Pathology, Toxicology and Pharmacy.
Applied Sciences:	In Clean & Sustainable Energy Technology (including but not limited to): Solar, Wind and Hydroelectric Energy, Biomass Energy, Fuel Cells, Energy Storage, Lower Fossil Carbon-Footprints Fuel.
Economics and Social Sciences:	In Economics, Financial & Banking Sciences (including but not limited to): Macroeconomics, Microeconomics, Development, Business, Monetary Economics, Public Finance, Corporate, Entrepreneurial Finance, e-Commerce, Venture Capital and Financial Technology.
Humanities, Arts and Literature:	In Arabic Literature & Art (including but not limited to): Critical Analysis of Modern & Ancient Arabic Literary Texts (Poetry, Drama, Narratives), Critical Theories, History of Arabic Literature, Literature of Specific Arab Countries, Studies in Arabic Cinema, Music and Formative arts.
Emerging Interdisciplinary Sciences	In Nanoscience & Nanotechnology & Applications (including but not limited to): The Study & Understanding of Physical & Chemical Phenomena at the Nanoscale, The Design & Production of Nano Structured Materials & Devices at the Nanoscale, The Applications of Nanoscience & Nanoengineering, Applications of Nano Technology in the Areas of Science, Medicine and Engineering.

KFAS awards an annual Prize cash sum of K.D. 40,000 (Approx. $135,000) for each subfield, along with a gold medal, a KFAS shield and a certificate of recognition.

Conditions and requirements:

1 - KFAS accepts nominations from universities, academic and research institutions, former laureates of the Kuwait Prize, and peers of the nominees. Nominations from political entities are not accepted.
2 - KFAS accepts self-nominations. Self- nominees must provide a statement outlining the basis for their eligibility for nomination and the significance of their research production.
3 - The nominee must be from an Arab nationality and have proof of Arabic origin, such as an Arabic birth certificate, a valid Arabic passport, or a relevant document. A copy of one of these documents must be included in the application file.
4 - The nominee must be a recognized specialist and researcher in the announced subfield and must hold a PhD degree. Applicants for the Fundamental Sciences (who do not hold a PhD degree) must hold the Medical fellowship and/or Medical Board.
5 - KFAS will accept self-nominations. Nominees must provide a list of references, three academics/researchers and one scientific institution.
6 - The work submitted should be innovative, significant in the announced subfield, and published during the past twenty years. Submitted work include papers published or accepted for publication in refereed Journals, and books with ISBN or ISSN number (authored, translated, edited, and chapter in a book). MA or PhD theses and any publications extracted from them shall not be evaluated as part of the nominee's scientific work.
7 - Nominees are requested to complete the Prize Nomination Form and send it along with the submitted work electronically. The Nomination Form is obtained from KFAS website www.kfas.org/kuwaitprize2022 The Nomination Form for the subfields in Fundamental Sciences and Applied Sciences should be submitted in English.
8 - The Nomination Form along with scientific publications and achievements completed within the past twenty years should be sent in PDF format, through the cloud storage services sites such as (Google Drive–Dropbox–OneDrive) via Prize email: kuwaitprize@kfas.org.kw
9 - KFAS decisions concerning The Kuwait Prize are final and objections are not accepted.
10 - Nominations must be submitted no later than **Wednesday, 31st August 2022.**

For further information and inquiries, please contact the Prize Office: Tel: +965-2227-0465; E-Mail: kuwaitprize@kfas.org.kw

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Kuwait Foundation for the Advancement of Sciences

التقدم العلمي
AL-TAQADDUM AL-ILMI

Issue 118
July – September 2022

A quarterly scientific cultural magazine published by the Kuwait Foundation for the Advancement of Sciences

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Back to the New Normal

As we prepare for this issue, the team takes over from Dr. Salam Al-Ablani, who led the Al-Taqaddum Al-Ilmi magazine for a decade. While we will miss his contributions, his vision will remain vivid in our minds, and his words will always echo in our ears.

In this issue we will continue to showcase some of the key research funded by KFAS during the pandemic. We will also be presenting some of the noteworthy conferences and activities funded or organized - with the return of the new normal - by KFAS or its centers.

