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empowering young physicians to work together towards a healthier world through advocacy, education, and international collaboration

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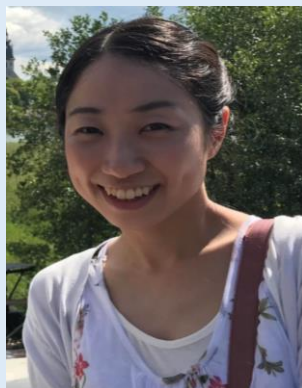
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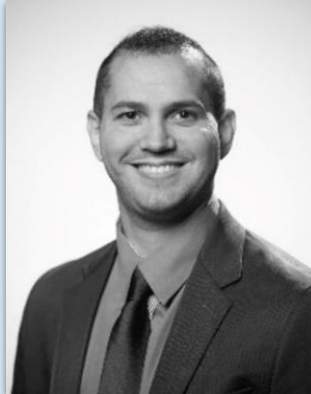


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Words from the Management Team

Dear colleagues from around the world,

It is our pleasure to introduce this COVID-19 Special Edition of the *Junior Doctors Network (JDN) Newsletter*. We hope that this resource allows junior doctors from all around the world to share thoughts and experiences during these challenging times.

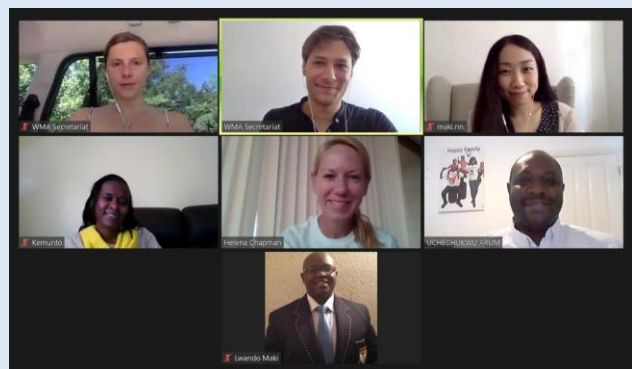
This decade has started with what is now being called a *generation-defining event*, and healthcare workers all around the world are dedicated to serving their communities. As the JDN, we are concerned about the well-being of all junior doctors, especially their capacity to access personal protective equipment, their risk of experiencing violence, the psychosocial stress related to extended work schedules, and the increased risk of exposure to the disease.

As the JDN Management Team, we have laboured hard to ensure the continuity of activities for our members. In April 2020, we coordinated two virtual conferences on topics related to the coronavirus disease 2019 (COVID-19) pandemic, as the World Medical Assembly (WMA) Council session in Porto was canceled. We transformed the pre-World Health Assembly (WHA) into a virtual post-WHA and adapted the agenda to accommodate participation across an array of time zones. Moving forward, we plan to launch a new COVID-19 Working Group for JDN members. Notably, we are excited to welcome new JDN members who can join our upcoming meeting and activities.

We hope that this *JDN Newsletter* will allow junior doctors to share personal stories of clinical and community contributions during the COVID-19 response efforts. From these unexpected challenges, we know that junior doctors will emerge stronger and more united and look optimistically to the future.

Sincerely,

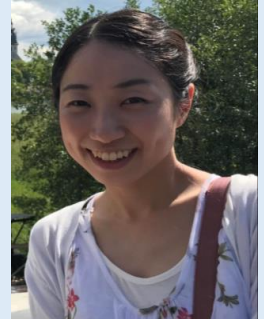
JDN Management Team



Credit: Dr Yassen Tcholakov.

Words from the Communications Director

[Maki Okamoto](#), MD
 Communications Director (2019–2020)
 Junior Doctors Network
 World Medical Association



Dear colleagues,

It is my pleasure to welcome you to the COVID-19 Special Edition of the *Junior Doctors Network (JDN) Newsletter*.

Since the beginning of this year, the world has changed in numerous ways – how people interact, spend time, and work. As junior doctors, our contributions to the coronavirus disease 2019 (COVID-19) response efforts are significant and recognized across the globe. We must develop collaborations that allow shared learning and foster professional networks across nations.

Supported by the World Medical Association (WMA), the JDN provides this international platform, where JDN members can share their passion and enthusiasm to enhance medical practices and support global health initiatives. This JDN network can expand the scope of activities as we manage the direct and indirect impacts of the COVID-19 pandemic.

To learn more information about JDN activities and updates, please visit the new JDN media accounts (**Figure 1**).

Media	Resource
Website	https://www.wma.net/junior-doctors/
Mailing List	https://goo.gl/forms/jCP774K1fldLloWj1
Twitter	@WmaJdn
Facebook (Members)	WMA-JDN
Facebook (Public)	WMA JDN
Instagram	wma_idn

Figure 1. List of JDN media resources.

Thanks to our wonderful JDN Publications Team, led by Dr Helena Chapman, for preparing this outstanding COVID-19 Special Edition of the *JDN Newsletter*. We hope that you enjoy the articles – and despite social distancing – feel that your colleagues are close and support your dedicated efforts on the frontline!

Take care and stay safe,
 Maki

Words from the Publications Director

[Helena Chapman](#), MD MPH PhD
Publications Director (2019–2020)
Junior Doctors Network
World Medical Association



Dear JDN colleagues,

On behalf of the Publications Team (2019-2020) of the Junior Doctors Network (JDN), we are excited to share the COVID-19 Special Edition of the *JDN Newsletter* with junior doctors across the world.

Today, more than ever, we are united in health and community as the coronavirus disease 2019 (COVID-19) pandemic affects all nations. As junior doctors, we have prepared for endemic and emergency scenarios and must contribute our expertise – clinical, community, education, laboratory, policy, and research – in leading steps to scientific discovery.

This COVID-19 Special Edition of the *JDN Newsletter* includes articles from junior doctors from Australia, Brazil, Canada, Dominican Republic, Ecuador, Germany, India, Japan, Kenya, Myanmar, Netherlands, Nigeria, Panama, Philippines, Republic of Korea, Spain, Sweden, Taiwan, United Kingdom, and the United States. These personal accounts contribute essential perspectives to the significant role of junior doctor across their clinical and community environments.

The *JDN Newsletter* offers an international platform for junior doctors across the globe to share their activities and stress their key role in health care service delivery. Their national and international leadership can strengthen communication between World Medical Association (WMA) and JDN members. By sharing experiences across borders, junior doctors can form collaborations that aim to expand and minimize health disparities.

We acknowledge the enthusiasm and leadership of all editors of the JDN Publications Team 2019-2020 as we finalized this COVID-19 Special Edition. We appreciate the continued support of the JDN Management Team and WMA leadership as we disseminate this key junior doctors' resource. We encourage you to read these personal accounts, become inspired by their dedicated efforts, and reflect on your contributions to the global pandemic!

Together in health,
Helena

Reflections on the COVID-19 Pandemic from a Kenyan Junior Doctor

[Lyndah Kemunto](#), MBChB
Membership Director (2019–2020)
Junior Doctors Network
World Medical Association



The Republic of Kenya reported the first confirmed case of coronavirus disease 2019 (COVID-19) on Friday, March 13, 2020. Since this date, the numbers have steadily increased, and as of July 1, 2020, Kenya had reported 6,673 confirmed cases, 2,089 recovered cases, and 149 fatalities (**Figure 1**) (1).

Two days after the first confirmed COVID-19 case, the Kenyan president addressed the nation and announced a raft of restrictive measures. These measures included travel suspension from countries with reported COVID-19 cases, 14-day self-quarantine for all travelers returning home, closure of all learning institutions, and bans on large gatherings such as church services, funeral, and political rallies.

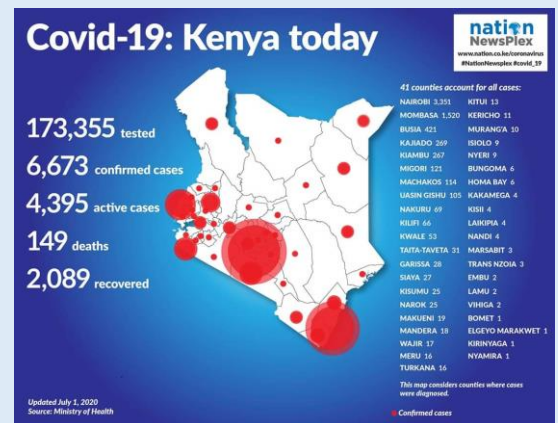


Figure 1. COVID-19 statistics in the Republic of Kenya, updated July 1, 2020. Credit: Ministry of Health (Kenya) and Daily Nation.

As COVID-19 cases transitioned from imported cases to local transmission, more restrictive measures were enforced.

These measures included dusk to dawn curfews, closure of entertainment places (e.g. pubs), closure of markets, and cessation of movement to and from areas with high COVID-19 confirmed cases such as Nairobi and Mombasa counties. Beyond these restrictive measures, the government introduced social distancing guidelines and mandatory use of face masks for everyone in public spaces. People were encouraged to work from home, where possible.

From the onset, it was clear that the already deteriorating economy was set on a downward spiral. Many employees in the informal and formal sectors were immediately rendered jobless or suffered pay cuts. In particular, the hospitality industry was significantly affected. In an attempt to cushion Kenyans from the harsh economic times, the government of Kenya implemented tax reliefs and fee exceptions to individuals and businesses. In addition, some vulnerable populations, such as the elderly and homeless, received some financial aid. This national financial assistance, though, had minimal impact on the population.

The COVID-19 pandemic may have presented a *silver lining*, as numerous institutions embraced locally manufactured products including personal protective equipment (PPE), medical technological innovations, and other products. With the need to adapt to this unprecedented situation, institutions were forced to adopt digital solutions. The expectation is that the *new normal* will persist beyond the pandemic for more efficient and effective transactions.

It was about time to “Build Kenya and Buy Kenya.”

Despite its limitations, the Kenyan health care system has managed the COVID-19 pandemic reasonably well. The Ministry of Health and devolved governments set aside COVID-19 treatment centres, trained health care workers, provided guidelines for COVID-19 prevention and management, and constantly kept the public informed and updated (Photo 1).



Photo 1. Health care workers in Kisii County participated in hand hygiene technique demonstrations as part of the COVID-19 training. Credit: Kisii County Government.

The COVID-19 crisis similarly accentuated challenges such as stigma, inadequate PPE and other medical equipment, poor quality PPE, and misappropriation of COVID-19 resources. Furthermore, patients with other illnesses were disadvantaged, because at the start of the pandemic, other health issues were overlooked. The Ministry of Health cancelled all chronic illnesses' clinics and elective surgeries, in order to divert limited human resources for health towards COVID-19 preparedness. This undeniably resulted in adverse outcomes, where cancer patients who could not receive timely care progressed to more advanced disease or died.

Overall, there is a general perception that the government has handled the crisis better than expected albeit challenges and high disease burden. The restrictive measures certainly helped in curbing disease spread, so much so, that some Kenyans have indicated doubt about the presence of COVID-19 in Kenya. Fortunately, the majority of reported cases were asymptomatic, and thus recovered with minimal intervention and home-based care. We cannot envisage the same, however, if COVID-19 incidence continues to exponentially rise and a pharmacological cure or vaccine is not found.

There has never been a better time than now, to strengthen our health system, using a societal approach to mitigate risk of COVID-19 transmission.

The COVID-19 pandemic has demonstrated that nothing happens without good health. As health practitioners and health advocates, we support and call upon all stakeholders – including the political class – to offer leadership now and beyond the pandemic. After all, health is a non-negotiable right.

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Health Care Workers as Essential Frontline Agents during the COVID-19 Pandemic

Judith Jolayemi, BDS
Lagos University Teaching Hospital
Lagos, Nigeria

Damilola Ayowole, MB.ChB
Federal Medical Centre
Owo, Nigeria

Ganiyu Olanipekun Ahmed, MB.BS
Federal Medical Centre
Owo, Nigeria

[Oladimeji Adebayo](#), MB.BS
University College Hospital
Ibadan, Nigeria



While the global burden of the coronavirus disease 2019 (COVID-19) pandemic is burgeoning, the exact number of COVID-19-affected health care workers (HCWs) remains unknown. Similarly, specific data highlighting the burden among junior doctors or early career doctors (ECDs) are limited. Hence, it is necessary to explore the effects of this pandemic on HCWs, especially among ECDs.

COVID-19 and HCWs

Ongoing COVID-19 surveillance of infections among HCWs examines the burden in high- and middle-income countries. In the United States, between February and early April 2020, there were more than 9,000 new COVID-19 cases and 27 deaths among HCWs (1). In Italy, by mid-March 2020, 2,026 infected HCWs constituted 10% of those diagnosed with COVID-19 (1,2). In China, by March 2020, there were more than 3,300 new COVID-19 cases and 22 deaths among HCWs (3). In Nigeria, by early May 2020, there were 113 new COVID-19 cases among HCWs, representing 6% of infections in the total infected population (4). Researchers reported a seven-fold increase in COVID-19 cases among HCWs during the past month, which has been attributed to the surge of infected patients at health care institutions in Nigeria.

