2023

DISCUSSION PAPER

Government Responses to the COVID-19 Pandemic

What We Can Learn from the GCC Countries

Reimbursable Advisory Services:
Technical Assistance on Health Economics

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Saudi Health Council
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Abbreviations

GCC	Cooperation Council for the Arab States of the Gulf, or Gulf Cooperation Council
GDP	gross domestic product
KSA	Kingdom of Saudi Arabia
MERS-CoV	Middle East respiratory syndrome coronavirus
OxCGRT	Oxford Covid-19 Government Response Tracker
PCR	polymerase chain reaction
SHC	Saudi Health Council
UAE	United Arab Emirates
VOCs	variants of concern
WB	World Bank
WHO	World Health Organization

Executive Summary

The COVID-19 pandemic has posed a great threat to the Gulf Cooperation Council (GCC) countries. These countries—namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE)—are a unique group of countries located in the Arabian Gulf and characterized by rich natural resources, a high per capita income with a young population structure, and a large proportion of foreign migrant workers. Until March 31, 2022, there have been a total of over 3.57 million COVID-19 cases and 20,000 COVID-19 deaths from all GCC countries. Oil prices dropped unprecedentedly low in 2020 when the pandemic started, which was a catastrophic economic blow to all countries in the GCC. In addition, a large proportion of foreign workers were working in the GCC countries with very dense living conditions. Such environmental risks made them prone to COVID-19 infection.

The governments of GCC countries have proactively implemented a comprehensive set of policy measures (on containment and closure, health system, vaccination and economic policies), though evidence to quantify various dimensions of the government response in these countries is still lacking. With their previous experience in combating the Middle East respiratory syndrome coronavirus (MERS-CoV) in 2012, the governments of the GCC countries acted swiftly at the beginning of the pandemic and began to implement control measures in early February 2020. Previous studies have qualitatively summarized and analyzed the efforts by governments of the GCC countries to "flatten the curve." However, little evidence is available to quantify various dimensions of the government response, which changed over time with evolving dominance of different SARS-CoV-2 variants of concern (VOCs) and the epidemiological burden of the pandemic.

The current study conducted a literature review to summarize the GCC countries' government response and quantitatively measured that response using four indexes—the Government Response Index, the Stringency Index, the Vaccine Index, and the Initial Response Index—based on high-quality secondary data. The specific objectives of the current study were to (1) examine the government response in different GCC countries to the COVID-19 pandemic, (2) quantitatively evaluate the variation of the government response in the GCC countries using the four indexes during the study period, and (3) distill good practices and experiences and discuss implications for future epidemic/pandemic responsiveness. The control measures data were collected from government official websites, peer-reviewed publications, gray literature, and credible news media. The COVID-19 epidemiological data were collected from the World Health Organization (WHO). The data on indexes to evaluate the government response were collected from the Oxford COVID-19 Government Response Tracker (OxCGRT). The Government Response Index and the Stringency Index were developed by OxCGRT, and the Vaccine Index and Initial Response Index were developed by the study team. The study period was set to January 1, 2020, to March 31, 2022.

Country variations in COVID-19 epidemiological burden were found, although these countries shared a similar pattern of change with the spread of SARS-CoV-2 variants. Cumulatively, a total of 3,574,147 cases and 20,296 deaths were reported in the GCC countries by March 31, 2022. The UAE had the highest absolute total number of cases (890,987), followed by Saudi Arabia, Kuwait, Bahrain, Oman, and Qatar. The total number of deaths was highest in Saudi Arabia (9,043), while it was lowest in Qatar (677). However, after adjusting for population size, Bahrain had the highest burden in terms of both cumulative cases and deaths. Saudi Arabia had the lowest incidence rate (21,242/100,000), while the UAE had the lowest death rate (230/100,000) during the study period. There was a surge of new cases in all GCC countries each time transmission of a new variant started. The Omicron variant caused most of the new cases throughout the study period, while the Delta variant caused highest death rate among all variants. The highest daily death rate was observed in Bahrain (1.66/100,000) on June 2, 2021, after the Delta variant had started to dominate. The death rate remained well under 0.1 per 100,000 population ever since late November 2021, when the Omicron variant started to spread.

Overall, the government response of all the GCC countries to the COVID-19 pandemic has been very comprehensive, stringent, and timely. Notably, the GCC countries have implemented comprehensive vaccine polices and worked actively to protect nationls and foreign workers. Similarly, they have implemented a comprehensive set of policies to respond to the epidemiological and economic consequences of the pandemic, including policies concerned with containment and closure, health systems, and vaccination, as well as economic policies. The stringency of the response has been kept high, especially at the beginning of the outbreak. All the governments started to take actions around late January 2020, when there were fewer than 100 local cases in each country. The vaccination policies started to be implemented at the end of 2020; these policies covered vaccine prioritization, availability, financing, and requirements to increase vaccine coverage. Distinctively, the GCC countries have worked actively to protect nationals and foreign workers by providing them with free access to testing, diagnosis, treatment, and vaccines. In addition, other policies—such as extending work and residency permits and providing temporary residency for those in need—were also implemented.

All the GCC countries dynamically adjusted their response with the evolving COVID-19 epidemiological burden, though the governments had different response magnitudes as measured by the four indexes. We observed a similar trend—that the governments had the highest Stringency Index score, namely the highest strictness of "lockdown-style" policies that restrict people's behaviors— at the very beginning of the outbreak. The second peak of the Stringency Index score came during the Delta variant period with the surge of new cases; it continued to drop and did not increase after the Omicron variant started. The Government Response Index, showing how the overall government response varied, followed a variation pattern similar to that of the Stringency Index. The Vaccine Index, which shows how the vaccine prioritization, availability, financing, and requirements policies varied, increased after the Delta variant appeared and had been kept at an even higher level since the Omicron variant started to dominate. On average, the Vaccine Index was highest in the UAE (82.5, on a scale of 1 to 100), followed by Saudi Arabia, Bahrain, Oman, Qatar, and Kuwait. Different paces of initiating the government response when the pandemic started were observed, as measured by the Initial Response Index. Oman started the most quickly of all the GCC countries with an index score of 45.7 (on a scale of 1 to 100), followed by Saudi Arabia, Bahrain, Qatar, Kuwait, and the UAE.

The findings of the study have provided several important lessons for future pandemic response and preparedness, not only for GCC countries but also for other countries with similar economic, demographic, and health contexts. First, it is essential to promptly activate and implement the containment and closure policies under

strong leadership of the governments to restrict people's mobility at the very beginning of the pandemic or epidemic. Second, the stringency of the containment and closure policies need to be dynamically adjusted based on the epidemiological burden, the virological features of different virus variants, and the availability of vaccines and medicines. Strengthening health system policies, such as testing and contact tracing, is the key to maintaining the gains achieved when it is time to relax the stringency of lockdown-style policies and prepare for opening up. Third, proactively implement comprehensive vaccination policies to improve coverage and provide sufficient funding for universally free access to vaccines. Fourth, ensure equitable and free access to testing, diagnosis, and treatment for all residents, regardless of their nationalities. Special attention should be paid to vulnerable or marginalized populations, such as foreign workers and others with lower socioeconomic status in poor and high-density accommodations. Fifth, strengthening the resilience of health systems—especially in governance, financing, human resources, and service delivery—should be integrated as part of routine work to enhance pandemic response capacity.

