Type of the Paper (Article)

Impact of COVID-19 on Urology Practice in Saudi Arabia

Meshari Alzahrani[1] *, Mohammad Alkhamees[1], Sulaiman Almutairi[1], Ahmed Aljuhayman[1], Sultan Alkhateeb[2, 3]

[1] Department of Urology, College of Medicine, Majmaah University, Al-Majmaah, Saudi Arabia.
[2] Department of Urology, King Faisal Specialist Hospital & Research Center, Riyadh, Saudi Arabia.
[3] College of Medicine, Alfaisal University, Riyadh, Saudi Arabia.

Meshari Al-Zahrani
e-mail: ma.alzahrani@mu.edu.sa

Mohammad Al-Khamees
e-mail: m.alkhamees@mu.edu.sa

Sulaiman Al-Mutairi
e-mail: sa.almutairi@mu.edu.sa

Ahmed Al-Juhayman
e-mail: a.aljuhayman@mu.edu.sa

Sultan Al-Khateeb
e-mail: sultan.alkhateeb@gmail.com

***Correspondence:**
Meshari Alzahrani
Teaching Assistant, Department of Urology, College of Medicine, Majmaah University, Al-Majmaah, 11952, Saudi Arabia.
e-mail: ma.alzahrani@mu.edu.sa
Tel. : 00966569990693
Fax : 00966164042500

Abstract: From the moment the World Health Organization (WHO) declared COVID-19 to be a pandemic disease, COVID-19 began to affect the lives of many healthcare providers worldwide. In response to this pandemic, urology departments and training residency programs implemented urgent measures to reduce outpatient clinics, adopted the use of telemedicine, regulated emergency and outpatient urological procedures, promoted the use of operating theatres, and developed the use of sustainable e-learning alternatives to traditional urology resident/staff educational activities. Here, we review the response of urologists in Saudi Arabia to the COVID-19 pandemic and how they applied both for the patients and for the healthcare of urologist personnel.

Keywords: Saudi Arabia, Urology, COVID-19, Telemedicine, Residency.

 doi:10.20944/preprints202008.0261.v1

Abbreviations:

ARIMA: Autoregressive Integrated Moving Average.
AES: Advanced Encryption Software.
COVID-19: Coronavirus Disease of 2019.
CME: Continuous Medical Education.
EAU: European Association of Urology.
ESSM: European Society for Sexual Medicine.
FFP: Filtering facepiece.
FTF: Face-to-face.
GORRG: Guidelines Office commissioned a Rapid Reaction Group.
HCP: Healthcare Providers.
ICU: Intensive Care Unit.
MOH: Ministry of Health.
PPE: Personal Protective Equipment.
PIRADS: Prostate Imaging Reporting and Data System.
SUA: Saudi Urological Association.
SSMH: Saudi Society of Men's Health.
SCOT: Saudi Center for Organ Transplantation.
TM: Telemedicine.
WHO: World Health Organization.

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1. Introduction

In late December 2019, a novel coronavirus was detected in Wuhan, China **[1]**, belonging to the family named SARS-CoV-2 (previously known as 2019-nCoV). It became known as coronavirus disease 2019 (COVID-19), as named by the World Health Organization (WHO) in February 2020. The disease was later declared a pandemic in March 2020 **[2]**. This disease leads to various degrees of pneumonia, acute respiratory distress syndrome (ARDS), and, in severe cases, to the need for mechanical ventilation_support or admission to the intensive care unit (ICU) **[3]**, **[4]**. During the COVID-19 pandemic, global efforts were combined to serve, educate, and prepare healthcare providers (HCPs) to optimize and reinforce resources and personnel to confront this crisis.

