Impact of COVID-19 on Clinical and Academic Urological Practice: A Survey from European Association of Urology Section of Uro-technology

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Abstract

Background: The unexpected coronavirus disease 2019 (COVID-19) pandemic has spread worldwide rapidly, developing into a global health crisis. At the same time, it has seriously impacted the daily activities in all the fields of urology.

Objective: To better understand the impact of the COVID-19 pandemic on clinical, academic, and scientific activities as well as on the quality of life of urologists from the main centers in Europe.

Design, setting, and participants: We conducted a survey using a 37-item questionnaire. The survey included three main sections: clinical practice, academic/scientific activities, and personal/social quality of life.

Outcome measurements and statistical analysis: A descriptive analysis was performed using the collected data.

Results and limitations: A total of 107 representatives affiliated to different centers from 22 countries completed the survey. Clinical activities were affected in 54.2% of the centers, and 85.0% of the elective surgeries were cancelled. Of the urological departments, 64.5% were still performing minimally invasive surgery for malignant disease. In 33.6% of the hospitals, dedicated and specially equipped operating theaters for COVID-19–positive patients were not available. According to 72.9% of participants, COVID-19 had a substantial negative impact on academic activities, and 82.3% of the respondents agreed that their quality of life has been affected negatively by the pandemic. Finally, 92.5% of the participants believe that the pandemic will have a moderate to severe impact on the health system of their countries.

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Conclusions: Data collected in this survey provide insight into changes brought about in clinical and academic settings amid COVID-19. Along with shortages such as bed occupancy and personal protective equipment, it highlights negative impacts on academic and scientific activities, including the personal and social life of urologists.

Patient summary: It is essential to understand the impact of the coronavirus disease 2019 (COVID-19) pandemic on clinical, academic, and scientific urological activities, as well as on related personal and social issues.

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1. Introduction

In late December 2019, a novel coronavirus disease (coronavirus disease 2019 [COVID-19]) was first reported in Wuhan, China, and rapidly spread across all the continents. On March 11, 2020, the World Health Organization (WHO) declared the outbreak as a pandemic. Most of the infected population developed a mild disease with symptoms such as fever, headache, dry cough, and diarrhea, whereas a small part of the population progressed to severe acute respiratory insufficiency and life-threatening disease [1,2].

The COVID-19 strain has overwhelmed the healthcare system of most European countries. Furthermore, hospitals are running out of intensive care unit beds and appropriate personal protective equipment (PPE). Very often a well-defined strategy to face COVID-19 patients is lacking, and the healthcare system is unable to provide the standard level of care to citizens with urological problems.

Since most of the urological departments have partially or predominantly been assigned to COVID-19 patients, the elective surgical activity inevitably decreased. Both the selection and the preoperative pathway of the patients waiting for elective surgery have undergone dramatic changes. Similarly, all academic, scientific, and educational activities have been affected significantly by the pandemic [3].

This survey aimed at better understanding the impact of the COVID-19 pandemic on the clinical, educational, and research activities in the field of urology in Europe, as well as on the personal and social consequences among representative urologists in Europe.

2. Materials and methods

The instrument used in this study was a survey including 37 questions clustered in four main sections. The first section included the demographics of the participants, while the remaining aimed to investigate the changes that have occurred in clinical practice and in academic, scientific, and educational activities, as well as the impact on personal and social aspects. The questionnaire was shared using the Survey Monkey platform (Palo Alto, CA, USA) to all the representatives of the main urological centers in Europe using the European Section of Uro-technology (ESUT) mailing list (including current and past members, as well as ESUT associates). An invitation e-mail was sent on April 10, 2020, and responses were recorded until April 15, 2020. Care was taken that only one urologist in the name of the institution completed the survey.

The results were collected on a spreadsheet and analyzed thereafter using the Windows Excel software. Only complete questionnaires were included in the analysis.

3. Results

3.1. Demographics

A total of 107 recipients, affiliated to different hospitals from 22 countries, completed the survey. The mean age of the participants was 45 ± 9 (30–71) yr and most of them were males (94%). Most of the participants who had completed the survey were senior consultants and heads of department (43% and 29.9%, respectively). Board-certified urologists (14.0%), residents (4.7%), MCC/PhD students (1.9%), and clinical (4.7%) and research (1.9%) fellows represented the minor part of the respondents, and we were asked to fill the survey with the consent/supervision of their respective heads and senior urologists.

Most of the centers involved were university and public hospitals (63.55% and 25.23%, respectively); the remaining were private clinics/hospitals (24.30%), tertiary care centers (9.35%), or government-based research hospitals (1.87%) (Table 1).