In early 2020, the World Health Organization (WHO) classified the spread of COVID-19 as a global pandemic and declared a state of emergency. While many of us had to adhere to lockdown measures, healthcare workers were required to continue working in full capacity to care for infected patients.

In The Hidden Face of the Pandemic: The Psychological Impact of COVID-19 on Healthcare Workers in Kuwait, we explore the levels of anxiety and depression among healthcare workers due to stressful working conditions, and the recommendations of Sarah Al Kandari's research for developing policies to provide for their necessary needs to ensure the well-being of healthcare workers in Kuwait.

In Predicting the Post-COVID Future, the economist Sulayman Al-Qudsi foresees the future in the aftermath of the COVID-19 pandemic and a collapse in oil prices, using CGE to assist policymakers and Kuwaitis in general in planning for the future. The research also holds insights for the average Kuwaiti about the future of work, education, commerce, and human connection. One of the study's interesting findings that can help Kuwaitis plan for the future is "tech-celeration."

The issue also highlights Dr. Barrak Alahmad's public health research looking into the health impacts of heat and air pollution in Kuwait. He focuses on environmental and occupational health, and future environmental exposures we are all worried about; air pollution, extreme heat, and changes in weather patterns. Alahmad believes that Kuwait is the right place for such studies and can provide meaningful contribution based on research and evidence to bodies like the Intergovernmental Panel on Climate Change and United Nations Framework Convention on Climate Change.

Executive Editor
Dr. Layla Al-Musawi

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Teamwork and Technology Major Themes at 2021 Endocrine Conference

The two-day virtual conference funded by KFAS offered researchers many opportunities to reflect on what's driving the field of endocrine research

PHOTO: MAGIC MINE / SHUTTERSTOCK

Throughout his career, Kuwaiti Dr. Zaidan Al-Mazidi has believed in the power of teamwork and embracing new technologies to transform the field of medicine and improve patient care. "These were some of the things we introduced at our last conference," he said, referring to the September 2021 Endocrine Conference, which the Kuwait Society of Endocrinology organized with support from the Kuwait Foundation for the Advancement of Sciences (KFAS).

Al-Mazidi is a pediatric endocrinologist with decades of experience in research and patient care. He now works at Al-Sabah Hospital and serves as head of the Kuwait Society for Endocrinology. He said that last year's conference served as "education for the doctors" who attended it, including presenters from Kuwait, Jordan, and Saudi Arabia. Throughout the two-day event, presenters shared their research on topics including osteoporosis management, the use of growth hormone therapy, and treatments for male infertility. Al-Mazidi also gave a talk on one of his research projects, which explores growth hormone adherence in pediatric patients.

Some presentations also focused on medical technologies, like the cutting-edge artificial pancreas system. An artificial pancreas is a three-part system that mimics how a healthy pancreas controls blood sugar. This technology is designed to help people with Type 1 Diabetes, who usually have to maintain their blood glucose level by monitoring it and taking insulin via injection or an insulin pump several times each day. Instead, an artificial pancreas automatically monitors a person's blood glucose level, calculates how much insulin they need, and delivers it.

While this and other high-tech medical equipment promise exciting new treatment options for patients, Al-Mazidi said that simpler technologies, like the video conferencing programs that made the online conference possible, also drive progress in the medical field. "Everyone was at their home, but we were still able to do the conference with this technology," he said. "We were still sharing our information." He said that the atmosphere at the online event was excellent.

As head of the Kuwait Society for Endocrinology, Al-Mazidi was also responsible for delivering closing remarks at the conference. He said that he again focused on the importance of teamwork and technology in these remarks. He also reminded his colleagues of the importance of coming together at conferences to share their research, "I told them 'We are now better than before at understanding the problems facing our patients and how to improve our work.'"

By Marianne Dhenin

KFAS Helps Fund Kuwait University 40th Engineering Design Exhibition

The College of Engineering and Petroleum at Kuwait University held its 40th Engineering Design Exhibition in December 2021, the first time at Sabah Al Salem University City. The exhibition has been running since 2001, with support from the Kuwait Foundation for the Advancement of Sciences (KFAS). Every year, teams of graduate students display their final capstone design projects for feedback and evaluation. The capstone design is the final course engineering students have to pass before graduation, where they put into practice their years of accumulated knowledge to produce unique engineering projects. It also prepares them for real life challenges and expectations of the job market.