As of 20 June, 2020, the WHO reported more than 8 million cases and more than 4,000,000 deaths globally **[5]**. The number of cases has been continually rising and no vaccine has been approved. In Saudi Arabia, a group from the biomedical engineering faculty from Imam Abdulrahman Bin Faisal University used the autoregressive integrated moving average (ARIMA) model to predict the expected daily number of COVID-19 cases. The results showed that the trend in cases was due to continue growing if strict precautionary steps and control measures were not implemented to limit the spread of infection **[6]**. The Saudi government announced its first case of COVID-19 on 2 March, 2020, when a patient from outside the country was confirmed as being infected. The infection was detected as a result of the Saudi Ministry of Health (MOH) applying a protocol for detecting the virus across all the country's national borders **[7].** As of 20 June, 2020, there were a total of 154,233 confirmed cases, with 1955 cases requiring ICU admittance, and 1230 deaths. Surprisingly, the recovery rate has been high, with a total of 98,917 recovered cases, resulting in a case mortality rate of 1% and a recovery rate of 99% **[8]**, **[9]**.

Urologists in Saudi Arabia, like many other HCPs around the globe, followed this emerging worldwide pandemic with interest. A study that included 529 physicians from different regions in Saudi Arabia showed that the COVID-19 pandemic had a negative psychological impact on physicians in Saudi Arabia, with the most common reported feelings being worry, isolation, and fear **[10]**.

As is the case worldwide, this crisis has affected healthcare at the population level in Saudi Arabia. However, guided by the recommendations of the MOH, the Saudi government implemented scientific measures to control the spread of COVID-19 from the moment the crisis was announced, and internal and external lockdowns in the early stage of the pandemic were successfully implemented. Remarkably, as a result, the spread of infection and the mortality rate were maintained at low rates, which helped decreased the burden on the healthcare system.

In this regard, the main goal of this article to share our experiences and recommendations, highlighting the impact on the urology service and demonstrating the role of urologists during the COVID-19 outbreak in Saudi Arabia.

2. Impact of COVID-19 on Urology Outpatient Clinics

Since the outbreak of the COVID-19 pandemic around the globe, the Saudi MOH was quick to implement appropriate action regarding clinical practice within the country. This was in accordance with the Center for Disease Control and Prevention (CDC) and the WHO, which recommended practice guidelines for clinicians to control the COVID-19 infection **[11]**, **[12]**, **[13]**. These recommendations included the use of personal protective equipment (PPE), such as a filtering facepiece (FFP; FPP2 and FPP3 for aerosol-producing procedures), single-use protective clothing, protective eyewear, frequent and accurate surface disinfections, ventilation of outpatient services, and washing of hands with alcoholic solutions. Policy changes during the COVID-19 pandemic and encouraged telemedicine (TM) access (telephone or video communication) and promoted using this developing technology to deliver acute, chronic, primary, and specialty care **[14]**. Many professional medical societies endorsed TM services and provided guidance for health practitioners in this evolving field **[15]**, **[16]**, **[17]**. One of advantages of TM is that patient health outcomes can be improved **[18]**.

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Ambulatory care in urology practice has received attention since the emergence of the COVID-19 pandemic and demands greater attention from stakeholders. It is crucial to reach out to urology outpatients, the majority of whom are elderly and have added health issues and complications. Such patients might be at a higher risk of COVID-19-associated complications. Patients with soft indications can be managed via telephone and they can be sent home with advice for care. Clinical patients with urological complaints that need to be seen on an urgent basis are advised to stay outside and can be brought straight into a clinic. Facemasks are given to such sufferers preferably before entering. If possible, detached access for entry is offered for outpatients. Delivering urology outpatient services required regulating how triage was measured and applied to patients through means that do not depend on face-to-face (FTF) care. Prescheduled outpatient appointments are screened and patients with nonurgent urological conditions are consulted via telephone and are prescribed treatment and asked to follow up. Patients in need of a physical examination are prioritized depending on the cause of the urological disease, such as suspected malignancy, obstructive uropathy, and immediate postoperative cases. Patients presenting with macroscopic hematuria are placed on empirical therapy, thus delaying the recommended cystoscopy by one to two months **[19].** Prostatic biopsies and cystoscopy for patients at high risk of malignancy and extracorporeal shockwave lithotripsy for obstructive ureteric calculi are allowed to proceed. Indeed, various experts recommended Prostate Imaging Reporting and Data System (PIRADS) 4/5 to be managed as planned, with the European Association of Urology (EAU) suggesting avoiding delays of more than six weeks for symptomatic patients **[19]**, **[20]**.