In the face of the COVID-19 pandemic, countries have observed that personal protective equipment – such as surgical facemasks, N95 masks, other air-purifying respirators, gloves, goggles, and face shields – has had insufficient supplies to ensure HCWs' occupational protection (5). At a COVID-19 briefing in April 2020, the World Health Organisation (WHO) estimated that in order to meet the global needs of HCWs' personal protective equipment, a total of over 89 million masks, 30 million gowns, 76 million gloves, 1.59 million goggles, and 2.9 million litres of hand sanitisers must be made available monthly (5). This gross shortage is further worsened by the surge in the economic cost of personal protective equipment.

The prevalence of COVID-19 is expected to increase globally as more countries experience community widespread transmission and surges of infected patients across all health care systems.

This pandemic has forced global health care systems to operate higher than the maximum capacity. This is in the milieu of inadequate resources, limited access to personal protective equipment, continuous risk of exposure to patients and potentially infectious co-workers, and increased occupational stress among frontline HCWs (1,6).

COVID-19 and ECDs

Although the differential effect on the psychosocial health status of ECDs is poorly understood, it is expected that there would be a differential impact of the pandemic and constraints on ECDs. Some considerations include their early career stage, strains related to disrupted clinical training, differential impact of psychosocial stress, and limited material and non-material resources and support systems, when compared to senior colleagues. The protection of Nigerian HCWs, particularly ECDs, has been prioritized by the Nigerian Association of Resident Doctors (NARD), with regular campaigns that advocate for the health and safety of clinicians working on the frontline.

Conclusion

To address this global concern, health systems can expand research applications that explore occupational risks associated with the health and well-being of HCWs, especially ECDs. Global health leaders should ensure the increased cognisance of these challenges and enhance efforts to prioritize HCWs' safety. Junior doctors and ECDs globally should be prepared to advocate for increased attention to HCWs' physical and psychosocial health and mitigate workplace risk of COVID-19 transmission.

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Is This What Medicine is All About?

[Dabota Yvonne Buowari](#), MD

Department of Accident and Emergency
University of Port Harcourt Teaching Hospital
Nigeria



Is this what medicine is all about?
Always helping humanity
Placing priority on the health needs of others
It has been joy
Being a doctor
Relieving the aches of my patients
Seeing my patients get well
I am always glad
When the groan on a patient's face
Suddenly turns to a smile

Is this what medicine is all about?
The tide changed in a twinkle of an eye
The joy of waking up to attend to patients
Has suddenly tuned to fear
What is this fear?
Fear of contracting the deadly COVID-19 virus

Is this what medicine is all about?
Studying pandemics in the preventive and social medicine class
Least I never knew
That I shall experience it in my lifetime

As an anesthesiologist
I was never scared
Of contacting a respiratory infection
Even the *Mycobacterium tuberculosis* bacillus
That is common in the tropics
Looking down the larynx
Where respiratory infections sit
Gently inserting the endotracheal tube
Never scared of taking any infection home

Corona, Corona
Where did you come from?
March 2020, you were declared a pandemic
I thought it was a joke
It has come to reality
Coronavirus is in Nigeria
COVID-19 is here in Port Harcourt

Is this what medicine is all about?
COVID-19 pandemic
All universal precautions
Must be observed
I must wear a face shield
Face mask must be worn
Throughout the shift
I must wear an apron
The shoe cover is not left out
Wearing the personal protective equipment
Fully kitted to fight the coronavirus
And the call of nature comes knocking

Is this what medicine is all about?
Oh Corona, Oh COVID-19, Oh pandemic
See how you have changed the world
The attitude of medical practitioners
Doctors no longer rush
To save a patient
Presenting with cough
A breathless patient
Raises red flags
And becomes a snare to health workers
Trusting in God
COVID-19
We shall beat you
COVID-19
You must be contained

Acknowledgments: The author acknowledges Prof Okolo Oko of the Department of English at the University of Lagos (Lagos, Nigeria) for his editorial review of this poem.

The Emergency Physician, the COVID-19 Hero

[Dabota Yvonne Buowari](#), MD

Department of Accident and Emergency
University of Port Harcourt Teaching Hospital
Nigeria



Oh emergency physician
You are the frontline physician

First attending to the COVID-19 patient
Before alerting the COVID-19 response team
Managing COVID-19

Oh emergency physician
You have the greatest risk
Of taking this unwanted free gift home

Oh emergency physician
You are a hero
In the fight against COVID-19

Acknowledgments: The author acknowledges Prof Okolo Oko of the Department of English at the University of Lagos (Lagos, Nigeria) for his editorial review of this poem.

The Role of Youth Leadership in Online Education during the COVID-19 Response

[Pablo Estrella Porter](#), MD
General physician, Quito, Ecuador
Partnerships Manager for Latin America at AMBOSS
Berlin, Germany



During the past months of the coronavirus disease 2019 (COVID-19) pandemic, youth leadership of healthcare practitioners and students has taken a very important role in the international setting. Youth associations and leaders have used their networks to educate, coordinate online activities, and even mobilize students as part of the COVID-19 response (1).

As a recent medical graduate from Ecuador, my passion has always been focused on youth leadership and to create collaborative networks with students from different backgrounds. During my medical career, I participated as a student representative at the local, national, and regional levels. Moreover, in my last year of medical school, I served as the global director of medical education of the International Federation of Medical Students' Associations (IFMSA).

Promoting and participating in youth leadership initiatives are key elements that support global healthcare systems.

As healthcare professionals, our role in this COVID-19 pandemic is not limited to hospitals, emergency departments or telemedicine consultations. That is why, in recent months, I have centered my efforts on promoting COVID-19-related technical knowledge and soft skills (e.g. career and communication skills) to medical students.

In terms of COVID-19 education, I have supported various online initiatives locally by Ecuadorian student associations and internationally by Russian medical students (**Figure 1**). These COVID-19 webinars were conducted at the beginning of the pandemic, when information was still limited and a general overview of the novel pathogen – severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) – was needed for healthcare students.

Even though we were saturated with new information on COVID-19 transmission, I continued to collaborate with student leaders in other related areas. Humanity has demonstrated that even with forced social distancing, we can stay closer and more connected than ever. For example, I participated on an international virtual panel and shared my reflections about how Latin American countries responded to the pandemic.

Webinars have become a technological tool for sharing knowledge and connecting experts and participants from different parts of the world.

On a professional level, I am currently working for an international medical education company. In my role, I have tried to redirect my actions into social accountability opportunities for medical students and international medical graduates. I have worked with different medical education experts to promote online lectures, webinars, and workshops on technical knowledge and soft skills. Some topics have included techniques to improve focus and productivity while studying at home, manage standardized exams, and utilize e-learning tools for semester plans. Furthermore, I have been in contact with leaders from different healthcare student associations to provide access to opportunities offered by my company, including educational scholarships, open access to COVID-19 materials, and collaborations to promote instructive webinars (**Figure 2**).



Figure 1. International webinar on COVID-19, “World Health Organization to Support Healthy Public Policy”.
 Credit: Observatory of International Relations and National Union of Medical Students (HCCM, Russia).



Figure 2. Webinar for Latin America, “How to Study more Effectively at Home?”
 Credit: AMBOSS GmbH.

Finally, healthcare professionals together with youth associations have a key role in empowering future generations of leaders.

By using new technologies to unite voices and knowledge, we can strengthen our international response for this pandemic and ensure that healthcare systems are available for everyone.

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One Health Research, Education, and Mentorship during the COVID-19 Pandemic

[Helena Chapman](#), MD MPH PhD
Publications Director (2019–2020)
Junior Doctors Network
World Medical Association



“Most of the fundamental ideas of science are essentially simple, and may, as a rule, be expressed in a language comprehensible to everyone”
– Albert Einstein

The coronavirus disease 2019 (COVID-19) pandemic has highlighted the key contribution of junior doctors across global health systems. As they apply their expertise in an array of roles – such as clinical care, community health, education, policy, and research – junior doctors are uniquely trained to share innovative analyses, offer medical and public health expertise, and foster professional networks.

Emerging global health risks – ranging from air pollution to zoonotic disease spillover – require transdisciplinary collaborations to develop novel approaches, implement appropriate interventions, and minimize risk to affected communities. Effective mitigation of this global burden hinges on the application of the One Health concept, which promotes a holistic view of health, intrinsically connecting human, animal, and environmental health (1). As junior doctors pursue their post-graduate training, they should evaluate how the direct and indirect effects of global health risks affect population health and how they can offer their leadership to advance the global dialogue. Hence, via virtual platforms, their synergistic efforts have the potential to advance scientific knowledge through research applications, educational outreach activities, and mentorship opportunities.

The era of physical distancing, as a result of the COVID-19 pandemic and increasing turnover of medical and public health research, further justifies the need for making active remote collaborations among junior doctors a top priority.

Strengthening One Health Research Applications

“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science” (Albert Einstein). Junior doctors can lead efforts that strengthen One Health research applications, noting innovative data and technology sources at the forefront of scientific advancement. One such resource includes Earth-observing satellite data, which offer real-time data that describe the natural and anthropogenic changes of the aquatic, atmospheric, and terrestrial ecosystems over time.

During the COVID-19 pandemic, junior doctors have participated in global forums that offer collaborative learning across scientific disciplines and enhance professional networking.

For example, the [Group on Earth Observations \(GEO\) Health Community of Practice](http://www.geohealthcop.org) serves as a global network of professionals who use Earth-observing satellite data to enhance health decision-making at local, national, and international levels. With an emphasis on environmental health applications, weekly community telecons were coordinated to leverage global expertise, share data and resources, and discuss challenges experienced across geographic regions. To date, junior doctors have contributed their medical and public health expertise to community discussions on the latest clinical research on the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and connections to potential research that examine air and water quality, environmental determinants and seasonality, and One Health and zoonotic diseases (**Figure 1**).



Figure 1. GEO Health Community of Practice.
Credit: Dr Helena Chapman.

Contributing Expertise to Academic Seminars for the Global Community

“Education is the most powerful weapon which you can use to change the world” (Nelson Mandela). In this virtual environment, junior doctors may be invited to participate on national and international conference panels, supported by academic institutions and professional medical societies. With this novel coronavirus, there is a significant need to rapidly learn more about the clinical aspects of SARS-CoV-2 transmission, immune response, and clinical management. At the same time, the secondary impacts due to the lockdown measures – such as air quality monitoring due to reduced combustion processes, economic limitations related to unemployment, and mental health challenges due to social isolation – offer an insightful dialogue that can examine knowledge gaps, critical analyses of current policies and programs, and recommendations for future actions. For this reason, junior doctors have provided their expertise in multiple webinar presentations, which support continued medical education for health professionals as well as dissemination of accurate scientific information to the wider community (**Photos 1-2**).



Photos 1-2. Dr Helena Chapman presented the webinar presentation, “Using Earth Observations to Strengthen One Health Collaborations”, to 60 medical students from the Universidad Central del Este School of Medicine (San Pedro de Macorís, Dominican Republic), supported by Dr Goldny Mills, June 2020.

Photo credits: Dr Goldny Mills.

Providing Essential Mentorship to Medical Students

“One of the greatest values of mentors is the ability to see ahead what others cannot see and to help them navigate a course to their destination” (John C. Maxwell). Since junior doctors are medical graduates who are completing their post-graduate training in diverse scientific specialties, they understand the hardships faced with lengthy training, exhaustive clinical and on-call schedules, comprehensive examinations, and work-life balance. Their

foresight can offer significant insight to medical students, especially during the global lockdown measures and their virtual academic lessons and clinical rotations. By connecting with national medical organizations, they can organize academic webinars, lectures, and personalized practicum sessions that promote student learning in this virtual environment. To date, their contributions have guided and encouraged medical students to continue their leadership through virtual community activities and advance their creative and technical writing through the preparation of brief perspectives or narrative papers (2) (Figure 2).



Figure 2. Flyer for the Publications Workshop of ODEM-Dominican Republic, June 2020. Credit: ODEM.

This current global health crisis has demonstrated that junior doctors are – and will continue to be – influential leaders in One Health research applications, educational outreach activities, and academic mentorship opportunities.

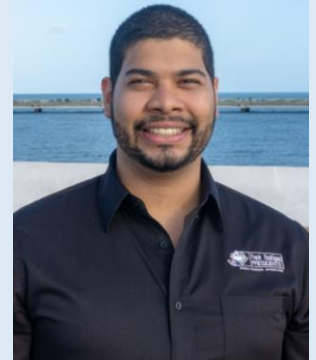
They have demonstrated their unique role to serve as indispensable global health leaders at the frontline of clinical and community settings. Since junior doctors are trained in the clinical and public health principles, basic research methods, and scientific writing, their contributions can encourage their colleagues to seek novel opportunities where they can advance their knowledge and skills. They are also strategically placed to offer a humanistic touch to families and community members, emphasizing adherence to recommendations that protect their health and well-being during the current pandemic. Moving forward, national health systems should examine how health authorities can strengthen the integration of junior doctors in the implementation of local and national initiatives to minimize community risk of endemic and epidemic health threats.

