

Table 3 Key nationwide, regional and city data on COVID-19 by intervention phase, Saudi Arabia, 2 March–5 July 2020

Measures	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
All of Saudi Arabia					
Incidence (%)	0.9	0.2	5.4	13.7	10.9
Point prevalence (per 100 000 population)	2.2	4.3	37.1	158.4	178.2
CFR (%)	0.1	1.6	0.8	0.8	1.2
Adjusted CFR (%)	50	35.5	6.2	1.4	1.4
Overall mortality (per 100 000 population)	0.0	0.4	3.2	32.7	2.0
Recovery (%)	3.6	14.1	12.1	68.7	43.8
Region					
Eastern					
Point prevalence (per 100 000 population)	2.5	3.5	37.2	266.3	450.5
CFR (%)	0.0	0.0	0.3	0.3	0.4
Adjusted CFR (%)	0.0	0.0	1.9	0.8	0.7
Overall mortality (per 100 000 population)	0.0	0.0	0.1	2.0	1.5
Recovery (%)	8.0	6.9	15.6	58.0	33.6
Western					
Point prevalence (per 100 000 population)	2.7	5.2	86.0	147.0	120.9
CFR (%)	0.3	3.0	1.1	1.5	1.6
Adjusted CFR (%)	100.0	60.9	11.6	2.6	2.3
Overall mortality (per 100 000 population)	0.0	0.1	0.9	7.8	2.1
Recovery (%)	3.1	24.2	6.6	76.3	55.0
Central					
Point prevalence (per 100 000 population)	2.7	5.3	21.9	224.6	155.7
CFR (%)	0.0	0.7	0.2	0.4	3.6
Adjusted CFR (%)	0.0	50.0	1.3	1.3	1.5
Overall mortality (per 100 000 population)	0.0	0.0	0.1	1.8	3.3
Recovery (%)	2.8	6.7	23.2	54.5	50.0
Northern					
Point prevalence (per 100 000 population)	0.0	0.4	9.7	22.0	86.0
CFR (%)	0.0	0.0	0.4	0.9	1.8
Adjusted CFR (%)	0.0	0.0	3.4	17.0	2.5
Overall mortality (per 100 000 population)	0.0	0.0	0.0	0.9	1.1
Recovery (%)	0.0	0.0	4.8	79.1	25.3
Southern					
Point prevalence (per 100 000 population)	0.7	0.9	1.9	48.4	124.2
CFR (%)	0.0	0.0	1.0	0.4	0.4
Adjusted CFR (%)	0.0	0.0	2.4	1.4	1.4
Overall mortality (per 100 000 population)	0.0	0.0	0.0	0.4	0.5
Recovery (%)	0.0	7.3	51.1	51.1	36.4
City					
Dammam					
Point prevalence (per 100 000 population)	3.7	9.0	62.9	254.4	484.3
CFR (%)	0.0	0.0	0.1	0.6	0.4
Adjusted CFR (%)	0.0	0.0	0.7	0.9	0.8
Overall mortality (per 100 000 population)	0.0	0.0	0.1	4.0	1.6
Recovery (%)	6.1	12.4	12.1	64.6	22.4
Jeddah					
Point prevalence (per 100 000 population)	2.6	3.0	47.0	118.1	70.4
CFR (%)	0.0	1.0	1.0	2.0	3.3
Adjusted CFR (%)	0.0	100.0	8.4	2.9	2.5

Table 3 Key nationwide, regional and city data on COVID-19 by intervention phase, Saudi Arabia, 2 March–5 July 2020 (concluded)

Measures	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5
Overall mortality (per 100 000 population)	0.0	0.0	0.5	8.9	2.3
Recovery (%)	3.2	36.6	8.0	75.4	61.8
Medina					
Point prevalence (per 100 000 population)	0.1	9.6	76.9	126.7	130.1
CFR (%)	50.0	6.0	0.9	0.5	0.7
Adjusted CFR (%)	-	-	13.7	0.9	0.8
Overall mortality (per 100 000 population)	0.1	0.6	1.5	3.3	1.1
Recovery (%)	0.0	0.0	1.6	84.6	51.5
Mecca					
Point prevalence (per 100 000 population)	7.3	11.1	154.1	263.8	167.9
CFR (%)	0.0	1.8	1.5	1.7	2.1
Adjusted CFR (%)	0.0	13.6	13.8	2.4	2.3
Overall mortality (per 100 000 population)	0.0	0.1	2.4	15.6	4.0
(%)	3.2	26.1	9.7	74.5	62.4
Riyadh					
Point prevalence (per 100 000 population)	3.8	7.3	28.9	258.4	143.3
CFR (%)	0.0	0.7	0.2	0.4	6.2
Adjusted CFR (%)	0.0	-	1.2	0.8	1.3
Overall mortality (per 100 000 population)	0.0	0.0	0.1	2.2	4.2
Recovery (%)	2.8	6.7	24.1	56.2	55.4

CFR= case fatality rate.

Medina and Riyadh showed an increasing trend in recovery rate from phase 1 to phase 4 and then it declined in phase 5. In phase 4, the highest recovery rate was in Medina (84.6%) and lowest in Riyadh (56.2%). However, in phase 5, Dammam had the lowest recovery rate (22.4%) while Mecca had the highest recovery rate (62.4%) (Table 3 and Figure 2).

Discussion

This is the first study describing the geographical distribution, prevalence, CFR, recovery rate and overall mortality rates of COVID-19 from Saudi Arabia. However, three previous studies have discussed COVID-19: one highlighted the demographic and clinical characteristics of COVID-19 cases in the different regions of Saudi Arabia (14); another examined Saudi Arabia's level of preparedness to manage COVID-19 (8); and the third described the status and management practices with regard to COVID-19 in the Gulf Cooperation Council countries (10).

On 5 July 2020, about 55 500 COVID-19 PCR tests had been performed per million inhabitants in Saudi Arabia. This was lower than Italy which reported 93 250 tests per million inhabitants by 5 July 2020 (15). However, in Eastern Mediterranean countries, Saudi Arabia had a high testing rate along with Bahrain, Djibouti, Qatar, and United Arab Emirates (16). In addition, 11% of the tests performed in Saudi Arabia were positive for COVID-19. In contrast, by 5 July, 2020 Italy reported a lower proportion (4%) of confirmed cases from the total tests conducted (15). By the end of phase 5 on 5 July, the proportion of

the population in Saudi Arabia affected with COVID-19 was 612.3/100 000 population which was higher than other countries such as the United Kingdom of Great Britain and Northern Ireland (422/100 000 population), Italy (393.3/100 000 population), France (290.1/100 000 population) and Germany (230/100 000 population) (17). The higher number of confirmed cases in Saudi Arabia may be due to the presence of two holy mosques where millions of pilgrims from around the world visit throughout the year to perform religious pilgrimage.

Effect of prevention strategies

The restrictions on public gatherings through lockdown followed by a curfew and rigorously implemented precautionary measures resulted in containment of the infection in the country. This is evidenced by the decreased COVID-19 incidence rates in the phase 5.

Effect of prevention strategies regionally

The lockdown followed by the curfew was effective in controlling the spread of COVID-19 in western and central regions, which were greatly affected by the infection. The high infection rate may be attributable to the presence of the two holy mosques in the western region, given the fact that millions of pilgrims visit the region throughout the year to perform *Umrah*. The reduction in new cases and mortality in the western region in phase 5, which occurred after the lockdown of the holy cities (Mecca and Medina), as well as Jeddah (the entry point for most pilgrims to Saudi Arabia), demonstrates the effectiveness of the suspension of international flights in