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PERSPECTIVE ARTICLE

Tele-Oncology: An Emerging Technology in Developing Countries during the COVID-19 Pandemic

Atlal M. Abusanad¹ and Humaid O. Al-Shamsi^{2,3,4,*}

¹Faculty of Medicine, King Abdulaziz University Hospital, Jeddah, Saudi Arabia

²Research and Innovation Center, Burjeel Cancer Institute, Abu Dhabi, United Arab Emirates

³Emirates Oncology Society, Dubai, United Arab Emirates

⁴College of Medicine, University of Sharjah, Sharjah, United Arab Emirates

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VIEWPOINT

The emergence of coronavirus disease 2019 (COVID-19) has caused a global public health emergency. In December 2019, an outbreak of respiratory disease caused by a novel coronavirus was first detected in China and has now spread to more than 200 countries [1]. The virus was named Severe Acute Respiratory Syndrome Coronavirus 2, “SARS-CoV-2”, and has a phylogenetic similarity to SARS-CoV-3 that caused the SARS epidemic in 2002 [2]. This new type of respiratory illness is characterized by rapid human-to-human transmission, having achieved pandemic spread [3]. There is presumably no pre-existing immunity in the population [3].

World Health Organization (WHO) has adapted alternative methods to ascertain social distancing as the coronavirus pandemic escalates around the world; this term has been revised to physical distancing to better highlight the need to be physically separate from others yet remain socially connected [1].

Quality cancer care is often inaccessible not only in low and middle-income countries but also in rural or remote areas of high-income countries [4]. The applications of medical telecommunications, including pathology, radiology, and other related disciplines, have the potential to enhance both access to and the quality of clinical cancer care as well as education and training. Its implementation in the developing world requires an approach tailored to priorities, resources, and demands [5].

The Gulf Cooperation Council (GCC) countries, also known as Arab Gulf countries, namely, Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE), are rapidly growing both economically and demo-

graphically. They are categorized as developing countries [6]. The health care systems in the Arab Gulf countries are ranked in the top 45 countries according to the most recent (WHO) report in 2000 [7]. There were 24,528 newly diagnosed cancer cases among Arab Gulf countries, according to GLOBOCAN 2018 report. This number is expected to increase by 1.7 folds to reach 43,245 new cases by 2025 [8].

In Saudi Arabia, all international flights from/to Saudi Airports were suspended from mid-March, 2020. Several measures to control the pandemic have preceded the travel ban; most noticeable is the closure of the two holy mosques in Mecca and Medina for visitation and Umrah, which is unprecedented (Table 1). Simultaneously, different sectors switched to online usage; for instance, online grocery shopping, banking, virtual schooling and governmental services for individuals. Although they have been in place before the pandemic, all become more utilized nowadays. Similarly, the switch to virtual mode has extended to the medical field in an attempt to create a safer environment and limit physical contact of both patients and health care workers, which has been the main route of COVID-19 infection dissemination.

In oncology, there is a concern regarding care disruption in patients with cancer and the potentially detrimental consequences of COVID-19 infection if infected [9]. Therefore, the adaption of different virtual and other non-virtual innovative means to ensure physical distancing has gained importance. Examples of successful telemedicine in oncology includes remote chemotherapy supervision, symptom management, survivorship care, palliative care and clinical trials [10 - 12].

The need for alternative means to serve patients and ensure continuity of care is crucial in the face of increasing number of COVID-19 cases and the implemented strict measures to contain the pandemic.

* Address correspondence to this author at Department of Medicine, University of Sharjah, Sharjah, United Arab Emirates; Tel: 0506315388; Email: humaid.al-shamsi@medportal.ca

Table 1. List of the most significant measures by dates insinuated by the government of Saudi Arabia with the onset of the COVID-19 pandemic in 2020.

Dates	List of the Most Significant Measures
27-Feb	Suspension of Umrah visitation from abroad
8-Mar	School suspension, partial travel restriction to endemic areas, isolation of the western region of the kingdom
10-Mar	New regulations for GCC travel
11-Mar	Movie theater, restaurants, and coffee shops closure
12-Mar	Ban of social gathering (wedding, funeral, and sport events)
13-Mar	Pan-international travel restriction (air and land) from and to Saudi Arabia
14-Mar	Commercial malls closure
16-Mar	Governmental employees to stay home and work online
18-Mar	Prayers ban in mosques
19-Mar	Closure of the two holy mosques in Mecca and Medina
20-Mar	National travel ban between cities (flights, trains, cars)
23-Mar	Partial curfew
30-Mar	Increasing curfew hours
31-Mar	Total curfew for selected cities

Observing current oncology service changes in Saudi Arabia and UAE are fascinating; for instance, virtual clinics are being widely used over the last few months, where patients are provided with an online platform link to reach their oncologists at a scheduled time. Oncologists have been triaging patients before their appointments to decide who can be seen virtually. Several hospitals are providing a mechanism for remote collection of medications *via* mailing and drive-through, limiting the exposure, where the patient requests a refill *via* a dedicated online hospital portal. Others implemented near home satellite chemotherapy infusion centers to allow timely administration of treatments with peer-to-peer supervision *via* teleconference.

Multidisciplinary tumor boards (MDT) are a very integral part of a quality oncology service. They are conducted virtually where oncologists and other specialists gather online to discuss management plans; radiology specialist displays and explains pertained images to attendees, pathologists review beforehand photographed slides and reports. Online MDT is conducted in a timely and professional way that is not short of the usual real time meetings.

Oncology educational activities, including webinars and oncology journal clubs, continue to take place but in the virtual space. Lecturing medical students as well has been moved to an online university platform where interaction with students, sharing slides, clips, documents, even taking attendance, are feasible for all subjects, including oncology.

The concept of telemedicine is not new in oncology; however, the adaption was not deliberate and perhaps limited to developed countries [13, 14]. Coronavirus pandemic triggered a worldwide movement toward more online communication in all life aspects. So, it enhanced the broader application of telemedicine to avoid care disruption while ensuring physical distancing. Moreover, it may provide a sense of reassurance and normality for patients with cancer that they are being taken care of and followed up closely and reduce the potential distraction effect by the pandemic [15]. Long-term and regulated use of tele-oncology can improve access to

medical care, reduce healthcare costs, and reduce geographic health disparities [16].

Tele-oncology has never been used as what is witnessed in our countries nowadays. Although the Saudi Health Council in collaboration with the Saudi National Health Information Center published telemedicine Regulations policy in 2018 [17], this new mass shift to telemedicine raises several questions and challenges in developing countries. The major challenges to telemedicine includes the jurisdictional boundaries of the physicians' practice, the need for proper training, which may be lacking and time-consuming during a pandemic outbreak, limitation of physical exam, patients' confidentiality and privacy, and telemedicine reimbursement related issues [18, 19].

There are a noticeable acceptance and wide utilization of telemedicine combined with the desire to sustain and improve [18]. However, the sustainable use of telemedicine in our region needs low-cost infrastructure, systematic implementation, dedicated education, and training on individual and institutional levels [19]. Training on telehealth related doctor-patient communications skills could be incorporated into the curriculum from undergraduate to post-graduate years. The time constraint due to the COVID-19 pandemic has limited the ability to properly and systematically perform these tasks. After the pandemic era, there is a need to integrate telemedicine not only in emergencies but also in day-to day practice supported with robust application and regulations.

LIST OF ABBREVIATION

GCC = Gulf Cooperation Council Countries.

AUTHORS' CONTRIBUTIONS

All authors contributed equally to the writing of the manuscript.

CONSENT FOR PUBLICATION

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informed consent.

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CONFLICT OF INTEREST

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