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Telemedicine and Artificial Intelligence: Redefining Medical Practice during the COVID-19 Pandemic

[Frank Rodríguez](#), MD
Temporal Consultant
Pan American Health Organization
Panama City, Panama



According to the World Health Organization (WHO), the current coronavirus disease 2019 (COVID-19) has caused more than 10 million confirmed cases and 510,000 deaths worldwide (1). This global pandemic has changed our daily lifestyles, including buying groceries, visiting family and friends, and using public transportation for work commutes. However, it has also stressed other complex sectors of society such as education, family finances and national economies, and healthcare system capacity, and hence exposing significant inequalities along the way.

In this context, mitigation strategies are essential to maintain our social systems. Global innovations have been implemented, and the health sector is no exception. Hospitals have reduced outpatient care services, reduced hospitalizations for conditions other than COVID-19, and reorganized supply distributions.

Notably, novel technology can replace personal contact during physical distancing measures, in order to avoid virus transmission and protect population health.

First, telemedicine is the delivery of health services remotely using communication technology platforms (2). Hospitals have implemented this technology worldwide, especially for triaging patients with respiratory symptoms (3). Through telemedicine, physicians can appropriately coordinate patient care based on their risks and previous contacts with infected patients. This strategy has helped patients with mild symptoms obtain the supportive care they need and reduce disease transmission to acutely ill patients in health facilities (4). Second, artificial intelligence (AI) in bots can provide virtual screenings and identify cases that, according to the WHO protocols, must obtain a COVID-19 diagnostic test.

Nations may face challenges when utilizing telemedicine or AI applications, such as the lack of federal investment and legislation, untrained health workforce, unequal access to internet, and hard-to-reach communities. For example, providing indigenous health services in marginalized areas of low- and middle-income countries can be challenging, but should be explored and prioritized across health systems. Proper investment and innovation to solve these challenges will remain in our toolbox even after the pandemic (**Photo 1**).



Photo 1. Through telemedicine, physicians can effectively coordinate patient care based on their risks and previous contact with COVID-19 patients. Credit: Pexels.

In Panama, both telemedicine and AI applications have been implemented by the Ministry of Health.

A new telephone line, managed by general physicians, is available for the population to receive remote healthcare for diverse services including COVID-19 care. Services have been relocated among hospitals and community health centers to prevent exposure of chronically ill patients to other suspected or confirmed cases. Through AI and new telephone lines, the general population can consult with healthcare professionals prior to leaving home. Based on their symptoms, they can be referred to certain healthcare facilities, learn general hygiene measures, receive psychological first aids, and obtain coordinated health services and medications for pre-existing mental health conditions.

Another AI strategy is Dr. R.O.S.A. – Respuesta Operacional de Salud Automática (Automatic Health Operational Response, in English) – a bot that uses Whatsapp® to virtually screen individuals for COVID-19. Based on established protocols, patients who require COVID-19 diagnostic testing will be connected to a physician and referred to the closest testing center (5). Patients who do not require further evaluation will be requested to stay home and take recommended precautions.

Technology can improve medical practice, especially during unprecedented times. Based on the current COVID-19 pandemic, we can advance our knowledge on the implementation of telemedicine and AI applications to medical practice, noting best practices and populations to prioritize population health.

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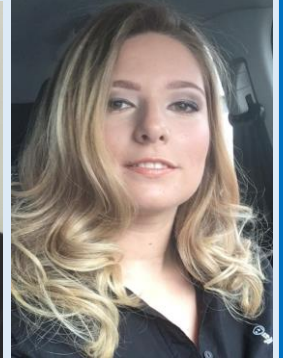
Obscurantism, Denialism, and COVID-19: A Brazilian Triple Challenge

[Andrey Oliveira da Cruz](#), MD

Family Medicine Resident
State Secretariat of Health of Santa Catarina,
Florianópolis, Brazil

[Michelle Medeiros](#), MD

Family Physician
Secretariat of Health of Florianópolis
Florianópolis, Brazil



Since the pandemic of the coronavirus disease 2019 (COVID-19) emerged, the virus has spread throughout 188 countries, causing more than 14 million cases and 600,000 deaths. With the rise in the number of cases of COVID-19 worldwide, countries defined their own strategies to manage the pandemic (1). Hampering efforts of scientists and frontline health professionals fighting the pandemic, special groups linked to anti-science thinking (2,3) had acquired an important space in discussions about this virus.

Recently, there has been a remarkable rise in the proliferation of misinformation, disinformation, and fake news, plaguing the scientific community and the public on a global scale.

Many topics were related to vaccine safety, the shape of the earth, and climate change. During the COVID-19 pandemic, however, the overabundance of information – some accurate and some myths – rendered it difficult to find trustworthy sources of information and reliable guidance. Subsequently, the World Health Organization (WHO) defined this situation as an *infodemic of planetary proportions* (4).

This situation becomes more complicated when authorities – official institutions and federal departments – fail to provide clear and reliable sources of information. The Merriam-Webster (2020) defines *obscurantism* as *a policy of withholding knowledge from the general public* (5). This action has more significance when implemented as a public policy. As such, authoritarian governments can exhibit disturbing denialism about COVID-19, depriving the general public of accurate information about the pandemic and actively opposing the prosecution of journalists and others who may raise legitimate factual concerns about COVID-19 (2).

In Brazil, this narrative is not unique. The ineffectual performance of the Brazilian federal government in managing the COVID-19 pandemic was noticeable by the statistics.

By July 18, 2020, Brazil reported around 2 million cases and at least 78,000 deaths due to COVID-19 (1).

With the scenario of high underreported rates, due to the extended national geography and limited resources, Brazil became the second country with the highest number of COVID-19 cases, behind the United States.

Despite the increasing rates of COVID-19 infection and deaths in the country, the federal government has expressed that scientists and scholars are pessimistic in their predictions, and that their preferences remains with politicians to describe the real societal impacts. As a result, new pandemic management measures have been taken. First, daily press conferences from the Ministry of Health have been suspended. Second, data disclosure of daily infection and death rates has been delayed for less coverage by journalists. Finally, official websites with pandemic data have been removed and modified to emphasize the number of infections, deaths, and *cured* individuals within the last 24 hours (3).

Notably, the Brazilian government fired two Ministers of Health in the middle of this pandemic and appointed a new Minister of Health without any expertise or training in medicine or public health. Leaders released official COVID-19 treatment protocols, based on minimal scientific evidence and not recognized by the main medical societies. Subsequently, the Brazilian government announced its desire to leave the WHO – the same organization that Brazil had a direct influence on its foundation proposal at the United Nations Conference on International Organization (San Francisco Conference) in 1945. Notwithstanding the indignation of several health professionals and epidemiologists at the new policies for covering up data, there is no national consensus that data censorship is harmful, accentuating the polarization of political ideals (5). In this chaotic scenario, it is the responsibility of the states and municipalities of the federation to choose their own measures to combat the COVID-19 pandemic, as defined in a decision by the Brazilian Supreme Court (3).

On the other hand, health professionals from all over Brazil are working effortlessly to contain the COVID-19 spread. However, they continue to struggle with inadequate working conditions, poor remuneration, absence of personal protective equipment, and stress related to the population demand for a vaccine. These challenges are shared across the world, but with COVID-19 cases increasing across Brazil, the situation symbolizes boarding a derailed train.

Although there are multiple approaches to curb COVID-19 transmission, obscurantism and negationism will most certainly hinder efforts to mitigate disease risk across global populations.

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The Political Role of the World Health Organization in Times of COVID-19

[Yassen Tcholakov](#), MD MScPH MIH
Interim Chair (2019-2020)
Junior Doctors Network
World Medical Association



At multiple moments in the coronavirus disease 2019 (COVID-19) pandemic, we have witnessed political influences being exerted over the World Health Organization (WHO). While many have been quick to critique these influences as being testimony to an erosion of WHO's independence, this article aims to emphasize the political role of the WHO as a necessary condition for its leadership in global health and decision-making capabilities.

Decision-making and Functions of the WHO

Founded in 1948, the WHO is the specialized agency of the United Nations responsible for global health. This multilateral organization, with 194 member states across six regions, coordinates annual governing body meetings to decide the priorities of the programme of work and provide programmatic and other activity updates (**Figure 1**).

Of these meetings, the World Health Assembly is the most significant, where thousands of global participants attend, including high-level representation from the Ministries of Health. Decisions there are taken by simple majority of the members present and voting (abstentions do not count) (e.g. rule 71 of the WHO rules of procedure), except certain procedural motions and *Decisions by the Health Assembly on Important Questions*, which are subject to a two-third majority (e.g. rule 70 of the WHO rules of procedure) (1).

- ☐ Provide leadership and engage in partnerships where joint action is needed
- ☐ Shape the research agenda and stimulate the dissemination of knowledge
- ☐ Set norms and standards and promote and monitor their implementation
- ☐ Articulate ethical and evidence-based policy options
- ☐ Provide technical support and build sustainable institutional capacity
- ☐ Monitor the health situation and assess health trends

Figure 1. Core functions of the WHO (2).

The organization accomplishes its goals through the coordinated efforts by the Secretariat, which is located at WHO Headquarters in Geneva, Switzerland, its six regional offices, and its 150 country offices.

WHO Financing

Financing is a challenge for the implementation of global health work which is subject to important resource constraints. Since its foundation, the WHO's funding has gradually evolved to rely more on *voluntary* contributions by members and funding by private actors (3). Thus, in order to accomplish the goals set out by its members, the WHO must try to appeal to those members in order to *earn* their voluntary contributions, and it must do the same to philanthropies and private sector interest. While this may be perceived as problematic, it is member states who have chosen over the years to freeze or to limit increases to their contributions (**Figure 2**).

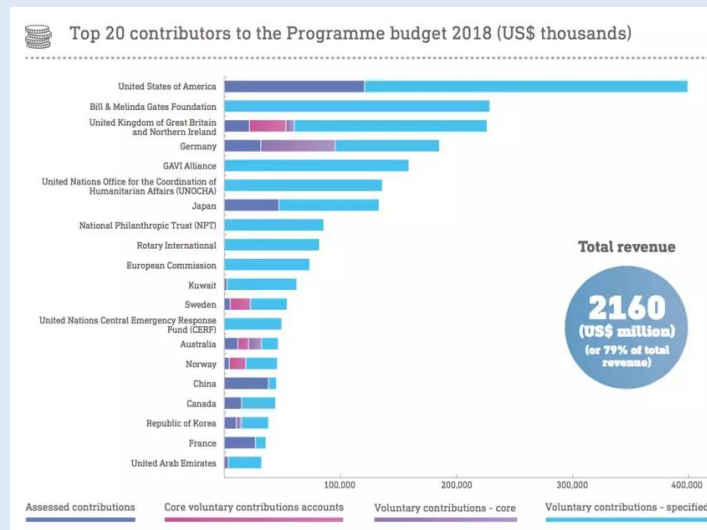


Figure 2. Top 20 contributors to the Programme Budget 2018 (4).

How it All Comes Together

Decisions at the WHO are made by 194 states, and each state holds one vote; however, the implementation is dictated by a paucity of actors who mobilize a significant portion of funds. The United States, the United Kingdom, and the Bill and Melinda Gates Foundation together represent more than one-third of the WHO's funding. Thus, for the WHO to be able to accomplish its mission, it must play the fine balancing act of courting its financiers, all while respecting the decisions by its governing bodies. This balance is hard to maintain, and countries have threatened to reduce their contributions to the WHO in an effort to exert pressure during certain negotiations.

Currently, the United States has threatened to withdraw from the WHO and attributed that decision to the management of the COVID-19 pandemic. This decision was made after years of ideological differences on the role of global intuitions as well as on specific topics such as climate change. Had the WHO not been the political actor that it is, we would now be in a significantly worse situation with respect to COVID-19. The organization, like all international institutions, is subject to political pressures by its members, yet those pressures are intrinsic to the nature of the organization, and devoid of them, its normative role would be meaningless. Nevertheless, the erosion of trust in multilateralism is dangerous and exposes everyone in the world to greater risk.

While the world felt a scare in 2014 with the Ebola epidemic, and while the whole world was expecting a novel flu pandemic, what happened in 2020 was predictable, yet unexpected, and the challenges highlighted our global interconnectedness. Disease transmission anywhere in the world is a hazard to all of us.

Now is the time to stand behind prior commitments of solidarity and further increase global aid in order to help low- and middle-income countries obtain the capacities necessary to fight off this disease.

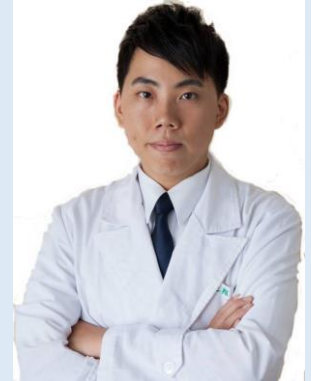
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Reflections on the COVID-19 Response: From a Taiwanese Junior Doctor

[Jen-Hsiang Roy Shen](#), MD

Attending Staff, Department of Ophthalmology
Wanfan Hospital
Taipei, Taiwan



Reflecting on the past, every Taiwanese citizen remembers the severe acute respiratory syndrome (SARS) outbreak in 2002-2003.