In Saudi Arabia, TM in urology practice during COVID-19 is promoted among urologists as well as other health services. To date, no data are available for measuring the effectiveness of TM among urologists during the COVID-19 pandemic period.

3. Impact of COVID-19 on Urological Procedures

After the detection of the first COVID-19 case in Saudi Arabia, strict nationwide policies were implemented to limit the transmission of the disease by implementing mass lockdown of cities, shutdown of schools and businesses, travel restrictions, implementation of testing protocols, and the use of novel technologies to trace suspected and confirmed cases. All these efforts helped to achieve a slow curve during the first two weeks of March. Elective surgeries were running as usual throughout the country.

However, in late March, the number of cases increased dramatically despite these strict policies. Therefore, the Saudi MOH recommended rescheduling all elective nonurgent surgeries with the exception of organ or life threatening and oncological cases. All governmental hospitals applied these recommendations, whereas surgical practice in the private sector continued at a much slower pace. These prompt and vigilant actions were taken by the MOH and all hospitals for many reasons, the main one was to prepare all the hospitals throughout the country to respond to any COVID-19 crisis scenario. In countries were the healthcare system collapsed and mortalities increased during the pandemic, the cause was mainly the unavailability of ICU beds and ventilatory support facilities. Therefore, these actions were taken to unburden as many of these facilities as possible, without exhausting the healthcare system with nonurgent stable cases that could be delayed.

The Saudi MOH illustrated the overall plan and provided recommendations to all the hospital and healthcare facilities in the country, giving the institutes the freedom to draw their own guidelines based on their administrative and infection control studies.

Emergency procedures that were life- or organ-threatening and those for opioid-dependent pain were continued all over the Kingdom. Regarding oncological procedures, most of the hospitals adapted the European Urology Association (EAU) guidelines that were developed by The Guidelines Office commissioned by the Rapid Reaction Group (GORRG) on 19 March, 2020 **[20]**. In these guidelines, cases were classified and color-coded based on their levels of priority from low priority to emergency. Accordingly, all cases were assigned to their corresponding level of priority and a decision was made to postpone or to proceed. When any elective surgery was scheduled, the policy mandated screening all patients with a nasal and/or oropharyngeal swab within 48 hours prior to

 doi:10.20944/preprints202008.0261.v1

surgery while still an outpatient. For patients with respiratory symptoms and in need of an emergency surgery, a COVID-19 test was performed, and the patients were treated as a positive case to minimize the risk of spreading the infection. When operating on a COVID-19 positive case, all necessary precautions were advised **[20]**. The number of working staff in the operating room was kept to the minimum.

With regard to renal transplant cases, tertiary care centers performing such surgeries followed the Position Statement on Organ Transplant and Donation during Coronavirus Disease (COVID-19) Pandemic issued by the Saudi Center for Organ Transplantation (SCOT) **[21]**. All potential donors (living and cadaveric) were tested with a nasopharyngeal and oropharyngeal swab for COVID-19. If the donor was from a high-risk region within the country, then another confirmatory swab was taken. Recipients were only cleared after having a negative swab (two negative swabs if they were from a high-risk area). Very detailed protocols were also constructed to manage early post-transplant recipients who were suspected or confirmed to have COVID-19.

The CovidSurg Collaborative group recently published an article estimating the number of cancelled or postponed operations during the COVID-19 pandemic **[22]**. In urology, 458,151 (36.6%) cancer surgeries and 2,492,604 (81.7%) benign surgeries were estimated to have been cancelled over the 12-week period of peak disruption. They concluded that if the surgical capacity increased by 20% after the pandemic, it would take about 45 weeks to clear the backlog of operations resulting from the COVID-19 disruption.