1 BACKGROUND

COVID-19, reported first at the end of 2019, has continued to infect hundreds of million people around the world. In approximately three months, the disease spread to 177 countries, with new cases in new countries emerging daily.[1] The first SARS-CoV-2 variant, Alpha, was discovered in South Africa in November 2020. Five major variants of concern (VOC) defined by the World Health Organization (WHO) were identified by the end of May 2021; these included Alpha (B.1.1.7), Beta (B.1.351), Gamma (P.1), Delta (B.1.617.2) and Omicron (B.1.1.529). The Delta and Omicron variants are currently spreading at the time of writing.[2] The global confirmed cases and deaths toll had risen to over 521 million and 6.2 million, respectively, by May 20, 2022.[3] Nevertheless, the death rate has decreased dramatically since the Omicron variant started spreading in late 2021.[4] Many governments have actively taken a set of actions—such as testing, tracing high-risk people, isolating patients, quarantining, encouraging social distance, and implementing lockdowns and travel bans—to contain COVID-19.[5,6] These measures were implemented very strictly at the beginning of the pandemic and have been adjusted accordingly with changing epidemiological situations. In addition, mass vaccination has been another important containment strategy after several vaccines became available to the public in early 2021.[7]

The Gulf Cooperation Council (GCC) countries—namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE)—are a unique group of countries located in the Arabian Gulf, characterized by rich natural resources, per capita high-income level, a young population structure, and a large proportion of foreign workers.[8] The median gross domestic product (GDP) per capita in the GCC countries was US$20,260 in 2020.[9] The percentage of people ages 65 years and older accounted for only between 1 percent and 3 percent of their total population in 2020.[10] Another distinctive characteristic of the GCC countries is the high percentage of foreign workers.[11] Access to healthcare for foreign workers may be dependent on their job status, unlike nationals who are generally provided healthcare coverage by the government regardless of their employment level.[12,13]

The pandemic of COVID-19 has posed a great threat to the GCC countries. The first case of COVID-19 in these countries was detected in the UAE on January 29, 2020, and most other GCC countries began to detect cases in late February.[14] In total, there were over 3.57 million cases and 20,000 deaths by March 31, 2022, in the GCC countries.[3] Oil prices dropped to an unprecedented low in 2020 when the pandemic started, which was a catastrophic economic blow to all the GCC countries.[15] Workers with certain environment and occupations were more vulnerable for getting the infection.[12,13]

Evidence to quantify various dimensions of the government response in the GCC countries is still lacking. With previous experience in combating MERS-CoV in 2012, the governments of the GCC countries acted swiftly at the beginning of the pandemic and started to take comprehensive control measures in early February 2020.[16] The confirmed cases

and deaths have been well under control, despite the surge of cases caused by the Omicron variant in 2021. Previous studies have qualitatively summarized and analyzed the efforts by governments of the GCC countries to flatten the curve.[12,16-20] However, little evidence is available to quantify various dimensions of the government response, which changed over time with the evolving dominance of different SARS-CoV-2 VOCs and epidemiological burden of the pandemic. Therefore, the current study aims to (1) examine the government response in different GCC countries to the COVID-19 pandemic, including containment measure policies, health system policies, vaccination policies, and economic policies; (2) quantitatively evaluate the government response in the GCC countries using four indexes (the Government Response Index, the Stringency Index, the Vaccine Index, and the Initial Response Index) to assess how GCC countries dynamically adjusted their responses according to the emerging SARS-CoV-2 VOCs and evolving COVID-19 epidemiological burden; and (3) distill good practices and experiences and discuss implications for future actions with effective responsiveness and preparedness for the emerging and re-merging epidemic/pandemic.

2 APPROACH

The analysis was conducted among the six GCC countries based on high-quality secondary data. We collected COVID-19 control strategies, policies, and measures taken by the governments from government official websites, peer-reviewed publications, gray literature, and credible news media. The COVID-19 epidemiological data, including new and cumulative cases and deaths, were collected from the WHO Coronavirus (COVID-19) Dashboard.[3] We also calculated the cases and deaths relative to the size of the population, using the projected population size in 2021 from the World Population Prospects 2019 study of the United Nations.[21] The data on indexes to evaluate the government response were collected from the Oxford COVID-19 Government Response Tracker (OxCGRT) at the Blavatnik School of Government, University of Oxford.[22] We restricted the data collection to the period between January 1, 2020, and March 31, 2022, covering the initial outbreak and the subsequent transmission of SARS-CoV-2 VOCs.

We used four indexes to quantitatively measure the government response in the GCC countries. These four indexes are the Government Response Index, the Stringency Index, the Vaccine Index, and the Initial Response Index. The Government Response Index and Stringency Index were developed by the OxCGRT team based on relevant policy indicators (Tables 1 and 2). All these indicators were binary or on an ordinal scale. A binary flag label system was used to further indicate the scope of the measure. The Government Response Index measures the overall government response on containment and closure, health systems, and economic policies. The Stringency Index measures the variation of the strictness of policies enforced with administrative power that mainly restrict people's mobility, which primarily included containment and control policies. Our study team further developed the Vaccine Index based on the four vaccine policy indicators (Tables 1 and 2) included in the OxCGRT. These four indicators captured vaccine prioritization, availability, financing, and compulsory requirement policies to comprehensively evaluate the vaccine-related measures. The Initial Response Index was previously developed by our study team by incorporating timeliness into the Government Response Index to evaluate how quickly governments responded at the early stage of the pandemic. It used the same indicators as Government Response Index except for indicator H7, as vaccination policies were not available during the initial stage of the pandemic in early 2020.

More information about the methods on OxCGRT indicators, Government Response Index, and Stringency Index can be found on the OxCGRT website at https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/index_methodology.md.[23] The detailed development methodology of the Initial Response Index was in our previous manuscript published elsewhere.[5]

TABLE 1 THE OxCGRT INDICATORS OF THE GOVERNMENT RESPONSE INDEX, STRINGENCY INDEX, AND THE VACCINE INDEX

Index	Containment and closure policies								Economic policies		Health system policies						Vaccination policies			
	C1	C2	C3	C4	C5	C6	C7	C8	E1	E2	H1	H2	H3	H6	H7	H8	V1	V2A	V3	V4
Government Response Index	X	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x				
Stringency Index	X	x	x	x	x	x	x	x			x									
Vaccine Index																	x	x	x	x
Initial response index	X	x	x	x	x	x	x	x	x	x	x	x	x	x		x				

