

Table 1 Telemedicine platforms for COVID-19 in Eastern Mediterranean and selected Arab countries, 2020

Name	Platform	Country	Languages	Sector	Scope	Services Provided	Classification of Innovation
Arian Telehealth ¹²	Smartphone	Afghanistan Syria	English	NGO	Sub-national	Guidance Training	Education Community engagement and communication Emergency communication Vulnerable groups Management
eTabib ^{40*}	Website	Algeria	Arabic French	Private	Sub-national	Appointment Consultations	Management
BeAware ⁴¹	App	Bahrain	Arabic English	Public	National	Awareness Test appointments Test certificates Test results	Community engagement and communication Detection and tracing Management
e-service portal, Ministry of Health ⁴¹	Website	Bahrain	Arabic English	Public	National	Appointments Prescription Test results	Detection and tracing Management
E-Clinics of Ain Shams University ^{15, 42*}	Website	Egypt	Arabic	Private	Sub-national	Consultations Training	Education Management
Altibbi ⁴³	App	Jordan	Arabic	Public	National	Consultations Hotline	Community engagement and communication Management
Harris Healthcare ⁴⁴	Website	Kuwait	Arabic English	Public	Sub-national	Consultations	Management
MyAUBHealth ⁴⁵	App Website	Lebanon	English	Private	Sub-national	Appointment Consultation Prescription	Management
Twinning of hospitals ^{13*}	---	Lebanon		Public-Private	National	Telemedicine	Education Management
Speetar ⁴⁶	Website	Libya	Arabic English	Public	Sub-national	Consultations	Management
Tbib24 ⁴⁷	App Website	Morocco	Arabic French	Public	National	Consultations	Management
KIMS Oman Hospital, TeleHealth ⁴⁸	Website	Oman	Arabic English	Private	Sub-national	Consultations On-line Chat	Management
MOH Virtual clinics ^{34, 49}	Phone	Oman	Arabic English	Public	Sub-national	Consultations	Management
Oman Insurance Company ⁵⁰	Website	Oman	Arabic English	Private	National	Consultations	Management
COVID19 Portal ⁵¹	Website	Pakistan	English Urdu	Public	National	Awareness Hotline	Education Community engagement and communication Management
Yaran e Watan ¹¹	Website	Pakistan	English	Public Private	National	Consultations Hotline Training	Education Community engagement and communication Management

Table 1 Telemedicine platforms for COVID-19 in Eastern Mediterranean and selected Arab countries, 2020 (continued)

Name	Platform	Country	Languages	Sector	Scope	Services Provided	Classification of Innovation
YA SAYDALI ³⁷	App	Palestine			Not yet available	Home delivery of medicines	Management
16000 (Call Centre service) ⁵²	Hotline	Qatar	Arabic English	Public	National	Appointment Consultations Hotline Home delivery of medicines Sick leave	Community engagement and communication Workforce development Management
Anat ⁷	App	Saudi Arabia	Arabic English	Public	National	Prescription	Management
Asefni ⁷	App	Saudi Arabia		NGO	National	Emergency services	Management
COVID-19 ⁵³	Website	Saudi Arabia	Arabic English Hindi Indonesian Tagalog Urdu	Public	National	Awareness	Community engagement and communication
Cura ⁷	App	Saudi Arabia	Arabic English	Private		Consultations	Management
Labayh ⁷	App	Saudi Arabia		Private		Consultations (mental health)	Management
Mawid ⁵⁴	App	Saudi Arabia	Arabic	Public	National	Appointment Self-assessment	Community engagement and communication Management
MayaClinic ⁷	App	Saudi Arabia		Private		Consultations	Management
Nala ⁷	App	Saudi Arabia	Arabic	Private		Consultations	Management
Tetaman ⁵³	App	Saudi Arabia	Arabic	Public	National	Awareness Hotline Quarantine Self-assessment Test results	Education Community engagement and communication Detection and testing Management
SCFHS Webinars ⁷	Website	Saudi Arabia		Public	National	Training	
Seha ⁵³	App	Saudi Arabia	Arabic	Public	National	Consultation	Management
Virtual Medical Academy	Website	Saudi Arabia		Private		Training	Education
Wasfaty ⁵³	App	Saudi Arabia	Arabic English	Public	National	Home delivery of medicines	Management
24×7 Health & Wellness Virtual Clinic ⁵⁵	Website	UAE	Arabic English	Private	Sub-national	Consultations Request lab tests Prescription	Management