In Taiwan, this SARS outbreak highlighted the impact of healthcare-associated transmission on community spread and the importance of personal protective equipment to minimize occupational exposure (1). In response to this SARS outbreak, Taiwan's health authorities were dedicated to curb disease spread by leveraging medical expertise, coordinating capacity building programs, and strengthening public health surveillance including contact tracing (1). Through these rapid actions, the SARS outbreak was controlled, and lessons were learned to strengthen public health infrastructure.

Early Awareness and Response during the COVID-19 Pandemic

From late December 2019, the Taiwanese community, including representatives of the Centers of Disease Control, had reviewed leaked documents from the People's Republic of China and learned about a potential *unknown infectious disease from Wuhan*. The government of Taiwan immediately quarantined passengers from Wuhan, Hubei Province, and later applied this mandate to all provinces of China. Sanitization and social distancing measures were implemented, and mask exportation was banned due to low national supplies. Protective masks were required to be worn in all health facilities, and citizens were requested to steam their masks for reuse. Also, the Taiwan's Ministry of Health and Welfare prohibited international travels for all medical professionals. By late January 2020, the World Health Organization declared this coronavirus disease 2019 (COVID-19) a *Public Health Emergency of International Concern*.

Proactive Screening and Quarantine for all Incoming Visitors

In January and February 2020, all incoming visitors, who were in close contact with any confirmed COVID-19 case, were quarantined and tested if they had any presenting symptoms such as fever, malaise or headache. All incoming visitors without symptoms were quarantined in a specialized hotel or at home and forbidden to be in physical contact with family members or friends. All visitors received a protective mask, personal supplies, and a 14-day food allowance. Every day, government staff called each quarantined person to evaluate their health and identify any presenting symptoms.

Preventive Measures in Taiwan's Hospitals

Several preventive measures were implemented across Taiwan's hospitals to reduce nosocomial and community transmission. These included: single building entrance and exit; temperature screening by infrared scanner and forehead thermometer; use of 70% alcohol spray when entering and leaving the hospital; mandatory use of protective masks except when eating; social distancing when patients and hospital staff were eating; patients and hospital staff with fever to be self-quarantined and tested for COVID-19.

Airport Screening Measures

As part of the community, many Taiwanese doctors volunteered their time for airport testing shifts. This wood building was located behind the airport building, distant from the airport terminal (**Photos 1-2**). With sufficient supplies of personal protective equipment, doctors followed mandatory guidance to wear protective masks when in contact with suspected COVID-19 cases.



Photo 1. Author as volunteer at the airport testing center in Taipei, Taiwan.
Credit: Dr J-H Shen.

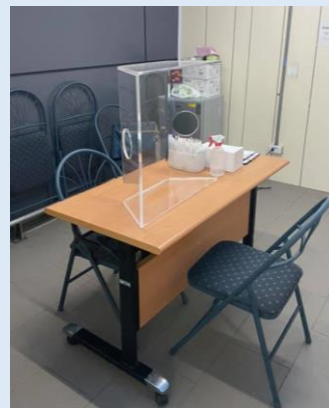


Photo 2. Airport testing center in Taipei, Taiwan. Credit: Dr J-H Shen.

Acknowledgments: I wish to thank all medical staff around the world for their dedicated efforts during this global health crisis. Together, we collaborate on the global COVID-19 response efforts to reduce community transmission and maintain population health.

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Challenges Faced by Junior Doctors in Myanmar during COVID-19 Response Efforts

[Wunna Tun](#), MBBS MSc MD
Fellow in Medical Education
Founder, Myanmar Medical Association, Young Doctor Society
Yangon, Myanmar



In December 2019, the World Health Organization (WHO) office in China identified and reported a cluster of pneumonia cases in Wuhan. The number of people diagnosed with the novel coronavirus began to rise exponentially in Wuhan, China and then around the world. This was followed by the declaration of the coronavirus disease 2019 (COVID-19) as a global pandemic by the WHO on March 11, 2020. Up to July 15, 2020, COVID-19 had affected 188 countries or regions with an estimated 13 million cases and 574,464 deaths, with varying mortality and morbidity rates in different countries (1). Since the COVID-19 pandemic was growing rapidly, several nations took immediate action to curb disease transmission. These measures included mandating stay-at-home orders, social distancing measures, preventing massive crowds, halting academic classes for schools and universities, limiting air travel, and raising community awareness about the virus.

Since junior doctors are often the first contact with COVID-19 patients in the hospital and clinic, their physical and psychosocial health are at risk.

Across nations, junior doctors have worked alongside fellow health professionals to diagnose and manage COVID-19 cases (2). Many worked overtime shifts detailed to primary care or emergency departments, serving as frontline health workers to address the increased demand of health care services related to COVID-19. This article will describe three specific challenges faced by junior doctors in Myanmar during the COVID-19 response efforts and offer potential solutions for clinical practice.

Like other countries during the COVID-19 pandemic, junior doctors in Myanmar have experienced a rapid shift into collective efforts that have certainly placed additional strain on their physical and psychosocial health and well-being. First, junior doctors have faced an insufficient supply of personal protective equipment (PPE) in the clinical workplace, increasing their risk of pathogen exposure during intubation and clinical care. As the union government had a limited budget, and medical mask prices were skyrocketing to 10- and 20-fold of the local market, PPE donations from Myanmar and former Myanmar citizens residing abroad aided hospital supplies across the country. Second, junior doctors in Myanmar have worked 24-hours shifts under sub-optimal working conditions and without long breaks. In their efforts to increase public awareness, they have encouraged citizens to adhere to stay-at-home restrictions and urged them to avoid unnecessary travels. Finally, limited psychological support for junior doctors, especially from departments, was available during this pandemic. Since many junior doctors have not returned home for fear of transmitting the virus to their family members, their support system may be weakened and directly affect their emotional health.

To address this global scenario, the World Medical Association and the World Health Professional Alliance encouraged governments to prioritize support for all frontline healthcare staff including junior doctors in March 2020. The Junior Doctors Network and the World Medical Association published a statement on physician well-being, which highlighted that physicians have the right to working conditions that reduce risk of burnout. They also emphasized that physicians should be empowered to care for their personal health through healthy work-life balance of professional and personal responsibilities (3). Certainly, frontline health workers are experiencing increased stressors and anxiety as well as physical exhaustion due to the uncertainty of COVID-19 response efforts.

Future action steps should reduce physical and psychosocial health risks for all frontline health workers, including junior doctors.

First, health authorities should strengthen the supply chain quickly to provide essential PPE for frontline health workers (4). Continued training on the novel coronavirus, including epidemiology and best clinical practices for management, is critical to mitigate nosocomial transmission and enhance outcomes and safety for junior doctors and patients. Second, since several studies have highlighted that physicians' well-being is essential for the best interest of patients, junior doctors should have adequate breaks during their shifts in order

to reduce risk of burnout or exhaustion (3). Third, emotional support should be available from departments to regularly connect with colleagues, debrief on clinical responsibilities, and energize efforts and morale. Occupation health and safety guidelines should focus on diagnostic testing for the novel coronavirus among frontline health workers.

This COVID-19 pandemic has provided an unprecedented opportunity for global health workers to collaborate and mitigate risk of disease transmission. Junior doctors bravely sacrifice their time to the provision of safe and quality care for their respective communities. Every frontline worker – including junior doctors, nurses, and other health care workers – are essential for preventing, diagnosing, and managing COVID-19 cases. Safe work environments are essential to maintain a healthy workforce and community.

As a junior and frontline doctor in Myanmar, I would like to express my support and best wishes to all junior doctors and their families around the world who are actively involved in the COVID-19 response efforts. Be strong and stay safe for your family, patients, and communities!

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Contribution to COVID-19 Response Efforts: Experiences from a Tertiary Hospital in the Visayan Region of the Philippines

[Maymona Choudry](#), MD MPH

General Surgery Resident
Vicente Sotto Memorial Medical Center
Cebu City, Philippines



When the first case of the coronavirus disease 2019 (COVID-19) broke out in the Philippines, the government aimed to limit COVID-19 spread by implementing widespread “lockdown” (“community quarantine”) measures. Although “lockdown” measures had varying levels of strictness, the “enhanced community quarantine” (ECQ) was the strictest measure. On March 16, 2020, the government of the Philippines, under President Rodrigo Duterte, imposed an ECQ in Luzon (1), which placed restrictions on population mobility except for necessity, work, and health circumstances. With over 600 kilometers between Luzon and the Visayas region, I was certain that COVID-19 would be able to be contained in Luzon. However, as the first case arrived in Cebu province (2), the Department Chair directed immediate and mandatory schedule changes including skeletal duty.

As a second-year general surgery resident, I completed several rotations in surgical subspecialties, and I had recently started my pediatric surgery rotations. Although our rotations required alternating 24-hour duties, schedules were revised to require daily duties as per the skeletal workforce. As we learned about the clinical presentations of confirmed COVID-19 cases, the hospital quickly developed a screening protocol and classification system of patients suspected of COVID-19 infection. During the first few weeks, we received relief goods from different organizations and companies, including meals and personal protective equipment (PPE) (Photo 1).



Photo 1. Donations of personal protective equipment from fellows and consultants.
Credit: Dr Dancel.

One day, as a post-operative patient was referred to the Department of Internal Medicine, an oropharyngeal/nasopharyngeal swab was taken. When this test confirmed a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, I understood that the virus was closer than previously thought. Knowing that triage and screening processes have limitations, I felt that wearing a N95 mask was insufficient. The hospital administration implemented drastic measures to ensure safety of medical residents, including schedules changes where each group of residents would have clinical duties for seven consecutive days, followed by 14 days of quarantine at home. Additionally, residents were required to attend training sessions on best practices related to COVID-19 diagnosis and management.

All medical residents consistently used PPE in the clinical environment, whether in the emergency room or the operating rooms (**Photo 2**). However, with PPE in limited supplies, one resident organization requested financial assistance from the wider community, seeking additional PPE supplies for residents. Personally, I requested donations from family members living abroad to support our limited institutional PPE supplies.



Photo 2. Residents conduct clinical rounds at the emergency room with personal protective equipment. Credit: Dr Maderazo.

As a doctor, it is my responsibility to remain up-to-date on clinical knowledge, apply this knowledge to clinical practice, and ultimately share this knowledge with colleagues and patients.

For this reason, during my off-duty periods on quarantine, I studied the latest research updates on SARS-CoV-2 diagnosis and management. In particular, I continued to learn about critical care management of patients admitted to the Intensive Care Unit, including mechanical ventilation techniques and best clinical practices (**Photo 3**).

This COVID-19 pandemic has taken a tremendous toll on global citizens, especially on health care workers. Health care workers face an array of risks and adversities each day to protect their patients, families, and country. Their collective efforts have contributed significantly to response efforts, especially as we learn more about this highly infectious and resilient pathogen.



Photo 3. Preparedness for COVID-19 Infection Training on Rapid Sequence Intubation. Credit: Dr Dollosa.

Although the future is uncertain, I believe that our global society will overcome these challenges.

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COVID-19 Prevention at the Community Level: Taiwan's Measures Against an Epidemic

[Chiang Kuan Yu](#), MD

Hospitalist, Taipei City Hospital
Taipei, Taiwan



From the start of the coronavirus disease 2019 (COVID-19) pandemic until today, Taiwanese health authorities acted promptly to allocate and distribute medical resources and deploy health workers to aid in response efforts. These collective actions successfully reduced disease transmission in Taiwan and protected population health.

Taiwan's national response efforts have highlighted key actions implemented during the initial defense of the epidemic.

Early during the epidemic, Taiwanese health authorities implemented effective measures taken to mitigate risk to the wider community, including community-based surveillance, early hospital referrals, preliminary triage measures, and revised guidelines for clinical decision-making in hospitals (**Figure 1**). In Taiwan's advanced response, COVID-19 cases were managed in separate hospitals through a referral system (*island-hopping strategy*). As the number of COVID-19 cases increased, hospitals and public health centers were integrated to enhance community management of COVID-19 cases. While suspected COVID-19 cases were awaiting their two real-time polymerase chain reaction (PCR) results, they were isolated in an expanded screening ward. If both PCR results were negative, then patients were transferred to the general clinical ward or discharged, depending on their presenting symptoms.

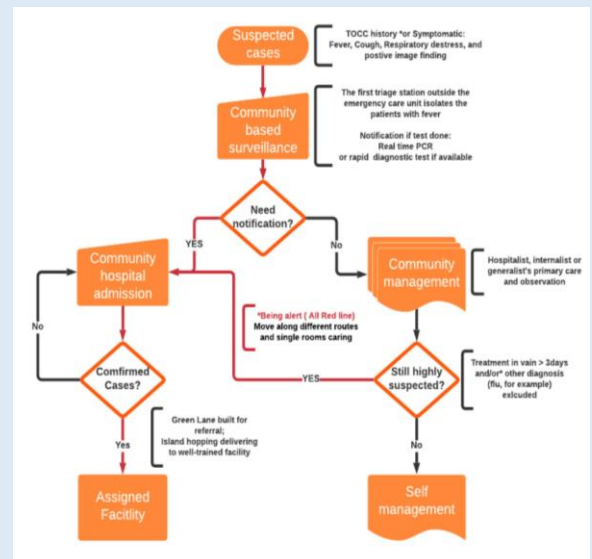


Figure 1. Taiwan's response at community facilities. (TOCC=Travel history, Occupation, Contact history, Cluster; PCR=polymerase chain reaction). Credit: Dr Chiang Kuan Yu; Referred and modified from National Health Command Center (NHCC) guideline, Taiwan.