Source: OxCGRT

https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/codebook.md

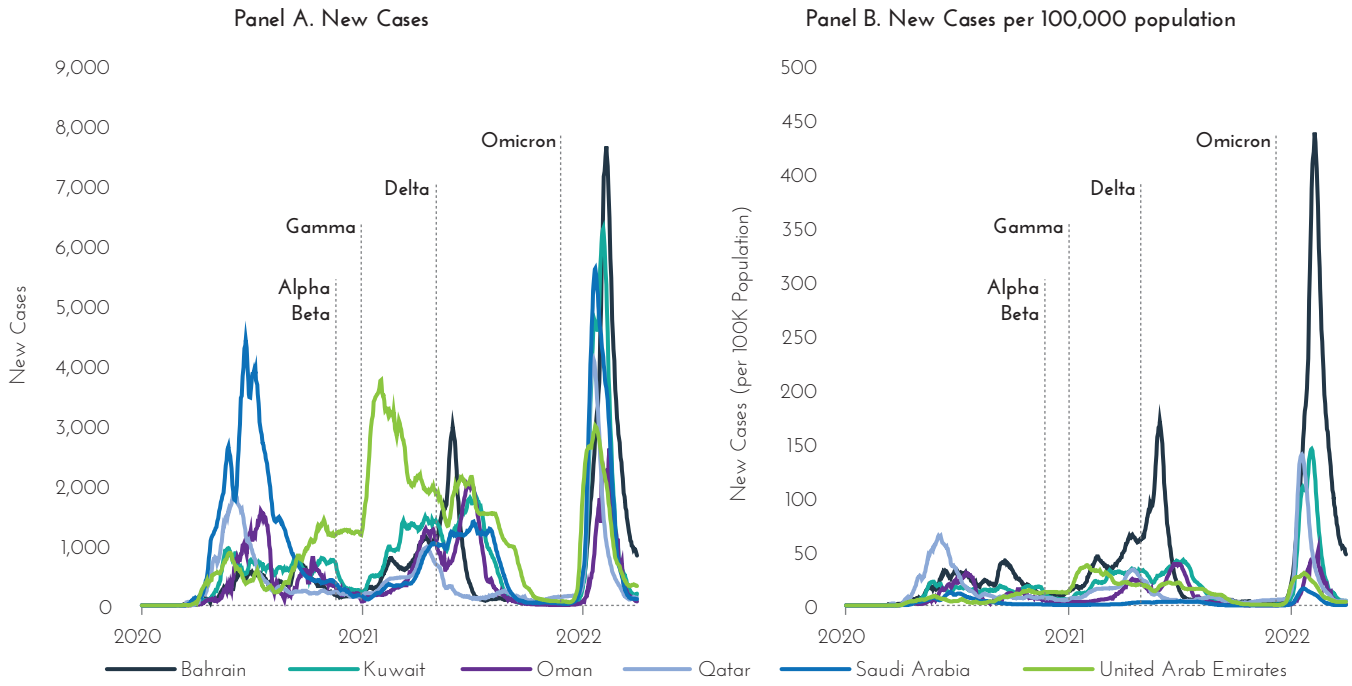
EPIDEMIOLOGICAL BURDEN OF COVID-19 IN THE GCC COUNTRIES

3

Since the onset of the COVID-19, a total of 3,574,147 cases and 20,296 deaths were reported in the GCC countries by March 31, 2022, with country variations in epidemiological burden. The UAE had the highest absolute total number of cases (890,987), followed by Saudi Arabia, Kuwait, Bahrain, Oman, and Qatar. The total number of deaths was highest in Saudi Arabia (9,043) and lowest in Qatar (677). However, after adjusting for population size, Bahrain had the highest burden, at 316,737 cases and 841 deaths per 100,000 population, respectively. Saudi Arabia had the lowest incidence rate (21,242/100,000), while the UAE had the lowest death rate (230/100,000) during the study period.

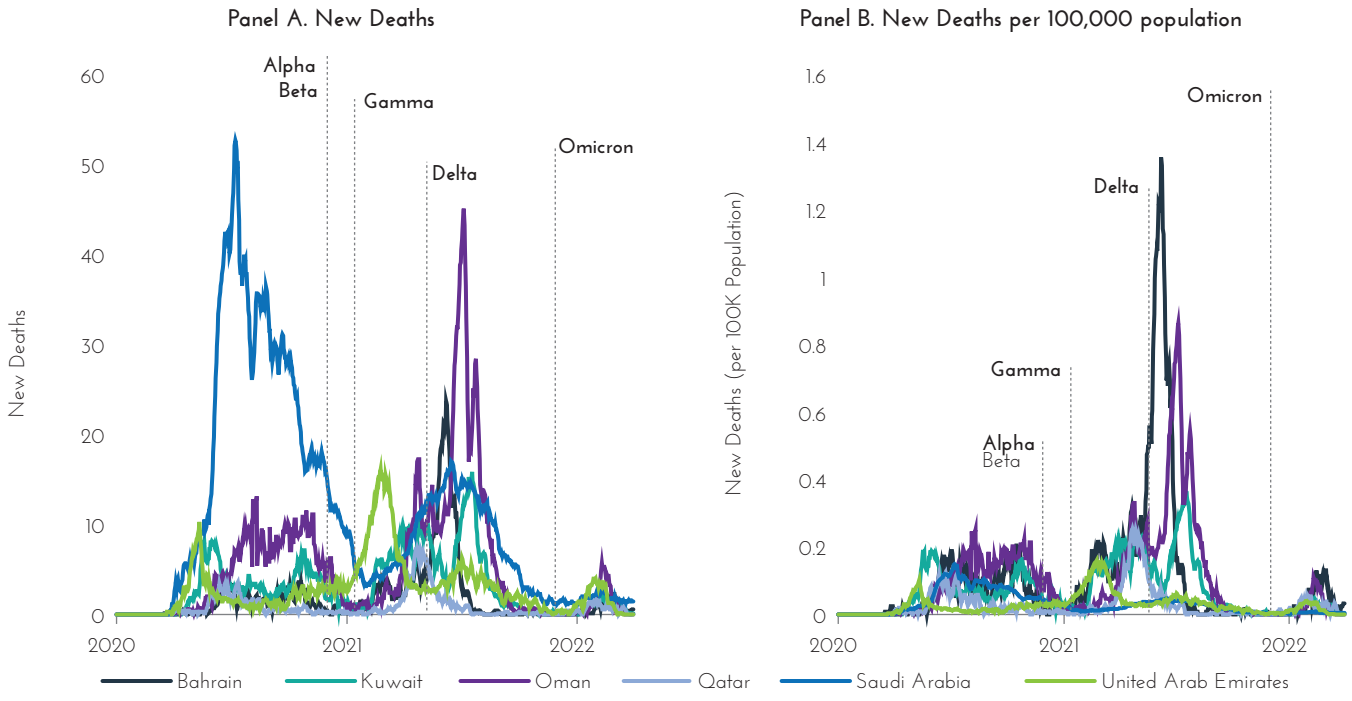
The GCC countries shared a similar pattern in the change of the COVID-19 epidemiological burden with the spread of SARS-CoV-2 variants. There was a surge of new cases in all GCC countries every time transmission of a new variant started (Figure 1). The Omicron variant has caused most of the new cases throughout the study period. Similarly, there was a surge of deaths with the spread of each new variant, although this dropped dramatically since the Omicron variant appeared (Figure 2). Specifically, the daily new death rate was below 3 per 100,000 population for all the six countries from January 2020 to mid-May, 2021.[24] However, daily deaths quickly went up and peaked between June and July 2021 after Delta was declared a VOC by the WHO. The highest daily death rate was observed in Bahrain (1.66/100,000) on June 2, 2021. It had remained well under 0.1 per 100,000 population ever since late November 2021, when the Omicron variant started to spread.

FIGURE 1 DAILY NEW CASES (7-DAY AVERAGE) OF COVID-19, GCC COUNTRIES, FROM JANUARY 2020 TO MARCH 2022



Data source: WHO Coronavirus (COVID-19) Dashboard

FIGURE 2 DAILY NEW DEATHS (7-DAY AVERAGE) OF COVID-19, GCC COUNTRIES, JANUARY 2020 TO MARCH 2022



Data source: WHO Coronavirus (COVID-19) Dashboard

SUMMARY OF THE GCC COUNTRIES' GOVERNMENT RESPONSE TO COVID-19

4

Governments of all the GCC countries have actively responded to the COVID-19 pandemic by implementing a series of policies (on containment and closure, health system, vaccination, and economic policies) during the study period (Table 2).