These estimations note the huge forthcoming burden on the urological practice in Saudi Arabia and around the world. Nationwide efforts are presently being implemented to facilitate clearing all the delayed and cancelled cases.

4. Challenges for Urology Residency Training

Worldwide, at time of writing, Italy was one of countries that reported the highest number of deaths due to COVID-19. Italy faced a serious challenge during the COVID-19 pandemic, and their healthcare system was near collapse due to the aggressive spread of the infection. Unfortunately, as a consequence, many HCPs in Italy were infected or died **[23]**, **[24]**. A study from Italy reported the first nationwide survey on urology residency training during the pandemic period, comparing the routine involvement of residents before and after the pandemic period with regard to their training in clinical and surgical duties. They found that during the pandemic, urology residents experienced a severe reduction (>40%) and complete suppression (>80%) in clinical and surgical activities compared to before the pandemic.

As with all other surgical specialties, in Saudi Arabia, urology practice was negatively affected by the COVID-19 pandemic. Cancelling and deferring most of the surgical cases was not in the interests of urology residents. Centers and academic institutes with a high resident load suffered the most, with few emergency and cancer surgeries being performed during the pandemic. Urology has a wide variety of subspecialties, all of which were placed on hold with the exception of uro-oncology cases. Policies that mandated minimizing the number of healthcare personnel in the operating theater also led to a lower chance of surgical hands-on training. With regards outpatient practice, urology residents continued to use TM on a virtual basis (phone and/or video calls) throughout the country. This led to a decreased amount of direct exposure to patients, and urological surgical procedures, resulted having plenty of free time during the outbreak which increase in chances of available time for teaching though e-learning platforms. Until that moment, no urology residents had been asked to crossover with other medical or ICU services. However, they were on standby to provide help whenever needed.

One positive side of the COVID-19 pandemic was the enormous growth in online teaching activities and seminars. Weekly teaching activities increased to two or three times a week, with more intense scientific content and a higher number of consultants attending and moderating these activities. Local association and groups (e.g., Saudi Urological association (SUA)) made tremendous efforts to arrange and conduct national and international online webinars and lectures in all urological subspecialties with renowned speakers from all over the world. The Annual Saudi Urology

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Board Review Course, conducted and delivered yearly by the SUA, was converted into an online course to prepare the residents in their last year for their final board exam. This provided a unique educational environment that boosted the academic performance of residents.

The Saudi Commission for Health Specialties (SCFHS), the supervising training body in Saudi Arabia, asked the scientific committees of each training program to formulate recommendations for how the SCFHS should deal with the residency training program during the pandemic. The urology scientific committee provided specific recommendations for each aspect of training. Rotations were rearranged or postponed, exam dates were reset, and evaluation methods were reestablished. All these efforts were undertaken to minimize the effect of the COVID-19 pandemic on urology training. These recommendations were to be revisited after three months according to the overall situation of the pandemic.

The SCFHS launched two unique initiatives. Firstly, Imtinan (gratitude) **[25]** was a gesture of appreciation for the effort from all healthcare workers and especially residents in the fight against COVID-19. It enabled all registered healthcare practitioners to extend their registration for a period of four months free of charge without the need to provide extra continuous medical education (CME) hours that are normally needed for the registration. Over 15,000 trainees received a prerecorded phone call from the Secretary General of the SCFHS thanking them for their efforts during these difficult times. Around 20,000 appreciation letters from the SCFHS were sent to the families of healthcare workers. Another initiative by the SCFHS was Da'em (support) **[26]**, a psychological supportive service helping trainees who were suffering from stress, burnout, and depression. Around 53 professionals (psychiatrists and psychologists) provided mental and psychological support for over 440 trainees, with therapeutic sessions, lectures, and webinars. All these efforts and initiatives were intended to protect the physical and mental wellbeing of trainees all over the country.

