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COVID-19 response in the Middle East and north Africa: challenges and paths forward







Coronavirus disease 2019 (COVID-19) was declared a pandemic on March 11, 2020; however, the first reports of its occurrence in the Middle East and north Africa (MENA) came from Iran in late February.1 As of May 6, the disease has spread across the 22 countries in the region, with 224071 confirmed cases and 8378 deaths (ie, case fatality rate of 3.7%). These figures underestimate the extent of the virus's spread because of the low number of completed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) tests and inadequate case reporting across the region. Based on the existing evidence, patients with COVID-19 in MENA are equally distributed within the 15–75 year age range (median age 42 years), and the main underlying comorbidities are cardiovascular conditions among women and diabetes among men. Although countries worldwide are struggling with the COVID-19 response, the situation in MENA is unique because of the divisions caused by poverty and regional conflicts.²

Although the states of the Persian Gulf are some of the wealthiest nations because of their oil resources, MENA is also home to some of the poorest countries in the world. MENA is the only region in the world where extreme poverty has been constantly increasing since 2011, and more than 20 million people are living on less than US\$1.9 per day.3 The economic outlook for these disadvantaged populations is poor, as estimated by the UN Economic and Social Commission for Western Asia: approximately 1.7 million people in the region will most probably lose their jobs in 2020, and 8 million more people will fall into poverty, half of whom will be children. Impoverished people in MENA have limited access to clean drinking water, adequate nutrition and sanitation, shelter, health care, and education.4

Similar to the wealth distribution across the region, the responses of countries in MENA to COVID-19 have been uneven. The responses range from restrictive temporary lockdowns to denial and lack of organisation, leading to more lax approaches. Some countries have tried to suppress the independent news describing the magnitude of the epidemic inside their country, whereas others have taken a human-rights-based approach and taken actions such as releasing thousands of prisoners.5-7

Some countries have even made a historical decision to cancel Friday and congregational prayers and to close their holy shrines.⁵⁻⁷ Responses have been particularly limited in countries that are facing conflicts and unrest. Despite the Islamic State's defeat last year, the region continues to strive to reach a lasting peace and stability. Several countries, including Afghanistan, Iraq, Libya, Syria, and Yemen, are still struggling with insurgencies, terror threats, and civil wars, which have led to thousands of casualties and millions of people being forcefully displaced both internally and externally. In Syria, Yemen, and Iraq more than 40 million people need humanitarian aid. In these countries in particular, public health infrastructures have not only had insufficient funding and resources in the past few decades, but have also been impacted by the destruction of health-care facilities during continuous bombing and the death or departure of health-care providers.8,9

Fortunately, some countries in MENA have been supported in their response to COVID-19 by UN agencies, the WHO regional office, and other non-governmental organisations (eq. International Committee of the Red Cross, Médecins Sans Frontières). These sources of support vary greatly across different countries but mainly include staff training and development of guidelines for case management and hospital preparedness, as well as providing testing kits and PCR machines. Country support desk teams have been established by WHO in response to COVID-19 in all countries in MENA, and guidelines for safe Ramadan practices have been provided.¹⁰

Unfortunately, this limited support faces substantial logistical and financial challenges. For example, as of April 8, 2020, WHO regional COVID-19 funding needs in MENA were approximately \$247 million. However, only approximately \$73 million of the needed funds have been secured through various donors, the majority from Kuwait (approximately \$41 million). The increased lockdowns and curfews have also affected WHO's capacity in providing technical support to the region. Moreover, essential immunisation services have been impacted, and in Afghanistan, Pakistan, and Somalia all resources in the polio immunisation networks are involved in the COVID-19 response.10 Given the already

Published Online May 14, 2020 https://doi.org/10.1016/ S2214-109X(20)30233-3 complicated economic and sociopolitical situation and fragile health-care systems in MENA, COVID-19 illustrates just how powerful the effects of weakened economies and overburdened health-care systems in some countries in MENA could be on the rest of the region and beyond.

Countries in MENA and the global community both have roles in addressing COVID-19. For the first time in decades, countries in MENA are facing a common problem with no political or religious agenda, that can nonetheless have devastating effects on millions of citizens. The leaders of these nations should put aside differences to come together and revisit their approach to regional security and stability, and to commit to further investments in regional public health infrastructure and strategies for future disease outbreaks. For the global community, it is imperative to show solidarity and empathy, and to allocate further support and financial and human capital resources to countries in MENA. Infectious diseases know no borders, and future outbreaks could be easily bridged to Europe and Africa and lead to future waves of pandemic.

We declare no competing interests.

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- 1 Sharifi H, Jahani Y, Mirzazadeh A, et al. Estimating the number of COVID-19-related infections, deaths and hospitalizations in Iran under different physical distancing and isolation scenarios: a compartmental mathematical modeling. medRxiv 2020; published online April 25. DOI:10.1101/2020.04.22.20075440 (preprint).
- 2 WHO. Eastern Mediterranean region COVID-19 affected countries. https://app.powerbi.com/view?r=eyJrljoiN2ExNWI3ZGQtZDk3My00YzE2LWFjYmQtNGMwZjk0OWQ1MjFhliwidCl6ImY2MTBjMGI3LWJkMjQtNGIzOS04MTBiLTNkYzI4MGFmYjU5MClsImMiOjh9 (accessed May 6, 2020).
- 3 World Bank. Poverty and shared prosperity 2018: piecing together the poverty puzzle. Washington, DC: World Bank, 2018.
- 4 UN Economic and Social Commission for Western Asia. COVID-19 economic cost to the Arab region. 2020. https://www.unescwa.org/sites/www. unescwa.org/files/escwa-covid-19-economic-cost-arab-region-en.pdf (accessed April 29, 2020).
- 5 Aljazeera. Fears grow for Middle East inmates amid coronavirus pandemic. April 17, 2020. https://www.aljazeera.com/news/2020/04/fears-grow-middle-east-inmates-coronavirus-pandemic-200417060909563.html (accessed April 29, 2020).
- 6 Shea J. Egypt is more concerned with controlling information than containing the coronavirus. April 3, 2020. The Globe and Mail. https:// www.theglobeandmail.com/opinion/article-egypt-is-more-concernedwith-controlling-information-than-containing (accessed April 29, 2020).
- 7 Solomon H. The impact of COVID-19 of the Middle East and North Africa. April 16, 2020. https://reliefweb.int/report/world/impact-covid-19-middle-east-and-north-africa (accessed April 29, 2020).
- 8 UN Office for the Coordination of Humanitarian Affairs. Global humanitarian overview 2020. Dec 3, 2019. https://reliefweb.int/report/ world/global-humanitarian-overview-2020-enarfrzh (accessed April 29, 2020).
- 9 Emmons A. Yemen's healthcare system, battered by war, braces for coronavirus. The Intercept. March 18, 2020. https://theintercept. com/2020/03/18/yemens-health-care-coronavirus-covid-19/ (accessed April 29, 2020).
- 10 WHO Regional Office for the Eastern Mediterranean. Coronavirus disease 2019 (COVID-19) weekly situation report 06. http://www.emro.who.int/ images/stories/coronavirus/covid-19-sitrep-6.pdf?ua=1 (accessed April 29, 2020).