Containment and closure policies are implemented in all GCC countries, with various levels of stringency. The containment and closure policies refer to those enforced with administrative power to constrain people's mobility, such as workplace closure and travel control, to ultimately reduce transmission among the population. All the GCC countries have implemented the identified eight containment and control policies, despite the difference in their stringency.[25] For example, the UAE, Saudi Arabia, Oman, and Kuwait initiated curfews and major cities were sealed off when the pandemic started. By comparison, Bahrain and Qatar did not impose any curfews.[18]

All key health system policies, except for investment in vaccine development, have been effectively implemented in the GCC countries. The health system policies are primarily public health measures covering testing, contact tracing, vaccine development and delivery, health system strengthening, wearing facial masks, and implementing special measures to protect the elderly. The stringency of implementation also varied.[25] For example, in terms of measures to protect the elderly, Qatar has published and implemented a number of guidelines on isolation, nutrition, and care to protect the elderly.[26] Bahrain has launched mobile units providing home vaccinations against COVID-19 for the elderly and people with special needs.[27] In the UAE, Dubai announced measures to protect staff, such as allowing elderly members of the workforce to work remotely.[28]

All six GCC countries have rolled out country prioritization plans to vaccinate their populations (both nationals and non-nationals) free of charge after vaccines became available in November 2020. Similarly, people most at risk of developing severe symptoms (for example, seniors, people with chronic diseases, and so on) and people most at risk of infection (for example, health care workers) have been the top priorities to be vaccinated.[25] Foreign workers have also been granted free access to vaccines.[13] All GCC countries have had a mandatory vaccination requirement for all people involved in indoor daily activities, and some countries targeted broader populations.[25] For example, in the UAE, all students over 16 years of age must be vaccinated against COVID-19 to attend school.[29] Saudi Arabia required employees to be vaccinated to appear in their workplace and domestic travelers to be fully vaccinated to fly.[30,31] To relieve the economic burden on enterprises and households, the GCC countries have also offered generous *financial support policies* during the pandemic, including by providing direct cash payments, freezing financial obligations, and providing financial stimulus packages.[18]

The GCC countries have implemented special policies for the foreign workers, who make up a large proportion of the population and generally have more limited access to health services. Testing, diagnosis, treatment, and vaccines of COVID-19, including hospitalization, were made free to all foreign workers in the six countries regardless of their immigrant status.[13,16] In addition, the GCC countries extended work permits and residency permits for these workers who could not return to their home countries because of travel restrictions and provided sheltered places for undocumented workers during the pandemic.[18] For example, in Saudi Arabia, residency permits were extended for three months for the expatriated workers and the expat levy was exempted.[32] In Bahrain and Kuwait, undocumented workers were pardoned and granted temporary residency.[18] In the UAE and Oman, delay fines and extension of expat manpower's licenses were waived.[18] In Qatar, the residency permits were renewed automatically.[18]

TABLE 2 SUMMARY OF GOVERNMENT RESPONSE IN THE GCC COUNTRIES

Category	OxCGRT ID	Measures description	Response summary
Containment and closure policies	C1	School closing	All GCC countries closed school and reopened in November 2021.[18,33]
	C2	Workplace closing	All GCC countries closed non-essential businesses and reopened, while maintaining social-distancing measures, after the curve was flattened.[18,25]
	C3	Cancelling public events	All GCC countries banned large public events such as concerts and religious and sporting events during the initial phase of the COVID-19 outbreak. Subsequently, public events were open to those who had completed vaccination.[25]
	C4	Restrictions on gatherings	All GCC countries placed restrictions on social gatherings such as the postponement of large public events and mass gatherings such as weddings, and restrictions on religious mass gatherings, including pilgrimage.[16,25]
	C5	Closing of public transport	Bahrain and the UAE: Public transportation was fully functional with restrictions. Kuwait, Oman, Qatar, and Saudi Arabia: Public transportation was initially suspended.[25]
	C6	Stay-at-home requirements	The UAE, Saudi Arabia, Oman, and Kuwait: Indefinite curfews were imposed and major cities sealed off; national curfews in these four countries lasted from March 2020 until May to August 2021.[18,25] Bahrain and Qatar: No curfews were imposed.[25]
	C7	Restrictions on internal movement	Saudi Arabia: Issued a ban on movement between 13 provinces and, effective on September 2021, only fully vaccinated passengers were allowed to fly on domestic flights. The UAE: All passengers entering Abu Dhabi must have a negative COVID-19 PCR test result issued within 48 hours. Omen: Issued a ban on interstate travel and only people vaccinated with at least one dose were allowed to enter Musandam Governorate & Governorate of Dhofar (Khareef). Kuwait: Vaccinated people are allowed to enter all places, but unvaccinated people can enter only pharmacies, supermarkets, medical centers, and hospitals. Bahrain and Qatar: No restrictions found.[18]
	C8	International travel controls	All GCC countries (except Bahrain) initially suspended international flights, but then gradually resumed, with the timing of resumes varying from country to country.[18]

TABLE 2 (Contd...)

Category	OxCGRT ID	Measures description	Response summary
Health system policies	H1	Public information campaigns	All GCC countries had a timely assessment of the risks of COVID-19, and transparent communication messaging was implemented both at national and subnational levels. Oman's response did not include risk communication team/ health professionals at the subnational level.[16]
	H2	Policy on who has access to testing	PCR tests are widely available for all GCC countries.[25]
	H3	Policy on contact tracing after a positive diagnosis	All GCC member states established a daily practice of monitoring COVID-19 cases, mortality, and contact tracing, as well as aggregating weekly and monthly data.[16]
	H4	Announced short-term spending on the healthcare system; e.g. hospitals, masks, etc.	All six GCC countries strengthened health care facilities, designated hospitals for treating COVID-19 patients, enforced infection control procedures and visual triage, and monitored the capacity for isolation beds, equipment, human resources, and critical medical supplies.[16]
	H5	Announced public spending on COVID-19 vaccine development	–
	H6	Policies on the use of facial coverings outside the home	All implemented indoor mask-wearing requirements.[25]
	H7	Policies for vaccine delivery for different groups	All GCC countries have policies to determine the priority of vaccination among population groups.[25]
	H8	Protecting elderly people (as defined locally) in long-term care facilities and/or the community and home setting	Bahrain, the UAE, and Qatar have recorded policies to protect older people. Saudi Arabia, Kuwait, and Oman: No relevant information found.[25]
Vaccination policies	V1	The ranked position for different groups within a country prioritization plan	All the GCC countries have a step-by-step plan to vaccinate residents based on the prioritization plan in the country. Similarly, people most at risk of developing severe symptoms (e.g., senior people, people with chronic diseases) and people most at risk of getting infected (e.g., health care workers) are the top priorities.[25]
	V2	Categories of people—regardless of their position in a prioritized rollout plan—are currently receiving vaccines	Nationals and non-nationals in all the GCC countries are receiving vaccines in the GCC countries, despite their position in the prioritization order.[25]
	V3	How vaccines are funded for each category of people identified in OxCGRT ID category V2 as currently receiving vaccines.	Vaccines are free of charge in the GCC countries for all citizens and residents.[25]
	V4	Vaccine requirements for workers	All GCC countries have had a mandatory vaccination requirement for all people involved in indoor activities.[25]

TABLE 2 (Contd...)