In recent years, the exhibition developed from being merely a show to display graduate students' final projects, to becoming a cornerstone for the development of any engineering project in Kuwait. The highly competitive award with its well-established guidelines pushes students to create unique projects that correspond with urgent local and international problems. Duaij Al Rukaibi, the Director of the Engineering Training and Alumni Centre, believes that the award positively incentivizes students and creates an environment for healthy competition.

"The exhibition is initiating critical conversations on how we can find solutions for problems on a national scale, like developing infrastructure and using natural resources," he said. "For example, how we can use something like waves to generate energy or solve the issue of asphalt and road surface degradation using advanced engineering technology."

The exhibition also included digital engineering projects that use Augmented Reality to integrate all kinds of information and present them in a unique, digestible way. "It's especially attractive for kids," said Al Rukaibi. "This kind of technology could be very beneficial for the Ministry of Education."

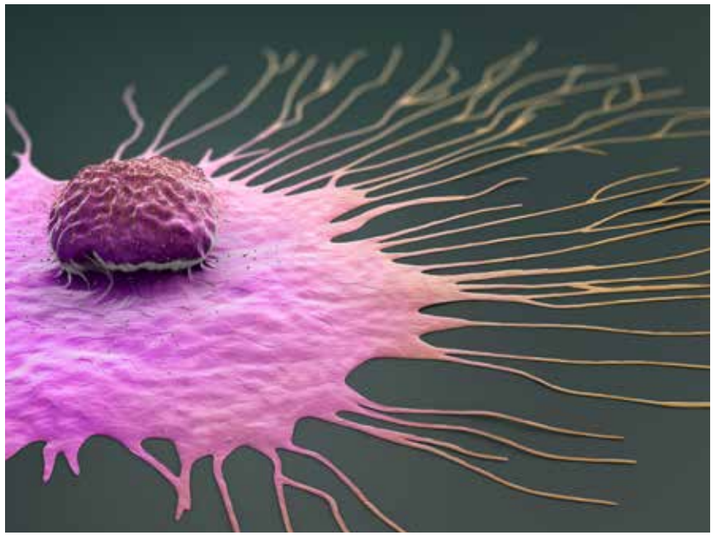
The exhibition includes seven different themes that engage all engineering departments. This includes: Building and Construction, Clean Energy and Natural Resources, Infrastructure, Technical and Digital Sciences and Communication, Artificial Intelligence and Robotics, Engineering Productivity and Mechanization, and Environmental Sustainability.

Any unique and innovative designs get the opportunity to apply for a patent.

"We have many engineering groups who have patents based on their capstone design or research paper." Al Rukaibi said. "In the Training and Alumni Centre, we walk them through the procedure up until they get their certification. Each year we have up to two or three groups who receive patents."

By Muneera Al-Yahya

Breast Cancer and Genomic Research Conference Showcases Advancements in Cancer Detection, Prevention, and Treatment



Last October, Kuwaiti Dr. Fahd Al-Mulla attended an international conference on breast cancer and genomic research from the comfort of his office in Kuwait City. The virtual event was organized by the Kuwait Society for Oncology and received support from the Kuwait Foundation for the Advancement of Sciences (KFAS). According to Al-Mulla, "it was a real success."

Al-Mulla is Chief Science Officer at Dasman Diabetes Institute, one of KFAS' centers, and a professor of molecular pathology and genomic medicine at Kuwait University. He says he values events like last year's virtual conference because they provide opportunities to network with other researchers and learn about advancements in cancer research around the world.

As a presenter at the conference, Al-Mulla shared his research on personalized or precision medicine, which is a field of medicine that focuses on optimizing treatment for particular groups of patients using genetic or molecular profiling. Specifically, he spoke about his research into gene mutations that serve as markers for familial breast cancer. Once scientists identify these mutations, doctors can look for them in patients to determine their cancer risk and offer more effective preventative care. Doctors can also use genetic markers to gauge which cancer cases are likely to become severe and which will be more easily treatable, allowing them to tailor treatment to each patient's needs.