Numerous lessons were learned following the SARS outbreak in Taiwan in 2003, motivating the implementation of national regulations to strengthen infection control measures (1).

During the COVID-19 pandemic, several hospitals were designed for COVID-19 treatment, enabling hospitals to share their available clinical capacity and medical resources. An effective referral system was established to transfer patients among these designated hospitals for optimal treatment. In order to minimize risks of cross-infection inside hospitals, health authorities aimed to strengthen clinical management (3). The first triage station outside the emergency room held isolated febrile patients, and patients with respiratory symptoms were evaluated in separate wards. This strategy was also applicable for any public health emergency where patients needed immediate clinical care (2). The prompt response of preliminary triage measures helped reduce community transmission of COVID-19, which outweighed the significance of COVID-19 transmission by international travel (Figure 2). In contrast, the SARS outbreak in Taiwan in 2003 was impacted by SARS transmission primarily by international travel (Figure 3).

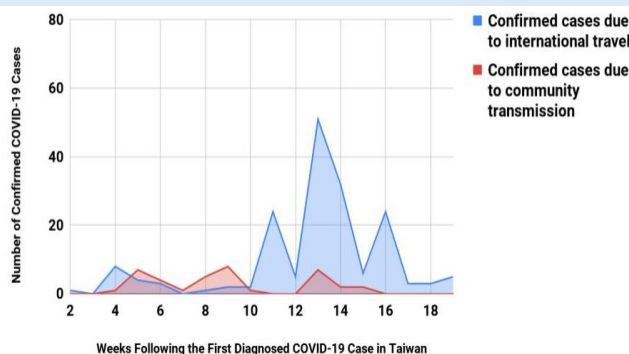


Figure 2. The number of confirmed coronavirus disease 2019 (COVID-19) cases from international travel and community transmission in Taiwan, as reported by the weeks following the first diagnosed COVID-19 case (January 21–May 9, 2020).

Credit: Dr Chiang Kuan Yu; Data from <https://data.gov.tw/>.

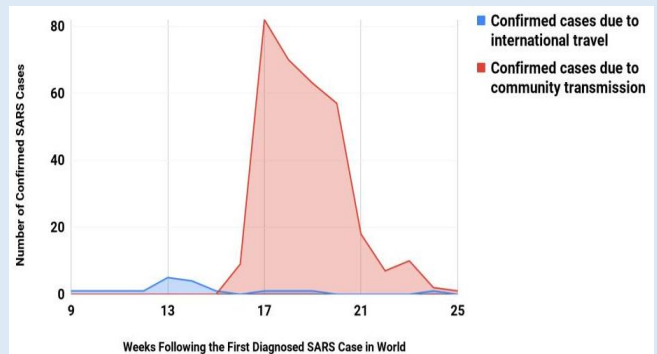


Figure 3. The number of confirmed severe acute respiratory syndrome (SARS) cases from international travel and community transmission in Taiwan, as reported by the weeks following the first diagnosed SARS case in the world, 2003.

Credit: Dr Chiang Kuan Yu; Data from <https://data.gov.tw/>.

Infection Control: Essential Component for All Medical Institutions

To continue to prevent continued COVID-19 transmission, securing airports and seaports, protecting local communities through stay-at-home restrictions, and securing sufficient capacity and resources among medical institutions were essential to curb disease spread to local communities. With heightened awareness among political leaders, hospital managers, and local citizens, infection control measures were effectively implemented inside major hospitals. However, authorities faced challenges in other medical institutions, including asylums, nursing homes, and other social welfare institutions, which have limited infection control policies and funding for robust infection control measures. Additional challenges included the comparison of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) to influenza virus among policymakers, leading to confusion of the general public.

**As an unexpected pandemic of the 21st century,
COVID-19 has challenged all aspects of global health
preparedness and response efforts.**

By distinguishing the COVID-19 pandemic from past disease outbreaks, health and policy leaders can share lessons in effective infection control measures, especially with prompt identification of at-risk populations. Taiwan's leadership in implementing triaging and clinical management strategies may serve as a reference point for hospital management. Moving forward, all health institutions should integrate a holistic medical policy that identifies best clinical and management practices and prepares health leaders to address future health threats.

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Mental Health of Frontline Health Care Workers during the COVID-19 Pandemic

[Rujvee P. Patel](#), M.B.B.S
Medical Officer, COVID-19
Surat Municipal Corporation
Surat, India



Globally, health care workers (HCWs) experience significant stress in the workplace, and the current coronavirus disease 2019 (COVID-19) pandemic has emphasized this burden. Since mental health significantly contributes to the holistic well-being of an individual, the evaluation of workplace stressors needs special attention, especially for frontline HCWs in humanity's battle against the novel coronavirus.

Currently, HCWs' clinical responsibilities are more physically and mentally exhausting, attributed to the accompanying burden of controlling COVID-19 spread across public and private sectors. Although preventing community spread is the collective responsibility of humanity, substantial burden lies on the health care sector. The compelling need to rapidly diagnose, treat, and manage patients invariably places significant stress on HCWs. All jobs and positions in the health care system are challenged, including primary care services, acute- and long-term care, community health promotion activities, monitoring and evaluation tasks, and health administration.

As multiple factors affect the mental health of HCWs, the burden has increased significantly since the beginning of the COVID-19 pandemic. Since new research advancements have led to the development of new clinical protocols and guidelines, HCWs must keep up-to-date on these evidence-based practices and new work patterns and environments.

Extensive clinical responsibilities, increased need for precision and alertness in the workplace, and few break periods can increase anxiety and stress among HCWs.

These stressors can affect work-life balance and produce sleep deprivation, which negatively affect the physical and psychosocial health of HCWs. As such, all potential risk factors should be examined in depth, including the influence of personal life challenges and preexisting mental health disorders.

Several studies have demonstrated this significant mental health burden on HCWs who are managing COVID-19 patients in the clinical workplace across the world. In China, one study concluded that of 1,257 HCW respondents, 634 (50.4%) reported symptoms of depression, 560 (44.6%) described anxiety, 427 (34.0%) stated insomnia, and 899 (71.5%) expressed distress (1). In Italy, another study confirmed that of 1,379 HCW respondents, 681 (49.4%) respondents reported post-traumatic stress disorder (PTSD), 341 (24.7%) described symptoms of depression, 273 (19.8%) described anxiety, 114 (8.3%) stated insomnia, and 302 (21.9%) perceived high levels of stress (2). In West Bengal, one study reported that of 152 physician respondents, 34.9% expressed symptoms of depression, 39.5% described anxiety, and 32.9% perceived stress (3). In Singapore, another study concluded that of the 470 HCW respondents, 68 (14.5%) were diagnosed with anxiety, 42 (8.9%) with depression, 36 (7.7%) were diagnosed with PTSD, and 31 (6.6%) perceived stress (4). As such, all potential risk factors should be examined in depth, including the influence of personal life challenges and preexisting mental health disorders.

In summary, mental health care of frontline HCWs requires special attention. We must remember that individuals who provide health care services are human beings who equally need rest and care. Their daily tasks require optimal health and well-being to be able to provide high-quality health care services to patients. While real efforts are focusing on the physical health of HCWs – such as proper sanitation and hygiene measures, balanced nutrition, and drug prophylaxis – their mental health should not be overlooked.

Moving forward, as a society, we should prioritize the mental health of HCWs as a call to action and a new focus area for health systems.

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Use of Information and Communication Technology for COVID-19

[Jaehyeon Jang](#), MD Msc

Public Health Physician, Anseong Public Health
Center
Director, Korean Intern and Resident Association
Anseong, Republic of Korea

[Keyhoon Kim](#), MD

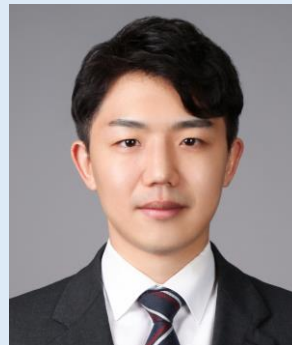
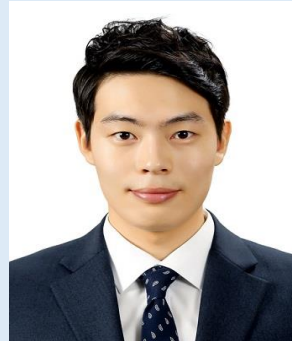
Public Health Doctor
Director of International Relations
Korean Association of Public Health Doctors
Seoul, Republic of Korea

[Sejin Choi](#), MD

Public Health Doctor
Vice President, Korean Association of Public
Health Doctors
Seoul, Republic of Korea

[Jihoo Lee](#), MD

Internal Medicine Resident, Seoul National
University
Director, Korean Intern Resident Association
Seoul, Republic of Korea



In late January 2020, the Republic of Korea reported the first case of the coronavirus disease 2019 (COVID-19). The national public health response was implemented, which rapidly halted community spread of COVID-19. This described response ranged from frontline health care workers in clinical management, contact tracing efforts to identify potential infections, and the deployment of a diverse set of information and communication technology (ICT) tools. This article will introduce some of the noteworthy devices that were developed and used in the Republic of Korea.

Notably, ICT tools have been adopted in various fields of quarantine systems including integrating in epidemiological research studies, disseminating information to the public, and complementing screening processes.

Almost every country has utilized multiple strategies to control the COVID-19 pandemic, focusing on the stay-at home restrictions and social distancing measures. Thus far, these recommendations are considered best practices to curb COVID-19 spread. In the Republic of Korea, the government developed the Cellular Broadcasting System (CBS) in order to confirm compliance to social distancing measures (1). Previously, CBS had been widely used as a means of communication reserved for informing the public about natural disasters (e.g. earthquakes, flooding, forest fires). During this pandemic, the government expanded its application to include public notification of COVID-19 related events. For example, once an individual entered a metropolitan region, the local government parastatals who were equipped with this system would immediately disseminate emergency texts about the travel log of confirmed COVID-19 patients.

As citizens received these texts, they could quickly check if their travels were proximal to the travel log of the confirmed COVID-19 patients, prompting testing if applicable.

ICT also supported the COVID-19 screening process for healthcare workers. For example, electronic medical records (EMR), which incorporated the Drug Utilization Review/International Traveler Information System (DUR/ITIS), played an important role in triage measures. This system alerted physicians on patients' history of overseas travel as well as self-diagnosis of symptoms (2). Instead of closing the national borders, the Republic of Korean government implemented restrictions on the entry of certain visitors into the country. Incoming visitors were required to download the app, where they would use the questionnaire-based screening tool to update their health status on a daily basis (**Figure 1**). If any anomaly in their health condition was detected, then they were mandated to visit a health institution. Although this concept was initially developed for the visitors to the Republic of Korea, it is now being used for university students (3).

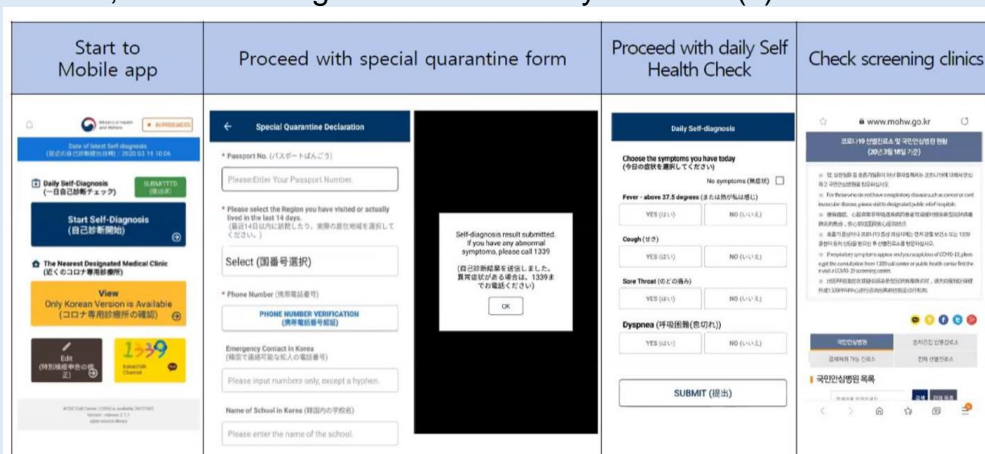


Figure 1. Diagram that demonstrates the process of the self-diagnosis application (3).

The COVID-19 Epidemiological Investigation Support System was developed to facilitate the contact tracing efforts (4). As the number of COVID-19 cases in Daegu Province skyrocketed, there was the need for breakthrough technology to manage the epidemiological data. The new system operated with the spatiotemporal records of credit card transaction and Global Positioning System (GPS) coordination of personal cellular phones. This platform helped Epidemic Intelligence Service (EIS) officers to quickly identify suspected COVID-19 cases by improving the reliability and shortening the investigation time (3). While the original method of receiving information from telecommunication companies via the district police station could take up to 24 hours of investigation, this novel platform could collect data within 10 minutes, which prevented delays to missing the *golden time* (**Figure 2**).