Category	OxCGRT ID	Measures description	Response summary
Economic policies	E1	Providing direct cash payments to people who lose their jobs or cannot work	Bahrain: Provides financial aid for taxi and bus drivers, kindergarten caregivers, and driving instructors. Kuwait: Establishes a mechanism to secure the minimum income that ensures the cost of living for workers affected by the current crisis and linked to contracts. Oman: Provides temporary income support to insured Omanis who lost their employment involuntarily and who seek to become reemployed. Qatar: All workers in isolation, quarantine or receiving treatment are paid their basic salary and receive their allowances irrespective of whether they are entitled to sick leave benefits. Saudi Arabia: Issued a decision to cover 60% of salaries in the private sector. Wage support extended only through July 2021. The UAE: Employers who lose their jobs under unforeseen circumstances will reportedly receive 60 percent of their salary, or up to $5,445 (AED 20,000) monthly for a limited time, helping maintain a rolling income.[18]
	E2	Freezing financial obligations for households	All the GCC countries have developed related economic policies to relieve the financial burden among households, though the intensity varies.[18]
	E3	Announced economic stimulus spending	All GCC countries introduced billion-dollar stimulus packages to help boost economies.[18]
	E4	Announced offers of COVID-19-related aid spending to other countries	The GCC countries have come together to support global equitable access to COVID-19 vaccines, with a total of US$221 million in funding pledges and US$50 million in in-kind support.[34]

Source: OxCGRT and relevant literatures.
Note: PCR = polymerase chain reaction; – = not available.

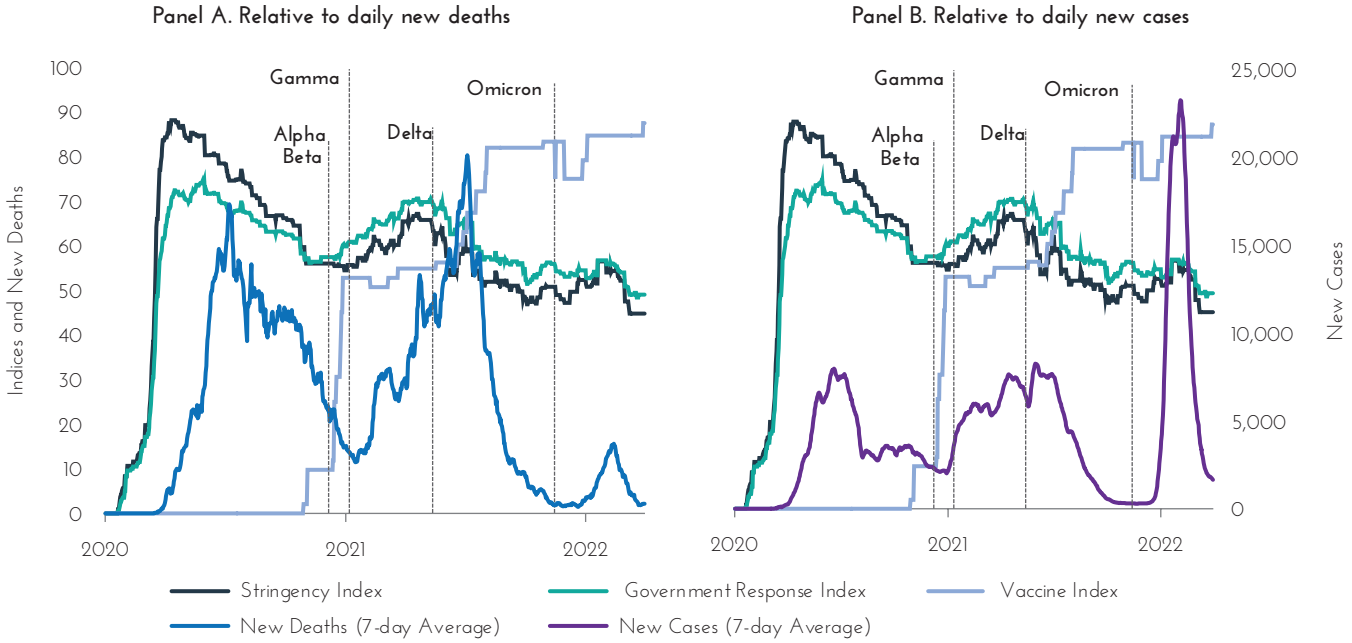
QUANTITATIVE MEASUREMENT OF THE GCC COUNTRIES' GOVERNMENT RESPONSE TO COVID-19

5

All the GCC countries had dynamically adjusted their response with the evolving COVID-19 epidemiological burden over the study period (Figures 3 and 4). We observed a similar trend that the governments had the highest Stringency Index score (close to 90 on a scale of 1 to 100), that all exhibited the most strict lockdown-style policies that restrict people's behaviors at the very beginning of the outbreak. The second peak of the Stringency Index score (close to 65) came during the Delta variant period with the surge of new cases. Governments continued to drop in the Stringency Index score—especially after the cases caused by the Delta variant were under control—and did not step up the stringency after the Omicron variant started (scores remained around 50). The Government Response Index, showing how the overall government response varied, followed a variation pattern similar to that exhibited by the Stringency Index. Interestingly, the Government Response Index score was lower than the Stringency Index score at the beginning of the outbreak, but it started to surpass the Stringency Index around the end of 2020, when other control measures—especially vaccines—became available. The Vaccine Index score, which shows how vaccine prioritization, availability, financing, and requirements policies varied, increased after the Delta variant appeared and had been kept at an even higher level since the Omicron variant started to dominate. Notably, with the evident increase in the score of the Vaccine Index, the new deaths had dropped sharply after the peak caused by the Delta variant.