While many nations search for two specific gene mutations — the BRCA 1 and BRCA 2 mutations — to determine a patient's risk of developing breast cancer, Al-Mulla says that these mutations are only common in familial cancer patients in "the West." These testing standards do not serve the Kuwaiti population. "It is other genes that are playing a part in inducing familial breast cancer or ovarian cancer in our population," he says. Al-Mulla looks for these other gene mutations with the goal of developing more useful testing standards for Kuwait and the surrounding region.

These and other topics discussed at the conference last October have the potential to save many lives. With this in mind, Al-Mulla says that he hopes conferences like these will become more frequent in the future and attract even more participants from abroad. Conferences are vital to making progress in the field "because they bring researchers together," he says. "As a scientist, you cannot move forward without collaborating."

By Marianne Dhenin

ILLUSTRATION: CHRISTOPH BURGSTEDT / SHUTTERSTOCK

Introducing Children to the Legacy of Arab and Muslim Scientists

A collaborative event between ASPD and AASC

Abdullah Almousawi (Big Jack)

By Muneera Al-Yahya

PHOTO: OMAR ALSAYED OMAR

Stemming from a shared belief in the importance of exposing children to different forms of learning, the Advancement of Sciences Publishing and Distribution (ASPD) organized a children's workshop in collaboration with the Museum of Arabic Islamic Science and Fine Arts Centre at Sheikh Abdullah Al Salem Cultural Centre during the national holidays.

The aim was to introduce children to the legacy of Arab and Muslim scientists and to help them learn the steps of the scientific method. Participants learned about the progression of the scientific method from early philosophers and natural scientists who first used experimentation as a way to reach scientific conclusions. They also learned about Ibn al-Haytham's theory of optics and visual perception, which was a stepping stone to modern science; relying on investigative methodology to prove that vision occurs when light enters the eyes rather than the eyes emitting light.

In the second part of the event, kids were introduced to Ibn al-Haytham's cabin at the Museum of Arabic Islamic Science and engaged in an experiment that explains the basic functions of the camera obscura using an ASPD publication called the Most Amazing Pop-up Science Book.

"It was important for us that the kids are not just receiving information but are active participants in producing the information," Mohammad Al-Obaidi, the presenter and organizer, said.

Engaging children in the learning process as active participants and introducing them to the richness of their scientific heritage can drastically improve their learning and thinking abilities, according to Al-Obaidi. "When they learn about the profound contributions of their ancestors to science, they become confident that they too can have a place in the field," he said.

The event also included an interactive science show by Big Jack, Abdullah Almousawi, a science presenter - who specializes in chemistry - for children and adults alike. Almousawi, who wears a giant Einstein-like grey wig and a lab coat covered in chemistry equations, demonstrated experiments revolving around the principle of sublimation, the chemistry of volcanoes and showcased magic tricks using science.

Throughout his show, the entire crowd could be heard yelling out in awe and excitement, with their jaws gaping open. "Science makes me happy, especially chemistry," AlMousawi said. "Some people who hate science, after my show they love it because it's presented in a simple and funny way."

> **It was important for us that the kids are not just receiving information but are active participants in producing the information**

Barrak Alahmad

Using Public Health Research to Study the Health Impacts of Heat and Air Pollution in Kuwait

For Barrak Alahmad, a medical graduate from University of Liverpool, UK, Kuwait is synonymous with dust storms and extreme temperatures. Growing up, he felt these two phenomena glare in his face wherever he looked out of the window. This motivated him from a young age to dedicate himself to the health of his people. One and half years into his stint as a junior doctor at Al Adan Hospital, he decided to specialize in public health. “Now, public health is not about having clinical experience with patients; it is more a study into population health,” Alahmad said. And that’s why he got into public health research.

To gain more expertise, Alahmad obtained a master’s in public health from John Hopkins Bloomberg School of Public Health and is currently pursuing a doctorate in population health sciences at Harvard T.H. Chan School of Public Health.