5. Urology Education and Activities during the COVID-19 Pandemic

Educational institutions worldwide experienced disruptions in their operations and were forced to adopt new methods of addressing the challenges of the situation. The COVID-19 outbreak interrupted all of the traditional forms of FTF communication, e.g., monthly and yearly scientific meetings, dedicated hospital-based lectures, conferences, and journal clubs. As a result of the pandemic, surgeons, especially those in the urology specialty, had a limited presence in operating rooms due to the high cancellation rate of elective procedures, and they found an opportunity for online learning during the lockdown and quarantine period.

In Saudi Arabia, many urological societies provide invaluable support to the urologic community, for example, the Saudi Urological Association (SUA) and the Saudi Society of Men's Health (SSMH). These societies are considered two of the premiere urology associations in the Middle East. These societies took the lead in terms of embracing and developing sustainable alternatives to traditional educational activities during the COVID-19 pandemic and helped in transitioning to distance learning to ensure urology education continued without interruption. From the spread of the pandemic, the urological society created an events calendar on the official website for upcoming live webinars. These activities were announced through the official website and through official social media platforms. These events were conducted on online streaming media platforms and were simultaneously recorded and broadcast in real time. The webinars were scheduled for times convenient to the presenters and audience, and the recorded sessions were made available on the official website for those not able to catch the live sessions. They used different e-learning platforms and applications such as Zoom® (Zoom, San Jose, CA, USA), Cisco Webex® (Cisco Systems, Milpitas, California, USA), and GoToWebinar® (LogMeIn, Boston, Massachusetts, USA). The most commonly platform used was Zoom® (Zoom, San Jose, CA, USA), which provides structural advanced encryption software (AES) with 256-bit encryption. These platforms were protected by a substantially higher level of security compared to the original web-based platforms **[27]**.

These societies created a huge number of webinars in the form of online interactive scientific lectures, focusing on a variety of advanced urological topics in different urological subspecialties

 doi:10.20944/preprints202008.0261.v1

from early on in the pandemic, with contributions from local and international pioneer urologists and men's health experts. In addition, cooperation occurred with local and international urological organizations to provide educational activities of clinical excellence, delivered in a safe and effective manner in the form of e-learning.

During the pandemic, efforts were made to continually improve the urology community. Recently, the urology department at Majmaah University launched the Saudi Pelvic Floor Surgery Society. This reflects how the urology community evolved even with the challenges associated with the pandemic.

Some urologists in our country were invited onto TV shows as advocates for society health education regarding COVID-19, providing advice regarding urology healthcare during the pandemic period. Others started communicating with the Saudi population through educational broadcasts on social media to reinforce the need to stay at home and comply with the quarantine restrictions, as well as to educate people on how to deal with urological emergencies and special urological conditions.

Finally, the quick move to online education posed many challenges. However, there were lessons to be learned, providing a chance the urology community to adapt and improve our forms of communication for the future. Adoption of technology is important not just in clinical practice, but also in communication and administration during these pandemic times. Overcoming the current global health crisis will be difficult, but through creative approaches in teaching, we think that as urologists we will move forward to improve and adapt. Our community will successfully move through the COVID-19 period with a sustained focus on our community wellbeing and academic success.

6. Conclusions

A tremendous amount of work was undertaken in the face of the COVID-19 pandemic in Saudi Arabia. Urologists played a part in confronting the crisis and had a role to play in serving society and public health.

Many lessons can be learned from this pandemic. From our practice during the pandemic, early implementation of telemedicine in urology practice provided favorable outcome, among urologist there were valuable time and good opportunity for transformation of traditional teaching into e-learning platforms.

Professional communication with immediate intervention and the establishment of alternative practical methods to maintain the learning process and the exchange of scientific information are essential to ensure support for healthcare providers and patient care and safety in such pandemic era.

Author Contributions:

Meshari Alzahrani: concept and design, writing the paper, validation.

Mohammad Alkhamees: writing the paper.

Sulaiman Almutairi: writing the paper.

Ahmed Aljuhayman: writing the paper.

Sultan Alkhateeb: revising the article.

Funding:

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflicts of Interest:

There is no conflict of interest for this work.

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