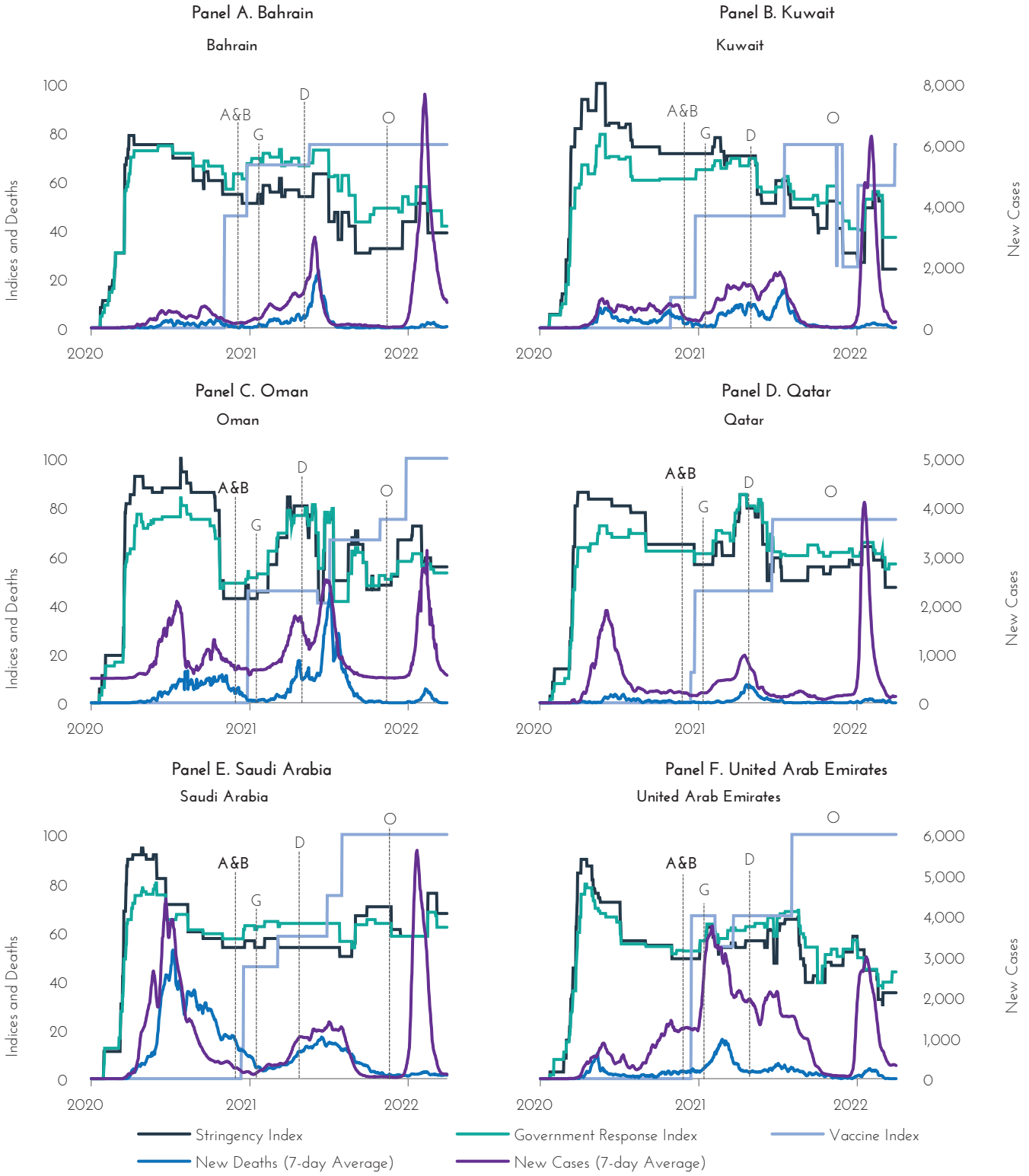
Though sharing similar response patterns, the GCC countries had different response magnitude over the study period (Figure 4). On average, Oman had the highest Stringency Index score (63.1), followed by Qatar, Saudi Arabia, Kuwait, the UAE, and Bahrain throughout the study period. Qatar had the highest Government Response Index score (61.4), followed by Saudi Arabia, Bahrain, Oman, Kuwait, and the UAE. We observed different paces of initiating the government response when the pandemic started, as measured by the Initial Response Index. Oman started fastest among all the GCC countries with an index score of 45.7, followed by Saudi Arabia (38.1), Bahrain (22.2), Qatar (20.6), Kuwait (18.2), and the UAE (13.9). On average, the Vaccine Index score was highest in the UAE (82.5), followed by Saudi Arabia (78.3), Bahrain (69.7), Oman (65.8), Qatar (62.8), and Kuwait (50.4). Notably, the Vaccine Index remained at 100 in the UAE and Saudi Arabia since October 2021, and in Oman since late December 2021.

FIGURE 3 CHANGE IN THE SCORE OF THE AGGREGATED STRINGENCY INDEX, GOVERNMENT RESPONSE INDEX, AND VACCINE INDEX OF THE GCC COUNTRIES RELATIVE TO THE COVID-19 EPIDEMIOLOGICAL BURDEN, JANUARY 2020 TO MARCH 2022



Source: OxCGRT

FIGURE 4 COUNTRY PROFILES OF THE GCC COUNTRIES IN THE CHANGE OF THE STRINGENCY INDEX, GOVERNMENT RESPONSE INDEX, AND VACCINE INDEX RELATIVE TO COVID-19 EPIDEMIOLOGICAL BURDEN, JAN 2020 TO MARCH 2022



Source: OxCGRT

Note: VOC (variant of concern) labels: A&B = Alpha and Beta; G = Gamma; D = Delta; O = Omicron.

GOOD PRACTICES, LESSONS, AND IMPLICATIONS FOR FUTURE PREPAREDNESS

6

The government response of the GCC countries to the COVID-19 pandemic overall has been very comprehensive, stringent, and timely. They have all implemented a comprehensive set of policies to respond to the epidemiological and economic consequences of the pandemic. Policies that aim to reduce transmission and mortality include containment and closure policies, health system policies, and vaccination policies. Specifically, the containment and closure policies aim to restrict people's mobility, while health system policies and vaccination policies aim to use a public health approach to control the pandemic. Economic policies have also been developed to relieve the economic loss to individuals, households, and enterprises caused by the pandemic. The stringency of the response has been kept high, especially at the beginning of the outbreak. All the governments began to act around late January 2020, when there were fewer than only 100 local cases per GCC country. In order to ensure effective coordinated efforts in future to tackle epidemics and strengthen the public health efforts, in January 2021 the GCC countries launched the establishment the new Gulf CDC in Riyadh, Saudi Arabia. The mission of the center is envisioned to foster harmonization, build knowledge, and generate evidence to enable the prevention of communicable and non-communicable diseases, mitigation of public health emergencies, and promotion of healthy communities across the GCC region.

The GCC countries have adjusted the government response dynamically based on the epidemiological burden, the virological characteristics of the SARS-CoV-2 variants, and the availability of vaccines. Similarly, these governments all kept the stringency of lockdown-style policies at a very high level, especially when the pandemic first started. However, they began to relax these policies when cases went down, especially after the vaccines became available in late 2020. When the Gamma and Delta variants began to circulate, the GCC countries worked on strengthening their health system and vaccination policies, while keeping the stringency of the containment and closure policies at a moderately high level. After the Omicron variant started to hit the GCC countries, the governments stepped up their vaccination policies as their main response, while relaxing other policies to restore the economy. Boosting economics became the top priority after the pandemic death rates were well under control.

The GCC countries have developed and implemented tailored policies to address the challenges in controlling spread of the virus among the large proportion of foreign workers. Compared with nationals, foreign workers usually have lower socioeconomic status, worse living and health conditions, and are prone to SARS-CoV-2 infections.[13] Singapore has the same demographic situation and the uncontrolled spread of SARS-CoV-2 among foreign workers, who lived in high-density accommodations, contributed to the surge of cases in April and May 2020.[35] The governments of GCC countries have learned this lesson and worked actively to formulate and implement effective policies for the foreign migrant workers to improve their access to health services and secure

their essential living conditions, regardless of their immigrant status. The governments have provided free testing, diagnosis, and treatment for these workers. Furthermore, they extended work permits and residency permits for those workers who could not return to their home countries as a result of travel controls. In addition, some governments also provided sheltered places for undocumented workers during the pandemic.

The GCC countries have proactively and effectively implemented a set of comprehensive vaccination policies targeting the vulnerable and high-risk populations. The vaccination policies conducted in these countries primarily cover (1) develop a country prioritization plan to deliver the vaccines to populations with different risks of infection and developing severe symptoms; (2) ensure the availability of vaccines among the population regardless of their prioritization order; (3) provide sufficient funding for each recipient category in the prioritization plan to be freely vaccinated; (4) put forward compulsory requirements to facilitate vaccination, such as restricting indoor activities and travel among the unvaccinated. Importantly, these countries have kept the vaccination campaign momentum after the surge of cases caused by the Omicron variant, especially the UAE, Saudi Arabia, and Oman. Notably, the share of people who received at least two doses of vaccines had reached 96.2 percent in the UAE by the end of March 2022, which was the highest rate worldwide.[36] Globally, Singapore and Portugal were the second and third most vaccinated countries, at 90.3 percent and 86.8 percent, respectively, by the same time.[36]

There were several important causes that shape the effective government response of the GCC countries. First, previous experience in dealing with the MERS-CoV has helped the region in strengthening its preparedness and response efforts, which facilitated a faster and more effective response against the COVID-19 pandemic when it was initiated.[16] Measures such as lockdowns of major cities, school closures, and suspension of flights were implemented quickly, as those Asian countries or regions—such as China; Hong Kong SAR, China; Taiwan, China; and Singapore, which had previous experience in controlling SARS—did.[5, 37-39] Second, the region has used its available financial means to develop a set of socioeconomic policies and tools for effective responses. Sufficient funding has been used to support the implementation of all the control and economic policies, which is especially important when it comes to securing vaccines and improving coverage. A recent study further demonstrates that higher GDP per capita can significantly predict lower cumulative rates of SARS-CoV-2 infection, based on data from 177 countries.[40] In addition, the carefully designed and comprehensive vaccination policies and robust implementation, as mentioned above, are another important factor in reducing death rates.