Asking the Right Questions First

Public health is a big umbrella and there are different facets to it, like the social and behavioral aspect, epidemiological aspect, data analysis, and health policy management, among others. Alahmad focuses on environmental and occupational health, where health of workers as a subpopulation is an area of interest because it’s the people who cannot afford to stay indoors and need to go out in the open to work that are the most vulnerable.

One of the first studies that Alahmad did, was a study on the impact of extreme temperatures on mortality of Kuwait’s inhabitants by analyzing historical data. It looked into the vulnerabilities of Kuwaiti society due to extreme temperatures.

To get answers, we need to ask the right questions, according to Alahmad. Once we know the determinants for the health conditions and vulnerabilities of the affected people, we can work towards mitigating them.

The study, funded by the Kuwait Foundation for the Advancement of Sciences (KFAS), found that migrant workers to be the most vulnerable subpopulation because they are not acclimatized to such extreme temperatures and often do not have protection nor access to healthcare facilities required to keep them fit. Alahmad intends to continue his work into health impact on vulnerable populations.

COVID-19: Giving Back to the Society

When COVID-19 hit, Alahmad was pursuing his doctorate in Boston, Massachusetts. He felt it was time to give back to his community and people. He connected with some Kuwaiti friends trained in public health in the U.S., came back to Kuwait and started conducting research assessments into different aspects of COVID-19 and the pandemic itself. The intent was to help the Ministry of Health make quick decisions on lockdowns and initiate healthcare capacity building.

In March 2020, when Abdullah Alshammari, a mathematical biologist and assistant professor at Kuwait University, was looking for an epidemiologist to assist him in predicting pandemic peaks using a preliminary mathematical model he had designed, Alahmad was his first choice out of many. “I was looking for a physician who was also an epidemiologist, a rare combination in Kuwait,” Alshammari said. “Besides, the person had to have a deep understanding of intricacies of research data and possess research integrity. [Alahmad] was the only one who ticked all boxes.”

During his work over the summer of 2020, Alahmad did multiple collaborative studies. His insights into a small set of data sourced from Sheikh Jaber Al Ahmad Al Sabah hospital established the relationship between fasting blood glucose levels and severity of COVID-19 in non-diabetic people. The results were eventually published in the Diabetes Care journal.

Some other notable research studies were done for measuring effectiveness of lockdown, linkages between COVID-19 and intensive care and qualitative assessment of pandemic health risks on migrant workers.

Alahmad was also involved in a capacity building project with Janvier Gasana, associate professor and chair of the department of environmental and occupational health at Kuwait University, in collaboration with KFAS. The project engaged with healthcare workers to train them on wearing PPE kits and mitigating occupational risks due to continued exposure to the virus.

Looking into the Future Right Now

Alahmad is passionate just about the environmental impact of extreme temperatures for Kuwaiti population but also on the global population. He feels that more environmental studies should be initiated in the inherently hot and arid Gulf region, and the Middle East in general, to study the impact of rising temperatures on people, especially the vulnerable subpopulations.

“Kuwait is the right place to conduct these studies as the future environmental exposures we all are worried about - air pollution, extreme heat, changes in weather patterns and extreme weather events - are already amplified here,” Alahmad said. “We can provide meaningful contribution based on research and evidence to bodies like the Intergovernmental Panel on Climate Change and United Nations Framework Convention on Climate Change.”

Kuwait is already at the tail end of the global temperature range. The temperature extremes seen here are unlike anywhere else in the world. It was the hottest place on earth in July 2021; Kuwaiti city Rabat-Al-Jahara recorded a high of 53.5 C.

The environment has deteriorated in the past decade itself and Kuwaitis have seen enough to start studying the negative health consequences of environmental change with urgency. In September 2021, Alahmad received a grant from KFAS to study the current and future impact of extreme temperature and climate on mortality in Kuwait and globally. These studies are expected to be published by the end of this year.

Science and Research Can Provide Answers

The environment is a key integral part of health and society. And there is no magic stick to fix the impact of environmental exposures or rising global temperatures in the short term or the long term. “Environment discussions and climate change need to be part of public discourse but if we do not have the data to back up the claims, it becomes really hard to make people buy-in,” Alahmad said.