Figure 2. COVID-19 data collection procedure before and after the COVID-19 epidemiological investigation support system (5).

Despite the gargantuan leaps made with ICT, some pitfalls were encountered with the aggressive and widespread use of ICT. First, as with any sort of internet technology that utilizes citizens' private information, ICT tools met some limitations regarding privacy infringement, especially during contact tracing. Since contact tracing data was accessible to the general population, people were discouraged from having social gatherings due to the fear of their personal information in the public domain and any potential breach in privacy. With no social consensus on how much privacy that citizens should give up for the sake of the greater good, it seems evident that new technologies should be adopted with more caution and regulation. Second, healthcare workers were not comprehensively trained on this novel technology due to time and resource limitations during the COVID-19 pandemic. As a result, there were inconsistent applications of ICT in the clinical and community settings. Hence, educating physicians on the mechanisms and implications of ICT tools will be imperative in preparation for the post COVID-19 era.

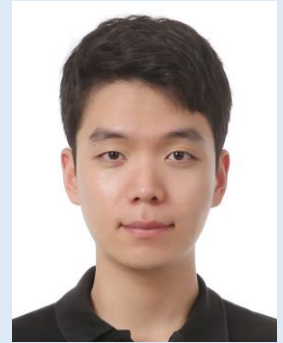
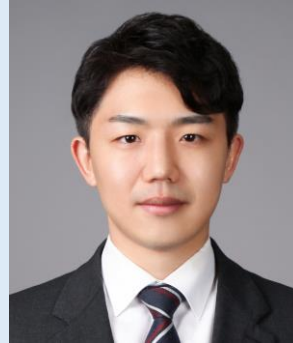
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Education and Training of Junior Doctors in the Post-COVID-19 Era

[Sejin Choi](#), MD

Public Health Doctor
Vice President, Korean Association of Public
Health Doctors
Seoul, Republic of Korea

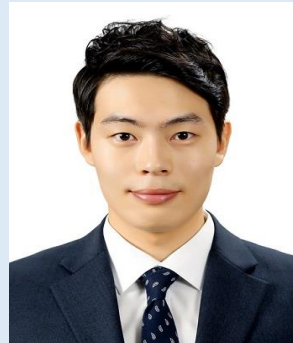


[Keyhoon Kim](#), MD

Public Health Doctor
Director of International Relations
Korean Association of Public Health Doctors
Seoul, Republic of Korea

[Jaehyeon Jang](#), MD MSc

Public Health Doctor
Anseong Public Health Center
Director, Korean Intern Resident Association
Anseong, Republic of Korea



[Jihoo Lee](#), MD

Internal Medicine Resident, Seoul National
University
Director, Korean Intern Resident Association
Seoul, Republic of Korea

Like other countries, junior doctors of the Republic of Korea have dedicated their efforts in the coronavirus disease 2019 (COVID-19) response efforts. To date, the Republic of Korea has been recognized as one of the successful nations in managing the COVID-19 pandemic, touting relatively low infection and mortality rates.

From a junior doctors' perspective, lessons learned during the COVID-19 pandemic can pave the way to better prepare the health system for the next pandemic.

In the Republic of Korea, junior doctors who have been mainly engaged in these COVID-19 response efforts were public health doctors (PHDs) – who work in medically underserved areas including rural healthcare centers as a part of their military service – and medical residents. As we all experienced in our clinical workplace, the public health crisis involved many different sectors and stakeholders of society – including healthcare workers, central

and local governments, administrative workers, and business leaders. Since the primary goal of these collective efforts was to protect the health and safety of community members from this highly infectious pathogen, doctors voiced their concerns, made prompt and appropriate clinical decisions, and led the healthcare teams in the clinical and community response efforts.

In addition to these clinical roles, doctors of the Republic of Korea served in various non-clinical roles. Many times, junior doctors served as technicians for laboratory samples (e.g. nasopharyngeal swabs) and overall management of intensive care units. These management decisions, completed by non-experts in the health system, overlooked clinical expertise among healthcare workers and led to confusion and cracks in the national quarantine efforts. For instance, the government started to loosen the social distancing measures and schools reopened to provide classroom lessons, even though the country's Crisis Alert Level was still the highest level 4 (**Photo 1**). Healthcare workers have also been inefficiently utilized, especially for the wide implementation of local infection prevention and control strategies. The resulting approaches were unorganized, lacked scientific rigor, and were less cost-effective.

Notably, doctors – especially junior doctors – felt that they were unable to assume the role of as “public health experts” to lead these complex decision-making processes, due to their limited training in public and population health.

Current medical education and training in the Republic of Korea are heavily focused on *clinical medicine* and strengthening skill-based clinical competencies. This training does not incorporate the health system as a whole, public health as a continuum of medicine, or knowledge of population health and field experiences (1). Although the Korea Center of Disease Control and Prevention (KCDC) has trained and employed some doctors with public health expertise, their limited staff cannot lead or manage every health emergency.



Photo 1. Patrons without masks visit one dance club in Seoul, Korea in May 2020.
Credit: Twitter (@supermassive101).

“Population health encompasses the domains of critical thinking and evidence-based practice, disease prevention and health promotion, health systems, health policy, and community health, including the broader community context for health or illness” (1).

Ad hoc education and training are not enough. Structured and formal education and training in public and population health should be integrated into current PHD and resident training systems. KCDC may be able to offer some education and training courses for junior doctors. When doctors are equipped with a priori knowledge and expertise on public and population health, they will be able to lead different stakeholders of society to improve the health and well-being of all citizens.

Evaluating the current scenario, there are few preventive medicine and public health residents in the Republic of Korea. Second, the COVID-19 outbreak has demonstrated that the public health training curricula required dramatic revision to train doctors to serve as public health experts in the clinical and community settings. Unfortunately, they were not given fieldwork opportunities as Epidemic Intelligence Service (EIS) positions for this COVID-19 crisis. Instead, retired family medicine doctors and veterinarians were placed into EIS positions, even without proper training. These collective actions have shown that major revisions should be completed to strengthen medical education and training in the Republic of Korea.

Through the COVID-19 response efforts in the Republic of Korea, health authorities have identified limitations in the health workforce capacity and need for more public health experts. Junior doctors, regardless of their selected specialty, also demand systematic education and training to strengthen and support their clinical expertise to serve the health and well-being of the national population (2). Unfortunately, simply increasing the number of doctors will not meet the national demand for more public health experts. Now more than ever, it is time to *nurture* experts – chief doctors – who can design and implement public health action plans for the COVID-19 response efforts and future pandemics.

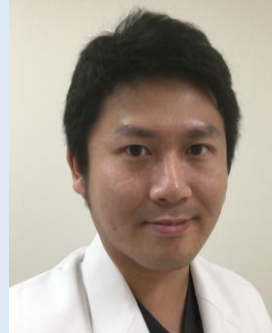
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Sharing Binational Experiences during the COVID-19 Response: Collaboration between the Republic of Korea and Japan

[Mineyoshi Sato](#), MD

Chair, Japan Medical Association – Junior Doctors
Network
Respiratory Physician, First Department of
Medicine
Hokkaido University Hospital
Sapporo, Japan



[Maki Okamoto](#), MD

Communications Director (2019–2020)
Junior Doctors Network
World Medical Association



[Sejin Choi](#), MD

Public Health Doctor
Vice President, Korean Association of Public
Health Doctors
Seoul, Republic of Korea

In April, the World Medical Association (WMA) – Junior Doctors Network (JDN) coordinated a general membership teleconference to discuss response efforts related to the coronavirus disease 2019 (COVID-19) pandemic. After this event, junior doctors from the Japan Medical Association (JMA) – JDN and the Republic of Korea organized a binational virtual teleconference for junior doctors to share their clinical and community experiences as well as discuss challenges related to COVID-19 response efforts across their countries.

Notably, these neighboring countries implemented different strategies to mitigate COVID-19 transmission, reporting low infection and mortality rates, when compared to other countries.

Republic of Korea

The framework of the Korean strategy focused on mass testing. Dr Sejin Choi, from the Korean Association Public Health Doctors (KAPHD), stated that young public health doctors (PHDs) played a pivotal role in the implementation efforts of this strategy. PHDs represent male doctors, between 20 and 30 years old, who have recently graduated from medical school or have completed their medical residency. As an alternative to military service, PHDs work for a period of three years in either rural areas with limited health

resources or in public facilities such as public health centers, airport quarantines, and correctional facilities (1).

When the first four COVID-19 cases in the Republic of Korea were confirmed on January 27, 2020, PHDs were deployed to the airport facilities to enforce quarantine measures. In February 2020, following one regional outbreak in Daegu, 200 PHDs were sent to this metropolitan city to lead and manage response efforts. To date, over 1,000 PHDs have worked on the frontline – airports, screening centers, drive-thru testing sites for mass testing, long-term care facilities – to mitigate COVID-19 spread. Moreover, they conducted health inspections and provided consultations at temporary isolation facilities where patients with mild symptoms were localized.

As of July 19, 2020, a total of 13,745 COVID-19 infections and 295 deaths were reported in the Republic of Korea (2). Hence, this national response – including calling PHDs to the frontline – was effective in curbing disease transmission. Since PHDs are replacements for military personnel and serve under the direction of the national government, this existing structure worked well to enhance a prompt and systematic national response.

The role of PHDs in the COVID-19 response efforts are a significant element to the effective national public health response.

Japan

Unlike the Republic of Korea, no national collective actions were coordinated by junior doctors to reduce COVID-19 spread in Japan. Instead, local government authorities focused on the key role of the local public health centers, to prioritize COVID-19 diagnosis and management as well as continue medical care services for other infectious and chronic diseases, maternal and child health, immunizations, and other health concerns. Health care workers aimed to prevent COVID-19 transmission by tracking and identifying suspected COVID-19 patients through contact tracing of clusters. With support by the government, they held the authorization for an array of clinical decisions including designating laboratory samples for PCR testing based on the guidelines set by the Ministry of Health, Labour and Welfare. This responsibility aimed to prevent overloading hospital and laboratory capacity, especially since Japanese citizens have free access to health care facilities. To date, although this national approach raised public concerns about potential low or limited diagnostic testing, a total of 24,642 infections and 985 deaths were reported in Japan (2).

By sharing these binational COVID-19 response efforts, junior doctors from the Republic of Korea and Japan observed how various national approaches were successful in effective control of COVID-19 transmission. They were able to learn from each other and observe regional and national variation during this public health crisis. Although it may be difficult to generalize the role of junior doctors across nations, their national leadership efforts are inspiring and offer renewed insight into the significant role of junior doctors in the health system.

Sharing these international experiences can strengthen the network of junior doctors, provide valuable perspectives, and inspire colleagues in preparing for future emerging health threats.

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The Importance of Primary Health Care during Health Emergencies

[Flora Kuehne](#), MD

General Practice and Family Medicine Resident
Munich, Germany



Through the Declaration of Alma-Ata of 1978, the concept of Primary Health Care (PHC) was recognized as a key component achieving health for all and the foundation for health in every health system. The main role of PHC within health systems was later reaffirmed in the Declaration of Astana of 2018, and the comprehensive, horizontal approach to health and well-being was emphasized. This commitment to PHC was motivated by the fact that more than 80% of people's health needs during their lifespan can be met by PHC. The impact of PHC on the health and well-being of global citizens is fundamental, where strong PHC can minimize risks of a future pandemic and pave the way to health for all (1). The importance of PHC is recognized now more than ever with the coronavirus disease 2019 (COVID-19) outbreak, placing pressure on health systems and significantly affecting clinical practice.

PHC plays a crucial role in health emergencies, where primary care teams are frontline agents of the COVID-19 response to keep communities healthy and safe.

First, primary care practitioners take care of patients infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), with most patients managed in outpatient care settings, presenting with mild symptoms. They are considered the most trusted source of health information for patients, including advice on prevention measures to mitigate risk of disease transmission. Second, primary care practitioners can help with monitoring disease

spread, such as serving as primary contacts for COVID-19 testing (1). As PHC represents the first contact of patients with the health care system, it can function as a key stakeholder in disease surveillance and health promotion through the adoption of best practices in public health (2).

Furthermore, another critical aspect during this pandemic includes the provision and maintenance of essential health services, including mental health, reproductive health, chronic disease management, immunizations, rehabilitative and palliative care, and follow-up or other referrals (4). Specific population groups – such as pregnant women and patients living with cardiovascular or metabolic disorders – need regular medical evaluations in the continuum of care. Some services, like immunization, HIV/AIDS medications, and contraceptive methods, however, are expected to be delayed or declined across many countries due to the pandemic (1).

As the pandemic continues, delayed health care services – whether due to limited clinic schedules and postponed elective procedures or fear to visit health centers – may result in disease complications.

For example, severe complications have been reported for patients who fail to seek early care for acute coronary heart syndrome, stroke, and appendicitis (3). However, elective diagnostic procedures, therapeutic measures, and preventive health evaluations must not be neglected. The growing need for mental health services have increased in times of social distancing, economic difficulties, and uncertainty. Within this scope, PHC can offer effective strategies if a second peak is observed in the demand of health services, pressuring already strained health systems (2).