The findings of the study have provided several important lessons for further pandemic response and preparedness, not only for GCC countries but also for other countries with similar economic, demographic, and health system contexts. First, it is essential to promptly activate and implement containment and closure policies, under the strong leadership of the government, to restrict people's mobility at the very beginning of the pandemic or epidemic. It is extremely important to reduce interpersonal transmission when there is limited knowledge about a new virus. Second, the stringency of the containment and closure policies needs to be dynamically adjusted based on the epidemiological burden, the virological features of different virus variants, and the availability of vaccines and medicines. Strengthening health system policies, such as testing and contact tracing, is the key to maintaining the gains achieved when it is time to relax the stringency of lockdown-style policies and prepare for opening up. Third, it is important to proactively implement comprehensive vaccination policies to improve coverage when vaccines are available and to provide sufficient funding to ensure free access to vaccines for all. Fourth, it is crucial to ensure equitable and free access to testing, diagnosis, and treatment to all residents, regardless of their nationality. Special attention should be paid to vulnerable or marginalized populations, such as workers and others with lower

socioeconomic status living in poor and high-density accommodations. Fifth, strengthening the resilience of health systems—especially in governance, financing, human resources, and service delivery[41]—should be integrated as part of routine work to enhance pandemic response capacity. The four elements of resilience in highly effective country responses to COVID-19, as set forth in a recent study among 28 countries, are (1) activating comprehensive responses, (2) adapting health system capacity, (3) preserving health system functions and resources, and (4) reducing vulnerability.[42] Countries can use these elements to guide and monitor the system resilience strengthening throughout the process.[43]

7 CONCLUSION

The GCC countries have effectively implemented a set of containment and closure, health system, vaccination, and economic policies in responding to the COVID-19 pandemic, though there are country disparities in terms of response magnitude.

The past often informs the future. These GCC countries have learned from their past experiences in epidemic/pandemic control, which helped them to tackle the challenges of the COVID-19 pandemic over the past two years. Countries around the world may learn from GCC one way or another in their future pandemic preparedness, as summarized here, and integrate the process of strengthening the resilience of the health systems into daily work to enhance pandemic response capacity.

References

1. WHO (World Health Organization). COVID-19 Situation reports. https://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports, accessed May 30, 2022.

2. WHO (World Health Organization). Tracking SARS-CoV-2 variants. https://www.who.int/activities/tracking-SARS-CoV-2-variants, accessed May 25, 2022.

3. WHO (World Health Organization). WHO Coronavirus (COVID-19) Dashboard. https://covid19.who.int/, accessed May 25, 2022.

4. Blauer, B. "Comparing Cases, Deaths, and Hospitalizations Indicates Omicron Less Deadly." Johns Hopkins Coronavirus Resource Center. https://coronavirus.jhu.edu/pandemic-data-initiative/data-outlook/comparing-cases-deaths-and-hospitalizations-indicates-omicron-less-deadly.

5. Chen, S., L. Guo, T. Alghaith, D. Dong, M. Alluhidan, M. M. Hamza, C. H. Herbst, X. Zhang, G. C. A. Tagtag, Y. Zhang, N. Alazemi, R. Saber, R. Alsukait, and S. Tang. 2021. "Effective COVID-19 Control: A Comparative Analysis of the Stringency and Timeliness of Government Responses in Asia." *International Journal of Environmental Research and Public Health* 18(16): 8686. doi:10.3390/ijerph18168686.

6. Hale, T., N. Angrist, Kira B, Petherick A, Phillips T, Webster S. Variation in government responses to COVID-19. 2020.

7. Liang, L.-L., H.-S. Kuo, H. J. Ho, and C.-Y. Wu. 2021. "COVID-19 Vaccinations Are Associated With Reduced Fatality Rates: Evidence From Cross-County Quasi-Experiments." *Journal of Global Health* 11. doi:10.7189/jogh.11.05019.

8. Sturm, M., J. Strasky, P. Adolf, and D. Peschel. 2008. "The Gulf Cooperation Council Countries: Economic Structures, Recent Developments and Role in the Global Economy." European Central Bank Occasional Paper No. 92, July 2008. https://www.ecb.europa.eu/pub/pdf/scpops/ecbocp92.pdf.

9. World Bank. World Bank DataBank. Data for Bahrain, Oman, Kuwait, Saudi Arabia, Qatar, United Arab Emirates. https://data.worldbank.org/?locations=BH-OM-KW-SA-QA-AE, accessed April 20, 2022.

10. World Bank. World Bank DataBank. Population ages 65 and above (% of total population) - Qatar, Saudi Arabia, Oman, United Arab Emirates, Kuwait, Bahrain. https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS?locations=QA-SA-OM-AE-KW-BH, accessed April 20, 2022.

11. Shayah, M. H. and Z. Sun. 2019. "Employment in the Gulf Cooperation Council (GCC) Countries: Current Issues and Future Trends." Paper presented at the 2nd International Conference on Social Science, Public Health and Education (SSPHE 2018). doi:10.2991/ssphe-18.2019.94.

12. El-Saharty, S. and A. C. Liu. 2021. "COVID-19 in the Gulf Cooperation Council Countries: Health Impact and Response." In *Handbook of Healthcare in the Arab World*, edited by I. Laher, 1325–57. Springer Cham. doi:10.1007/978-3-319-74365-3.

13. Global Investigative Journalism Network. 2022. "COVID-19 and Migrant Workers in the Gulf." In *Guide to Reporting on Migration in the Gulf Arab Countries,* chapter 2. https://gijn.org/chapter-2-covid-19-and-migrant-workers-in-the-gulf/.

14. Alandijany, T. A., A. A. Faizo, and E. I. Azhar. 2020. "Coronavirus Disease of 2019 (COVID-19) in the Gulf Cooperation Council (GCC) Countries: Current Status and Management Practices." *Journal of Infection and Public Health* 13(6): 839–42. doi:10.1016/j.jiph.2020.05.020.

15. Arezki, R., R. Y. Fan, and H. Nguyen. 2020. "Coping with a Dual Shock: A Perspective from the Middle East and North Africa." In *COVID-19 in Developing Economies,* edited by S. Djankov and U. Panizza, edition 1, volume 1, 69–85. Center for Economic Policy Research.

16. Al Awaidy, S.T., F. Khamis, F. Al Attar, N. A. Razzaq, L. Al Dabal, M. Al Enani, W. Alfouzan, M. Al Maslamani, H. Al Romaidi, J. Al Salman, H. Altawalah, S. U. Langrial, L. Al Ariqi, and O. Mohamed. 2021. "Covid-19 in the Gulf Cooperation Council Member States: An Evidence of Effective Response." *Oman Medical Journal* 36(5): e300. doi:10.5001/omj.2021.115.

17. Al-Aamri, A. K., A. A. Al-Harrasi, A. K. AAl-Abdulsalam, A. A. Al-Maniri, and S. S. Padmadas. 2021. "Forecasting the SARS COVID-19 Pandemic and Critical Care Resources Threshold in the Gulf Cooperation Council (GCC) Countries: Population Analysis of Aggregate Data." *BMJ Open* 11(5): e044102. doi:10.1136/bmjopen-2020-044102.