But if there is a willingness to change, science can provide the data needed to bring about the change for the decision makers. And Alahmad is the right person to spearhead this attempt due to his passion for research, inquisitive mind, research ethics and the fresh perspective he brings even to past data and research.

By Shweta

PHOTO: KENT DAYTON

Sulayman Al-Qudsi

Predicting the Post-COVID Future

Economist Sulayman Al-Qudsi uses economic modeling to help policymakers and everyday Kuwaitis plan for the future.

PHOTO: BANDELE ZUBERI

Sulayman Al-Qudsi is in the business of predicting the future. The long-term Kuwait resident earned his doctorate in economics from the University of California, Davis in 1979. He made a career consulting for organizations like the World Bank, the Asian Development Bank, and the Organization of Arab Petroleum Exporting Countries and he now works as a principal research specialist at the Kuwait Institute for Scientific Research (KISR) in its Techno-Economic Division.

Al-Qudsi has always been interested in studying how global changes affect economies and societies. One of his most recent projects explored the effects of two of the most significant changes in his lifetime: the COVID-19 pandemic and a collapse in oil prices, which struck Kuwait and the globe in the first quarter of 2020. With support from the Kuwait Foundation for the Advancement of Sciences (KFAS), Al-Qudsi led a team that modeled the effects of this "double whammy" on Kuwait. Their predictions, first published in April 2021, can help policymakers and everyday Kuwaitis plan for the post-COVID future.

"We don't have a crystal ball," joked Al-Qudsi, when asked how his team achieved their results. Instead, Al-Qudsi and his research team relied on existing data, new field surveys, and economic modeling methods to make predictions and offer recommendations for a path forward following these shocks.

A Multi-pronged Approach

The idea for the project came to Al-Qudsi about two years ago, just as COVID-19 was declared a pandemic in March 2020. Al-Qudsi's research team is always "on the lookout" for shifts in global, regional, and Kuwaiti markets. Decades of experience have made them perceptive observers. "When we sense that something is in the offing, we keep monitoring, and we start to collect data and information about it," he said.

This proactive approach put Al-Qudsi and his colleagues at the cutting edge as COVID-19 swept the globe. As governments shuttered businesses and imposed travel restrictions, the worldwide demand for oil dropped, leading to an unprecedented collapse in oil prices in April 2020. During this period, Al-Qudsi and his colleagues consulted data from the United States, Canada, Latin America, Europe, Asia, and the Middle East to understand how these changes affected regions across the globe and estimate how the changes would affect Kuwait.

However, the available publications did not offer enough information to produce accurate economic models for Kuwait. "When the pandemic hit, there was a real scarcity of data," said Al-Qudsi.

To develop more accurate models for Kuwait, Al-Qudsi and his team proposed a project that would combine their preliminary research with new survey data. Our objective was to get a good representation and responses from the field," he said. The team received a letter of support from Khaled Mahdi of Kuwait's Supreme Council for Planning and Development and funding from KFAS. With this support, they designed and conducted three field surveys to supplement their initial research.