Through multisectoral action, robust collaborations, and community engagement, PHC can provide an approach for effective emergency responses and prepare for resilient health systems (5). Decisions on health policy and resource allocation should therefore take into account the opportunities that strengthened PHC systems can offer, shaping global health for the future.

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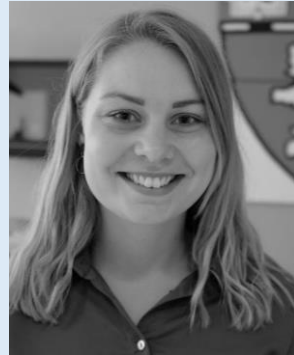
Listening to the Hopes and Fears of Swedish Medical Students and Junior Doctors

[Lotta Velin](#)

Medical student, Lund University
Secretary, Junior Doctors Global Health Section
Swedish Society of Medicine
Lund, Sweden

[Hanna Jerndal](#), MD

Secretary, Junior Doctors Public Health Section
Swedish Society of Medicine
Umeå, Sweden



Ensuring support for and taking time to listen to the worries, questions, hopes, and fears of those at the center of this coronavirus disease 2019 (COVID-19) pandemic crisis will be time well-spent if we are to conquer this battle. For medical students and junior doctors in Sweden, a platform to discuss our role in the pandemic has been missing. Therefore, we arranged a virtual panel discussion, *A Student / Junior Doctor during the Pandemic – What is my Role?*, in early April 2020. More than 200 medical students and junior doctors attended the event, and more than 500 additional individuals have watched the recording. In this article, we would like to share three main take-away messages.

Medical students and junior doctors are essential members of the health workforce.

“Let us help” – has been a rallying cry from medical students in Sweden. Most of us have entered this profession because we want to help our patients and, as voiced by one of our panelists, Madeleine Liljegren, chair of the Swedish Junior Doctors’ Association: *“This is what we have been trained for”*. In mid-March 2020, lists for medical students interested in helping the Swedish health system were circulated, and thousands signed up. More than just altruistic motivations, Niki Shams, panelist and chair of the Swedish Medical Associations’ student branch, suggested that this is a unique opportunity: *“There is so much for us to learn”*. This statement reflects that medical students are both *learners* and *clinicians in-training* (1).

Although academic learning may be jeopardised with cancelled internships and virtual coursework, living and serving during a pandemic can provide young doctors with unique clinical experiences and competences that will be beneficial for their career path as practitioners and leaders in health systems.

Since the start of medical school, medical interns and junior doctors look forward to their first day of advanced clinical training with a mix of excitement and anxiety. Continued support and mentorship are essential throughout these early career stages to reach academic milestones. For those medical interns and junior doctors who are entering the workforce during the COVID-19 pandemic, further academic support from senior leadership are needed to offer the appropriate workplace conditions and training opportunities.

The flaws in our health system have been exposed.

Prior to the pandemic, there was evidence that the Swedish health system had major flaws in governance and function (2). For example, the waiting time for recent medical graduates to enter the mandatory two-year internship was approximately one year, and the lack of transparency in the recruitment process raised questions about the selection process for these coveted internship placements (3). As a scarcity of nurses has led hospital wards and operating theatres to close, an ever-growing backlog of patients requiring surgical interventions has become apparent.

For years, many physicians have expressed their burnout symptoms, linking significant stress to managing extensive administrative paperwork and completing clinical responsibilities. Additionally, increasing privatization of healthcare and undermining of our universal health coverage system has caused further tensions in the fragile system. Since our health system has continued to face significant challenges, this pandemic may offer innovative solutions where health authorities can transform the health system at local and national levels.

“Junior doctors are used to being quiet in order not to risk their chances of getting an internship or a residency spot, but we have to speak up if we feel uncertain”

Madeleine Liljegren, chair of the Swedish Junior Doctor's Association

The Swedish system of medical education is about to be restructured in one of the largest health transformations to be seen in decades (4). This process – prolonging the medical program for one additional semester and resulting in a six-year academic program – has been widely debated. The pandemic has delayed the implementation of these changes, causing differing sentiments of relief and anxiety, among new medical graduates and final-year medical students.

The lack of disaster preparedness was mentioned as another flaw in the Swedish health system during the panel discussion. This has been observed during the surge in patients receiving care at emergency rooms, primary care settings (e.g. elderly homes, rehabilitation units), and intensive care units. In primary health care settings, already strained health care workers have faced new challenges with supporting the delivery of acute health care services for COVID-19 patients and will now be charged the enormous task of managing long-term follow-up and rehabilitation services.

Medical students and junior doctors are privileged, and many are not.

Living in a privileged country like Sweden, we realize that the pandemic has left devastating effects on society at large, with vulnerable groups in Sweden and around the world hit the hardest. As medical students and junior doctors, we have been able to transit to virtual education and continue our internships, albeit with significant modifications. In most health facilities in Sweden, protective personal equipment is readily available. However, this is not the case for colleagues across the global landscape.

Over the past few months, medical students and junior doctors have observed significant changes to their professional and personal lives, and many have expressed physical illness, psychosocial stressors, and burnout during their clinical rotations. We send our thoughts to our colleagues around the world and hope that this response phase will be followed by recovery efforts to rebuild the health system and strengthen medical education. As we endure the pandemic and health systems under strain, we must remember to take a moment to reflect, listen with empathy to one another, and offer our support.

We can learn from this unprecedented global crisis and prepare our health systems for all emerging health challenges.

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Gender Gaps and the COVID-19 Pandemic

[Jeazul Ponce Hernández](#), MD MSc
Predoctoral Fellow
Complutense University of Madrid
Madrid, Spain



Gender is a social determinant of health that may influence health-seeking behaviors and access to health care services.

For example, gender-related research studies on tuberculosis management have shown that men and women report symptoms, seek health care services, experience barriers, and interact with health professionals in distinct manners (1). In general, differences have been observed as women have lower rates of reporting symptoms or visits to health centers, report preferences for alternative care (e.g. traditional healers), and express general shame or fear of stigma. These factors may be attributed to the limited number of health professionals focusing on women's health. This article aims to describe the gender differences observed during the coronavirus disease 2019 (COVID-19) pandemic.

Globally, females represent a significant percentage of the health workforce, contributing to efforts to strengthen clinical services and community health initiatives. For example, 54% of health care workers are women in Wuhan, China (2), and 52% of registered doctors and 84.2% of nursing staff are women in Spain (3).

Gender inequalities can be exacerbated during extreme situations of societal stress, such as widespread disease outbreaks.

Some impacts may include neglected basic services for sexual and reproductive health concerns. During the Zika virus outbreak, different gender norms influenced women's sexual and reproductive life, especially when seeking regular prenatal care. During the Ebola virus outbreak, women experienced increased stress by serving as caregivers to their families and working as frontline health care workers in health centers (2).

These discrepancies can be affected when supply chains are altered, as a result of the pandemic response efforts (4). For example, during the COVID-19 lockdown restrictions, society observed shortages of personal hygiene products (e.g. toilet paper, hand sanitizer, soap) and sharp cost increases of family sanitary products (e.g. tampons). Also, many young girls and women around the world had limited access to basic information and services related to menstrual hygiene and family planning methods.

Due to the COVID-19 pandemic, economic consequences directly impact women, especially since they tend to provide most of the informal care within families.

This domestic role may hinder their ability to seek employment and economic independence outside the home. Notably, as women spend more time at home with their families, gender violence or aggressions may become a significant threat to women's health. The incidence of gender violence is unknown, since acts of violence may not be reported due to expressed distrust of police authorities and lack of awareness related to proper legal reporting of incidents (5,6).

Currently, gender differences have been noted regarding the availability and access to treatment for COVID-19 cases. However, there are few quantitative studies that have closely examined data by age and sex. There are also limited qualitative studies that explore these sensitive topics with women to better understand the gender perspective.

Women have found themselves in the first-line of action against COVID-19, but their visibility in the development of public health policies, sanitary measures, and prevention has been scarce. However, studies have reported that women are less likely to make decisions during the COVID-19 outbreak (4).

Women should have a more active role in planning and response efforts related to the public health surveillance, security measures, and prevention and control practices.

As a medical community, doctors should listen closely during medical evaluations with their female patients. They can attempt to recognize the influence of these gender perspectives, identify disparities, and explore their perceptions on disease risk and access to medical care. Through these actions, they can advocate for further epidemiologic studies to examine gender differences related to the provision of health care services as well as prepare anti-violence campaigns. Since certain social measures (e.g. stay-at-home restrictions) can influence gender violence, doctors can identify at-risk female patients and provide essential health information and resources to seek additional medical or community support.

In summary, doctors are community leaders who can promote women empowerment and the gender perspective in health care service delivery.

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Courage vs COVID-19: Australia's Junior Doctors Leading by Example

[Naga Annapureddy](#), MD
Resident Medical Officer
The Prince Charles Hospital
Brisbane, Australia

[Simrun Mody](#), MD
Resident Medical Officer
Logan Hospital
Brisbane, Australia



In 2015, Menachery et al. published an article that described 'a SARS-like cluster of circulating bat coronaviruses [that] shows potential for human emergence' (1). Less than four years later, hypotheticals transpired into reality as a deadly coronavirus respiratory disease became a household name. After one cross-species transmission, the coronavirus disease 2019 (COVID-19) infected patient zero, and three months later, the virus disseminated worldwide. Countries entered a collective lockdown. Our home, Australia, was no exception.

As of June 5, 2020, the Australian Government Department of Health reported 7,251 confirmed cases and 102 deaths secondary to COVID-19 (2). According to the United Nations, Australia ranked 65th in the number of confirmed cases and 72nd in the death toll, compared to other countries (3). These findings confirmed that Australia was successful in reducing the number of new COVID-19 cases. Australia's geographical isolation and sparse population density have contributed to the relatively low infection rate. Moreover, this positive outcome is largely due to compliance with national government initiatives, including the promotion of physical distancing, increased health system capacity, and strict quarantine of infected patients.

Individual hospitals and health care workforces have, therefore, played a significant role in this national response.

Early on, Queensland Health recognised the impending surge of potential COVID-19 cases and took immediate action. In February 2020, the Metro North Executive Director of Medical Services stated that clinical staff were posted at Brisbane International Airport to screen incoming travellers and assist thousands of people into self-quarantine. Hospitals opened dedicated Fever Assessment Centres to review potential positive COVID-19 cases in a contained environment. On March 6, 2020, Queensland's premier announced an

increase in the Fever Assessment Centre, Emergency Department, and Intensive Care capacities across all hospitals, purchasing additional ventilators, and bringing forward AUD\$25,000,000 of medications and personal protective equipment (4). Meanwhile, Public Health Units provided health professionals with regular advice regarding COVID-19 testing criteria, contact tracing, and management. They also performed outreach work with community stakeholders, including Residential Aged Care Facilities. All workers in health-related fields have had to adapt to these organisational changes in a limited timeframe. Given government-initiated social restrictions, they also have had to adjust their communication with patients.

COVID-19 has presented many challenges to clinical management, including the ability to interact face-to-face with patients. Hence, the Australian Government introduced alternative models of care to support patients recovering from the disease. One such initiative was the *virtual ward* model, which capitalized on Hospital in the Home and Post-Acute Care services via telehealth measures (6). Interestingly, the development of these alternative approaches to patient care has streamlined hospital processes, including outpatient follow-up, and has the potential to become the new standard practice.

Amidst these new changes, junior doctors – who are advancing their knowledge and skills in their appointed medical specialty – have thrived under the pressure of this pandemic.

Medical Interns in Fever Assessment Centres swabbed hundreds of patients as suspected COVID-19 cases. Junior House Officers donned their personal protective equipment for upwards of 10 hours each day in the *Red Zones* of the Emergency Departments. Senior House Officers entered the negative pressure rooms of makeshift infectious diseases wards to provide ongoing medical assessment for confirmed COVID-19 cases. Certainly, junior medical staff had access to senior advice; however, the limited knowledge surrounding this respiratory disease meant that there were many unknown factors. Despite this, medical residents had voluntarily forgone their preferred electives and scheduled leave in order to aid understaffed hospitals. Outside the hospital walls, junior doctors strengthened the delivery of public health information in the media by correcting incorrect facts and dispelling myths. In one *MJA InSight+* article, junior doctors highlighted the racial prejudices that have become macroscopic under the critical lens of COVID-19, both in the hospital and at home, and encouraged society to acquit rather than accuse (7).

The Australian Medical Association's Council of Doctors in Training supported the rights of junior doctors during the COVID-19 response. The council's four advocacy priorities included: scope of practice, well-being, occupational rights, and career progression (8). Employers were advised to provide appropriate induction to doctors transitioning beyond their typical clinical duties, ensure accessible personal protective equipment, promote physical and mental well-being services, and respect leave entitlements. Additionally, medical colleges were encouraged to communicate clearly with their candidates regarding examination cancellations and review selection criteria in light of the pandemic. As a result, junior doctors were able to provide world-class care to their patients without fear of personal compromise.

The Australian Government Department of Health's prompt response to the pandemic resulted in low COVID-19 incidence and case-fatality rates.