18. Shehab, N. 2020. "Exploring Gulf responses to COVID-19." IISS Analysis. https://www.iiss.org/blogs/analysis/2020/06/mide-gulf-covid-19.

19. Fawcett, L. 2021. "The Middle East and COVID-19: Time for Collective Action." *Global Health* 17(1): 1–9. doi:10.1186/s12992-021-00786-1.

20. Alanezi, F., A. Althumairi, A. Aljaffary, A. Alfayez, D, Alsalman, H. Alhodaib, M. M. AlShammari, R. Aldossary, B. AlThani, F. Alghamedy, and T. M. Alanzi. 2021. "A Comparative Study of Strategies for Containing the COVID-19 Pandemic in Gulf Cooperation Council Countries and the European Union." *Informatics in Medicine Unlocked* 23 (2021): 100547. doi:10.1016/j.imu.2021.100547.

21. United Nations. 2019 Revision of World Population Prospects. https://population.un.org/wpp/, accessed April 20, 2022.

22. Oxford COVID-19 Government Response Tracker (OxCGRT)." Available at https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker

23. OxCGRT (Oxford COVID-19 Government Response Tracker). 2021. "Methodology for Calculating Indices: Index Methodology Version 3.7, 27 September 2021." https://github.com/OxCGRT/covid-policy-tracker/blob/master/documentation/index_methodology.md.

24. Our World in Data. Coronavirus (COVID-19) Deaths. https://ourworldindata.org/covid-deaths, accessed March 30, 2022.

25. OxCGRT. OxCGRT Data Update. In: Tracker OC-GR, ed. https://github.com/OxCGRT/covid-policy-tracker/tree/master/data, accessed May 15, 2022.

26. Qatar Ministry of Public Health. 2022. Coronavirus Disease 2019 (COVID-19): Elderly. https://covid19.moph.gov.qa/EN/Information-tailored-for-you/Pages/Elderly.aspx.=m, accessed May 30, 2022.

27. Sherbini, R. A. 2021. "Bahrain Launches Mobile COVID-19 Vaccination Service: Home Service Targets the Elderly and People with Special Needs." *World Gulf,* January 14, 2021. https://gulfnews.com/world/gulf/bahrain/bahrain-launches-mobile-covid-19-vaccination-service-1.76481985.

28. *The National* News (UAE). 2020. "Coronavirus: Dubai Chamber Allows Staff to Work from Home." *The National,* March 15, 2020. https://www.thenationalnews.com/uae/government/coronavirus-dubai-chamber-allows-staff-to-work-from-home-1.992883.

29. Khaleej Times. 2021. "Covid in UAE: Students Aged 16 and above Must Be Vaccinated to Attend On-Site Classes." *Khaleej Times,* August 3, 2021. https://www.khaleejtimes.com/coronavirus/covid-in-uae-students-aged-16-and-above-must-be-vaccinated-to-attend-on-site-classes.

30. U.S. Embassy & Consulates in Saudi Arabia. COVID-19 Information. https://sa.usembassy.gov/u-s-citizen-services/covid-19-information/, accessed May 30, 2022.

31. Alajlan, A., Z. Y. Younes, C. O'Connell-Schizas, and G. Sayen. 2021. "Saudi Arabia: Mandatory Vaccination to Attend the Workplace." *Global Compliance News*, September 2, 2021. https://www.globalcompliancenews.com/2021/09/02/saudi-arabia-mandatory-vaccination-to-attend-the-workplace-16082021/.

32. B.A.L. (Berry Appleman & Leiden). 2020. "COVID-19: Residency Permit, Exit, Return Visa Extensions: Saudi Arabia." *B.A.L. News,* July 27, 2020. https://www.bal.com/bal-news/saudi-arabia-covid-19-residency-permit-exit-return-visa-extensions/.

33. UNICEF. 2021. "As Most Schools Reopen, Much Remains to Be Done to Improve Children's Education in the Middle East and North Africa." *UNICEF News Note,* November 8, 2021. https://www.unicef.org/mena/press-releases/most-schools-reopen-much-remains-be-done-improve-childrens-education-middle-east-and.

34. Gavi. 2021. "Gulf Countries Unite to Support COVAX." Gavi, October 6, 2021. https://www.gavi.org/news/media-room/gulf-countries-unite-support-covax.

35. Tam, W. J., N. Gobat, D. Hemavathi, and D. Fisher. 2021. "Risk Communication and Community Engagement during the Migrant Worker COVID-19 Outbreak in Singapore." *Science Communication* 44(2): 240–51. doi:10.1177/10755470211061513.

36. Our World in Data. Coronavirus (COVID-19) Vaccinations. https://ourworldindata.org/covid-vaccinations, accessed March 30, 2022.

37. Wong, J. E. L., Y. S. Leo, and C. C. Tan. 2020. "COVID-19 in Singapore—Current Experience: Critical Global Issues That Require Attention and Action." *JAMA* 323(13): 1243–44. doi:10.1001/jama.2020.2467.

38. Wang, C. J., C. Y. Ng, and R. H. Brook. 2020. "Response to COVID-19 in Taiwan: Big Data Analytics, New Technology, and Proactive Testing." *JAMA* 323(14): 1341–42. doi:10.1001/jama.2020.3151.

39. Pan, A., L. Liu, C. Wang, H. Guo, X. Hao, Q. Wang, J. Huang, N. He, H. Yu, X. Lin, S Wei, and T. Wu. 2020. "Association of Public Health Interventions with the Epidemiology of the COVID-19 Outbreak in Wuhan, China." *JAMA* 323(19): 1915–23. Doi: 10.1001/jama.2020.6130.

40. COVID-19 National Preparedness Collaborators. 2022. "Pandemic Preparedness and COVID-19: An Exploratory Analysis of Infection and Fatality Rates, and Contextual Factors Associated with Preparedness in 177 Countries, from Jan 1, 2020, to Sept 30, 2021." *The Lancet* 399 (10334): 1489–512. doi: 10.1016/S0140-6736(22)00172-6.

41. Thomas, S., A. Sagan, J. Larkin, J. Cylus, J. Figueras, and M. Karanikolos. 2020.

Strengthening Health Systems Resilience: Key Concepts and Strategies [Internet]. European Observatory on Health Systems and Policies. European Observatory Briefs. https://pubmed.ncbi.nlm.nih.gov/32716618/.

42. Haldane, V., C. De Foo, S. M. Abdalla, A. S. Jung, M. Tan, S. Wu, A. Chua, M. Verma, P. Shrestha, S. Singh, T. Perez, S. M. Tan, M. Bartos, S. Mabuchi, M. Bonk, C. McNab, G. K. Werner, R. Panjabi, A. Nordström, and H. Legido-Quigley. 2021. "Health Systems Resilience in Managing the COVID-19 Pandemic: Lessons from 28 Countries." *Nature Medicine* 2021 27(6): 96480. doi:10.1038/s41591-021-01381-y.

43. The Statistical Centre for the Cooperation Council for the Arab Countries of the Gulf (GCC-STAT) and The Gulf Health Council. The impact of the Corona (Covid-19) pandemic in the GCC countries on the health, social, economic and environment aspects, December, 2021. (Arabic). Available at: https://gccstat.org/ar/center/docs/publications/2113-the-impact-of-the-corona-covid-19-pandemic-in-the-gcc-countries-on-the-health,-social,-economic-and-environment-aspects/file

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