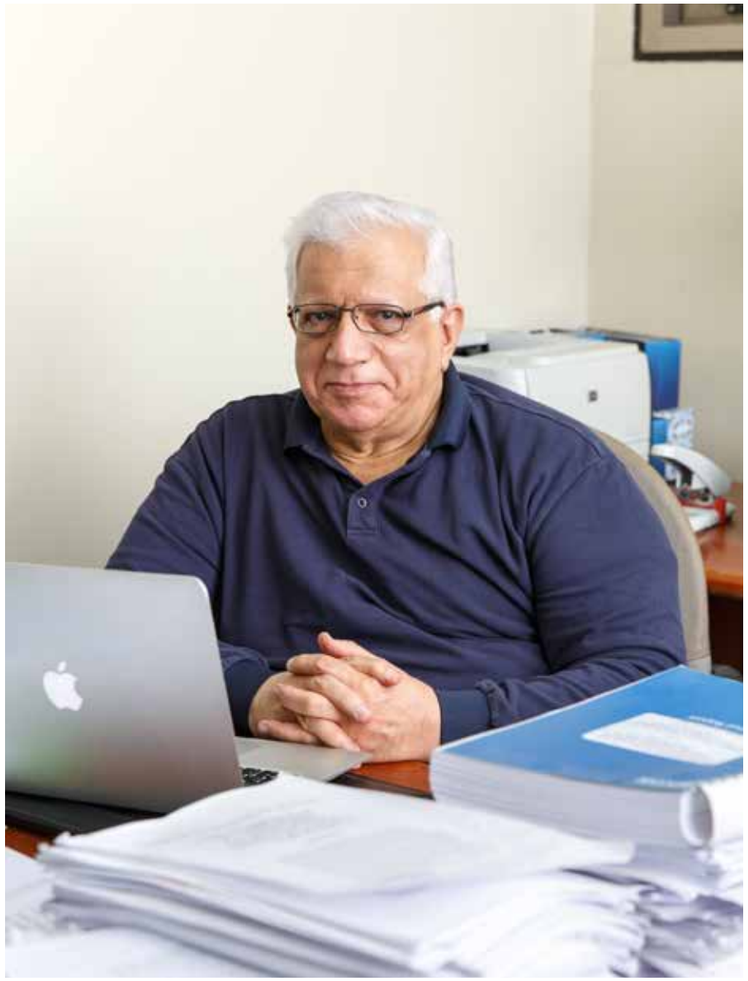
The three surveys were distributed to workers, households, and business leaders across Kuwait, and they provided the research team with exactly what they needed to execute their project. "The data was fresh and illuminating," Al-Qudsi said. But it painted a dire picture.

Surveyed business leaders reported that they had, on average, lost 30 to 50 percent of their sales during the pandemic. The data showed that small- and medium-sized enterprises were hit hardest, and many were forced to close. Data collected from Kuwaiti and non-Kuwaiti households in the nation showed that family incomes had decreased, as many family members lost jobs or experienced salary reductions during the early months of the pandemic.

With the data from surveyed workers, Al-Qudsi's team extrapolated that about a quarter of a million foreign workers left Kuwait as they lost their jobs or chose to go back home to be with family amid job uncertainty. Al-Qudsi said that data from the Kuwaiti government later confirmed this estimate.

"The commonality is that the pandemic was savage," said Al-Qudsi. "It was really harsh on the health sector, on people, on workers, as well as students. Companies were hit hard."

Finally, Al-Qudsi's team used econometric and Computable General Equilibrium (CGE) modeling to understand changes and develop predictions. Using CGE models was the perfect approach for the project because



the models combine economic theory with real data to measure the impacts of shocks on the economy.

Charting a Path Forward

The team published its first comprehensive report on its findings in April 2021, and it has since published other papers using the same results. These published studies make the struggles of everyday Kuwaitis visible to policymakers in Kuwait and the broader region. They also guide policymakers in charting a path toward recovery following the initial shock of the pandemic and the 2020 collapse in oil prices.

The research also holds insights for the average Kuwaiti about the future of work, education, commerce, and human connection. One of the study's interesting findings that can help Kuwaitis plan for the future is "tech-celeration," a term used to describe how fast things change due to technological advancements.

Al-Qudsi's team found that technology began to penetrate and reshape new sectors during the pandemic in Kuwait and abroad. The changes have been good in some ways, like allowing students to continue learning online when schools were closed thanks to new education technologies. But tech-celeration has also created unemployment for a segment of workers who are not tech-savvy or whose companies were unprepared to shift to tech-centric work environments. This data suggests that workers and companies alike need to prepare for a more tech-oriented online world.

"When we address the policymakers as well as the public at large, we are telling them that you really need to monitor what's happening," said Al-Qudsi. Thanks to his research, monitoring the effects of global economic shifts and planning for the future has never been easier.

By Marianne Dhenin

Sarah Al Kandari

The Hidden Face of the Pandemic: The Psychological Impact of COVID-19 on Healthcare Workers in Kuwait

In early 2020, the World Health Organization (WHO) classified the spread of COVID-19 as a global pandemic and declared a state of emergency. While many of us had to adhere to lockdown measures and switched to studying and working from home, healthcare workers were required to continue working in full capacity to care for infected patients. The prevalent uncertainty and disruption caused by the pandemic proved to significantly impact our collective psychological health and, more acutely, that of healthcare workers who are still on emergency mode due to the variants that continue to spread.