This was a direct consequence of the remarkable effort of all frontline workers, including cleaners, nurses, pharmacists, and junior doctors. This unique experience has provided junior doctors with expertise far beyond anything obtainable from didactic education. It is clear that they are more than capable of forming a substantial and proactive part of the healthcare system. Australia is in safe, sanitized hands.

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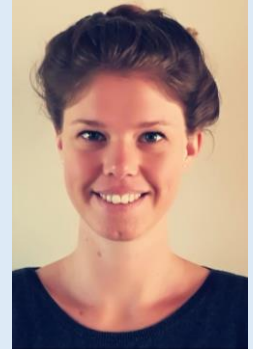
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Challenges and Opportunities in Providing Primary Health Care during the COVID-19 Pandemic in Six Countries

[Wunna Tun](#), MBBS MSc MD

Fellow in Medical Education

Founder, Myanmar Medical Association, Young Doctor Society
Yangon, Myanmar

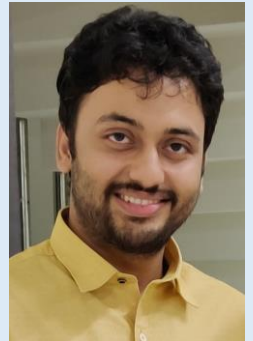
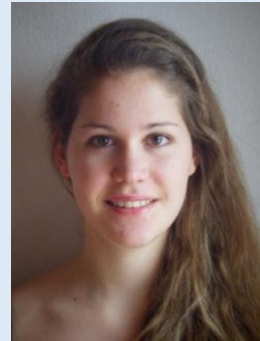


[Laura Kalkman](#), MD

Geriatric and Internal Medicine Resident
Leeuwarden, The Netherlands

[Flora Keuhne](#), MD

General Practice and Family Medicine Resident
Munich, Germany



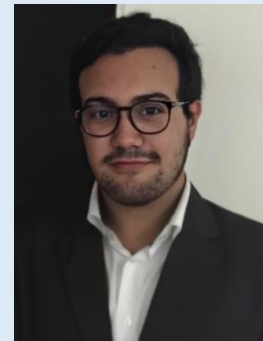
[Shiv Joshi](#), MD

Community Medicine Resident
Mahatma Gandhi Institute of Medical Sciences
Sevagram, India

[Andrey Oliveira da Cruz](#), MD

Family Medicine Resident

State Secretariat of Health of Santa Catarina,
Florianópolis, Brazil



[Chioma Amugo](#), MBChB

Medical Director, Queens Clinic and Maternity
MPH student, University of South Wales
Abuja, Nigeria

Primary Health Care (PHC) plays a crucial role in health emergencies like the coronavirus disease 2019 (COVID-19) pandemic. Notably, this pandemic has highlighted gaps where PHC can be strengthened and hence integrated across global health systems. In this article, perspectives are provided by junior doctors from different countries – Myanmar, the Netherlands, Germany, India, Brazil, and Nigeria – to illustrate the exemplarily role of PHC during the COVID-19 pandemic as well as describe perceived challenges and opportunities in health service delivery.

Myanmar

In Myanmar, fever clinics serve a frontline role, where clinicians provide COVID-19 diagnostic tests to febrile patients, and if necessary, refer them to the nearest public hospital for further testing. These fever clinics, which are directed by primary care doctors, relieve pressure on the under-staffed and under-resourced hospitals and health care system, which would otherwise be unable to manage even a modest disease outbreak. As a collaborative effort between primary care doctors and the Myanmar Medical Association, doctors aim to raise general awareness and take action to reduce transmission of nosocomial infections among primary care doctors and patients in hospitals. For this reason, doctors in fever clinics are well equipped with personal protective equipment (PPE) – both levels 2 and 3 – for screening of suspected respiratory pathogens of diverse etiologies and for appropriate hospital referrals throughout the country (1).

The Netherlands

In the Netherlands, around half of the deaths attributable to COVID-19 occurred outside hospitals, mainly in nursing homes (2). Excess mortality among the Dutch elderly, however, is not solely attributed to the frailty of this vulnerable population. Since health authorities have focused attention on upscaling capacities of in-patient and intensive care unit services, health care workers employed in primary care and nursing homes have experienced PPE shortages and lack of access to COVID-19 diagnostic testing. In their clinical practice, health care workers faced an increased risk of occupational exposure to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and subsequent transmission to other patients. Hence, many doctors and nurses in primary care and nursing homes felt abandoned and forced to make impossible ethical choices without proper guidance (3,4).

This example illustrates how equipping primary care providers, especially those working with vulnerable populations, should be prioritized in order to reduce mortality during an epidemic.

Germany

In Germany, the COVID-19 pandemic allowed us to recognize the importance of digital health and challenges related to its national implementation. When compared to other European countries, Germany has a conservative approach to digital health, where there are no implemented electronic health records or routinely administered video consultations. However, health care providers have been directed by law to connect to the virtual telemedicine infrastructure until 2021, as a first step to nationwide digital health services.

To date, a total of 85% of patients infected with SARS-CoV-2 in Germany were managed by ambulatory care, mainly by general practitioners (5). To prevent infection and transmission, doctors and patients have minimized physical contact through essential telemedicine and video consultations including simplified requirements for invoicing services (5). Many doctors, however, still lack the necessary infrastructure, skills, and routine to conduct comprehensive video consultations.

Despite these challenges, the COVID-19 pandemic has driven the momentum to implement digital health as a remarkable opportunity for Germany and PHC.

India

India has continued to experience a national lockdown since March 25, 2020. Outpatient medical services have been limited or suspended, and small hospitals and clinics were expected to only provide emergency care by diligently maintaining proper hygiene, sanitation, and PPE, albeit limited supplies. Private hospitals across India recorded a sharp 70%-80% drop in patient visits. This situation has caused significant financial stress among general practitioners who are challenged to compensate their staff. Notably, government hospitals are currently able to manage this situation, since the number of COVID-19 cases has not exceeded their ability to provide health care services to patients. However, if this threshold is breached, and there is a significant increase in the number of COVID-19 cases, government and private hospitals may collectively be unable to meet the patient demand for COVID-19 diagnosis and management. In order to tackle this challenge, the government should take adequate measures to strengthen health infrastructure, including enhanced clinical training, appropriate compensation, increased protection, and private sector involvement in providing COVID-related care.

Brazil

In Brazil, political issues have dominated the media, especially related to the national management of the COVID-19 pandemic. Many national leaders have prioritized the need to improve the economy and voiced disagreement with quarantine measures to control COVID-19 spread.

This pandemic has highlighted the need for strong PHC, which provides essential health care services to the largest portion of the population.

This effective PHC action was enabled by legislation, which identified the essential role of PHC during the COVID-19 pandemic to strengthen health service delivery across federal, states and municipalities (6). It was noted that PHC remains the gateway to the national health system, offering clinicians the ability to directly monitor vulnerable families, provide follow-up care for suspected and mild COVID-19 cases, continue chronic disease management, and examine other related issues (e.g. mental health disorders, domestic violence, alcoholism) that may arise from prolonged social distancing (7). To combat this pandemic at the community level, PHC leaders must identify best practices for handling suspected COVID-19 cases and managing care, ensuring options such as telehealth, incorporating new care and service technologies, and strengthening links with local communities through community health workers (7,8).

Nigeria

In Nigeria, although there are mixed perspectives on whether the COVID-19 pandemic has crippled the economy or has exposed faults in the governance system, inadequacies in the health sector were visibly exposed. Whether doctors are employed in the public or private health sector or telemedicine system, discrepancies can be observed in medical care, especially due to the lack of synergy between public and private health providers. Although some private hospitals are designated as PHC centers, their efforts to refer patients to tertiary-level health institutions are often overlooked due to inadequate infrastructure. As hospitals are often ill-equipped to manage a surge in patient care, as observed during this pandemic, they may not be able to access loans, finance these high interest rates, or fear the inability to repay loans.

During this pandemic, the government has made no tangible effort to include private hospitals in the national response. They have not been regarded as frontline institutions, although many patients seek care at private hospitals and subsequently may be referred to tertiary-level health institutions. In recent months, a health care sector loan of US\$260 million (N100 billion) was approved, to provide credit support as part of the pro-active measures to cushion the economic impact of the COVID-19 pandemic. It aims to improve health care and ensure collaboration between primary, secondary, and tertiary health care providers in Nigeria.

Although it took a pandemic for the Nigerian government to recognize the importance of the private health sector, it remains a step in the right direction to prioritize population health.

The insights of health care workers involved in PHC across countries reflect how the COVID-19 pandemic has posed diverse challenges in delivering quality health care for suspected COVID-19 cases, ensuring the continuum of care for patients living with chronic disease, and adapting to limited PPE supplies in the workplace.

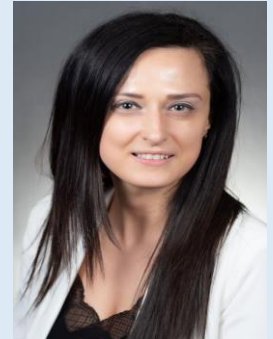
However, this public health crisis has enhanced international recognition of the importance of the health sector and encouraged the adoption of innovative technologies like digital health, in efforts to strengthen PHC systems.

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Junior Doctors Network Leadership at the Post-World Health Assembly 2020

[Mike Kalmus Elias](#), MBBS DTM&H AKC
NIHR Academic Clinical Fellow in Global Child
Health
University of Liverpool
Liverpool, United Kingdom



[Caline Mattar](#), MD
Past Chair, WMA-JDN
Assistant Professor of Medicine
Division of Infectious Diseases
Washington University in St. Louis
St. Louis, Missouri



[Yassen Tcholakov](#), MD MScPH MIH
Interim Chair (2019-2020)
Junior Doctors Network
World Medical Association

For the first time, the seventy-third World Health Assembly (WHA) was held in a virtual format, due to the disruptions from the coronavirus disease 2019 (COVID-19). For these same reasons, the Junior Doctors Network (JDN) held its traditional post-WHA workshop in a similar virtual platform. This format change allowed for greater and more diverse participation from over 40 JDN members around the world, while the technology provided an opportunity for meaningful engagement.

The post-WHA workshop consisted of four one-hour sessions held over a period of two days, in order to accommodate a maximum number of time zones for active participation by JDN members. The event focused on COVID-19 response and recovery efforts and aimed to engage JDN members in a wider discussion.

The agenda focused on highlighting key discussions held at the virtual WHA about national and international challenges faced by delegates.

The JDN post-WHA sessions and speakers provided insight on a variety of global health topics related to the COVID-19 pandemic.

**Saturday, May 23, 2020
(1400–1630 CEST)**

Q&A with the World Medical Association (WMA) Leadership on the WMA's response to COVID-19 and Engagement with the World Health Organization (WHO)

- Dr Miguel Jorge (WMA President)
- Prof Dr Frank Ulrich Montgomery (Chairperson of Council)
- Dr Otmar Kloiber (WMA Secretary General)

Moderated by Dr Yassen Tcholakov (JDN Deputy Chairperson)

The Global Response to the COVID-19 Pandemic and the Role of WHO

- Dr Paula Reges (Coordinator for the Solidarity Trial in Brazil, Fiocruz – Rio de Janeiro)
- Dr Gina Samaan (COVID-19 Country Technical Support Lead at WHO Headquarters)

Moderated by Dr Caline Mattar (Past JDN Chairperson)

**Sunday, May 24, 2020
(1400–1630 CEST)**

The Digital Health Transformation and How the Pandemic will Shape it?

- Dr Priit Tohver (Ministry of Health, Estonia)
- Dr Lisa Murphy (Independent Digital Health Consultant, former Digital Health Advisor to Public Health England)

Moderated by Dr Mike Kalmus Elias (Past JDN Socio-Medical Affairs Officer)

Critical Policy Analysis Skills for Global Health (Interactive Workshop)

- Dr Mike Kalmus Elias (JDN Member and Global Child Health Fellow at University of Liverpool)
- Dr Yassen Tcholakov (Deputy Chairperson of JDN and Public Health Resident at McGill University)

We wish to thank all JDN members for their active participation in the post-WHA (**Photos 1-2**). We would like to extend an invitation to all JDN members to view the [recorded presentations](#) on the WMA YouTube account and [presentation slides](#).



Photo 1. Part of the JDN Delegation attending the 73rd WHA virtually.
Credit: Dr Yassen Tcholakov.

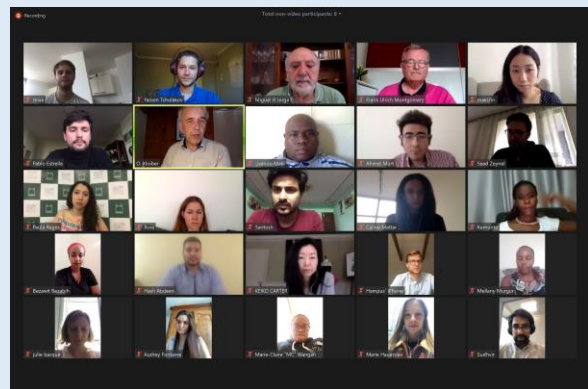


Photo 2. JDN 2020 Post-WHA Session with WMA Leadership. Credit: Dr Yassen Tcholakov.