Table 1 Telemedicine platforms for COVID-19 in Eastern Mediterranean and selected Arab countries, 2020 (concluded)

Name	Platform	Country	Languages	Sector	Scope	Services Provided	Classification of Innovation
Aster DM Virtual Outpatient Department (OPD) ⁵⁶	Website	UAE	Arabic English	Private	Sub-national	Consultation Prescription	Management
Doctor for every citizen ⁵⁷	App Website	UAE	Arabic English	Public	Sub-national	Appointments Consultations Prescription	Management
Malaffi ⁵⁸	Website	UAE	Arabic English	Public Private	National	Consultation Testing results Track and trace	Management
Virtual hospitals ⁵⁴	Website	UAE	Arabic English	Public	Sub-national	Remote care via smart monitors or AI devices	Management

Note: *Information collected through the online survey, October to December 2020

Slightly more than half of the telemedicine services ($n = 19$; 54%) were developed by the public sector, including 16 at the national level. COVID-19-related services provided included awareness-raising, appointments reservation including for PCR testing, healthcare consultations, online chats or hotlines, prescriptions, and home delivery of medications.

Two applications, Arian Teleheal (in Afghanistan and Syria) and Yaran e Watan (in Pakistan) (11,12), provided guidance and training for health professionals. Telemedicine was established in Lebanon through partnerships by public and private healthcare institutions to train and exchange information such as management and treatment protocols between health professionals (13). Egypt and the United Arab Emirates are developing virtual hospitals; efforts which began prior to the pandemic but became a high priority during the pandemic (14-15).

Digital platforms for surveillance

Digital platforms for COVID-19 surveillance were available in 18 countries and used to communicate trends publicly. At least nine countries (Comoros Islands, Iraq, Lebanon, Libya, Mauritania, Palestine, Somalia, Sudan, and Syria) reported upscaling DHIS2 and eWARN surveillance platforms for their surveillance dashboards, as part of their response to the COVID-19 pandemic. In addition to communicating the number of officially detected COVID-19 cases in the country, some platforms provided more comprehensive information and evidence on how countries were able to manage, analyse, interpret, and publicly communicate national trends.

Five countries (Afghanistan, Algeria, Djibouti, Libya, and Yemen) used their platforms to monitor the pandemic but did not make them publicly accessible (16). At least nine countries (Bahrain, Egypt, Jordan, Kuwait, Morocco, Oman, Pakistan, Tunisia and UAE) possibly upscaled their surveillance platforms, including institutional websites or mobile applications, to monitor the COVID-19 epidemiology. Ten countries provided data at the sub-national level, including Comoros Islands, Iraq, Jordan, Lebanon, Mauritania, Oman, Pakistan, Palestine, Somalia, and Sudan.

Contact tracing, detection and testing

Fifteen contact tracing applications were observed to have been developed in a range of public sector fields, including education, health and interior and used in 14 countries (Algeria, Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Pakistan, Qatar, Saudi Arabia, Tunisia, and UAE). Majority of identified mobile applications were bilingual, providing information in Arabic and English/French. They included a system to notify users if they had been in contact with someone with COVID-19 and/or a person in quarantine.

Other Innovations

Twelve non-digital innovations and four innovative processes and approaches were reported. Of the 12 non-digital innovations, four were infection prevention and control (IPC) devices and eight were clinical management devices, including five ventilators and two oxygen solutions. Three each were from Palestine and Somalia, two each from Algeria and Morocco and one each from Jordan and Lebanon.

The IPC devices included two disinfection cabins or pass-throughs for entrance to buildings (17-19), and one was a multi-use device that could measure temperature, eject sanitizers and disinfect body and feet (20). All these innovations were developed with local