At the beginning of the pandemic, Sarah Al Kandari, research assistant and chairperson of the Animal Care and Ethics Committee at Dasman Diabetes Institute, was part of a group of frontline volunteers who were called to assist the medical staff performing PCR tests for people arriving on evacuation planes. Her background in genetics meant that she was familiar with the PCR as a research tool now used to diagnose COVID-19.

When Al Kandari began working in April 2020, it was two months into the pandemic and her first time working as a healthcare worker in a clinical lab setting. She described the experience as brutal; they worked long shifts that lasted until three or four in the morning – sometimes longer depending on the workload they were required to complete.

PHOTO: BANDELE ZUBERI

"Even though I was there in a volunteer capacity and I could leave when I finished the six-week period, I was already experiencing burnout," Al Kandari said. "It really made me think of the healthcare workers who were doing this with no end in sight."

Informed by her background in healthcare systems and in collaboration with doctors from different fields, Al Kandari started to investigate the psychological impact of the COVID-19 pandemic on healthcare workers in Kuwait.

With the assistance of psychiatrist Mohammad Al Suwaidan, Al Kandari and collaborators utilized validated questionnaires to measure things like depression, anxiety, and wellbeing among healthcare workers. By utilizing the WHO-5 Well-Being survey, the Patient Health Questionnaire-9 (PHQ-9) and the Generalized Anxiety Disorder survey (GAD-7), the team was able to measure the mental health of 378 healthcare workers during the first two weeks of July 2020.

"We used something called the snowball gathering technique, which is when we send the survey to one person and they send it to their network," she said. "We had a few medical doctors in different fields helping us with data collection like Dr. Maha Amber and Dr. Fatima Al Hajji from Farwaniya Hospital, as well as Dr. Essam Al Amad from Adan Hospital."

The study shows that there are high levels of anxiety and depression among healthcare workers due to stressful working conditions. On the one hand, 77 percent reported moderate levels of anxiety and 20 percent reported symptoms of severe anxiety; on the other hand, 83 percent reported some level of depression, while nine percent reported severe depression. Sadly, these results were not surprising to the team since there's a general rise in levels of depression and anxiety among healthcare workers on a global scale.

"We're all facing the same thing; fear of a life-threatening disease, loss of loved ones, social isolation due to lockdown restrictions, education disruption, unemployment and financial instability," Al Kandari said. "Imagine having a healthcare body working as a frontline defense against the pandemic for two years, with no time off, and they're also facing what we're facing."

As the pandemic enters its third year, this elongated pressure on healthcare workers can have devastating consequences if not properly addressed. Having social support proved to lessen the mental strain experienced by healthcare providers during the pandemic. According to the findings of the research project, married participants reported less frequency and severity of symptoms of both anxiety and depression compared to unmarried participants. For example, unmarried healthcare workers are 12.4 percent more likely to experience severe depression compared to married healthcare workers.

"We found that the stress responses of poor nutrition, self-harm, and suicide ideation were more frequent in unmarried healthcare workers, which brings us to the whole aspect of how social support, in this case exemplified in partnership, can have a great impact on the workers ability to cope with the day-to-day stress," she said. Finding ways to establish a wider supportive social network within this high-stress setting can positively impact the workers' mental health in these challenging times, "Evidence-based supportive measures are imperative in assisting healthcare workers in maintaining their mental health."

Burnout among healthcare workers not only negatively affects the workers themselves, but also the patients and the healthcare system as a whole. Medical institutions and healthcare organizations around the world are urging governments to implement evidence-based supportive measures specifically targeting the mental health of their healthcare workforce, otherwise they run the risk of straining their healthcare system and pushing healthcare workers out of the profession.

According to a report by the Ontario COVID-19 Science Advisory Table, financial compensation, adequate scheduling and shift length as well as support networks are some of the ways in which mental and physical exhaustion among the medical staff can be mitigated. More locally conducted research can help implement policies that target the particular needs of the healthcare workforce in Kuwait.

By Muneera Al Yahya