3.2. Clinical practice

Overall, COVID-19–infected patients occupied 37% of the total available beds. The bed occupancy within urological departments was reduced by 48.6% in order to hospitalize COVID-19 patients, and the reduction rate was correlated with the country’s total cases and total deaths per million inhabitants at the date surveyed (r = 0.359, p < 0.001 and r = 0.417, p < 0.001, respectively). Furthermore, clinical activities were halted in 54.2% of respondents’ hospitals due to the COVID-19 pandemic. Of the elective surgical procedures, 85% were cancelled because of the shortage of resources and an elevated risk of COVID-19 infection.

All the institutions changed their routine surgical plans in order to follow new preventive measures during the pandemic. Most of them (80.2%) decided to follow internal regulations, while only 19.8% followed international guidelines provided by urological societies or other medical/surgical associations.

The main reasons for the reduction of the workload in urological departments were attributed to hospital’s...
management dispositions in 62.6% according to respondents. Other reasons were related to the patient’s choice (35.5%), relocation of the urological staff, and use of urological facilities for treating COVID-19 patients (31.8%). In 20.6%, it was a personal decision made by the urologist.

In 82.2% of institutions, the preoperative pathway for patients waiting for elective surgery has changed compared with the pre-pandemic period. The COVID-19 confirmatory test was performed in asymptomatic and suspected cases (positive contact, clinical symptoms, cough, fever, etc.) in 41.1% and 42.1% of the centers, respectively. While 11.2% of the centers were performing computed tomography (CT) chest imaging routinely for all the patients attending surgery, 20.6% of them were scanning only suspected cases.

Before COVID-19, all the included hospitals were performing minimally invasive surgery (MIS). After the outbreak, only 64.49% of urological departments were using MIS for malignant disease and 10.3% for benign pathology, while 35.5% centers were not performing MIS at all. Among the centers performing MIS, 17.8% were using insufflation systems with integrated “active smoke evacuation mode” and 21.5% were using systems with an intelligent integrated flow system. On the contrary, 33.6% were still operating with standard two-way insufflators.

During the COVID-19 pandemic, 71% of the urologists were more concerned about bed occupancy than they were before the pandemic. Up to 52.3% of the urologists reported a shortage of medical staff, and the main reasons included sick leave (29%) and increased workload (25.2%) related to COVID-19 pandemic.

In 58% of the hospitals, dedicated and specially equipped operating theaters were available for COVID-19-positive patients. It is worth mentioning that in up to 17.1% of participating centers, in which only emergency cases were being operated, specially equipped operating rooms were not available. Nine respondents stated that they did not know about specially equipped operating theaters for COVID-19-positive patients in their centers. We could confirm that COVID-19-positive patients were not operated in four of these centers. Furthermore, 11 of the 62 participants, who stated that only emergency cases were operated in their centers, declared that specially equipped operating rooms were not available in their centers.

The availability of adequate PPE was always and almost always appropriate in 16.8% and 45.8% of the centers, respectively, and only 3.7% of the respondents have declared an insufficient supply. According to almost all respondents (96.3%), the use of PPE changed compared with the pre-pandemic period. Additionally, 31.8% of them were recruited to work as COVID-19 frontline care providers (Table 2).

### 3.3. Academic/scientific activities

Up to 72.9% of the participants believe that COVID-19 pandemic would have a substantial negative impact on scientific, academic, and educational activities. Before the outbreak, the mean time dedicated to research and education was 9.92 h/wk (ie, journal club sessions, grand rounds, interdisciplinary meetings, etc.), while during the pandemic it decreased to 4.78 h/wk. The majority of the participants (70.1%) were involved in tele-education and have been conducting remote meetings/grand rounds/lectures during the COVID-19 outbreak.

Additionally, 83.2% of the respondents have been forced to cancel their travel plans to scientific meetings and

### Table 1 – List of centers and countries involved

| No. | Country                  | No. of respondents |
|-----|--------------------------|--------------------|
| 1   | Austria                  | 5                  |
| 2   | Belgium                  | 4                  |
| 3   | Bosnia and Herzegovina   | 3                  |
| 4   | Bulgaria                 | 1                  |
| 5   | Czech Republic           | 1                  |
| 6   | France                   | 7                  |
| 7   | Germany                  | 12                 |
| 8   | Greece                   | 6                  |
| 9   | Italy                    | 16                 |
| 10  | Macedonia                | 1                  |
| 11  | Montenegro               | 1                  |
| 12  | Netherlands              | 3                  |
| 13  | Poland                   | 2                  |
| 14  | Portugal                 | 3                  |
| 15  | Romania                  | 2                  |
| 16  | Russia                   | 7                  |
| 17  | Serbia                   | 1                  |
| 18  | Spain                    | 9                  |
| 19  | Switzerland              | 1                  |
| 20  | Turkey                   | 13                 |
| 21  | Ukraine                  | 2                  |
| 22  | UK                       | 7                  |
|     | Overall                  | 107                |

### Table 2 – Demographic information

| Demographic data                      | No. of respondents | 107 |
|---------------------------------------|--------------------|-----|
| No. of responders                     |                    | 107 |
| Participating countries, n            |                    | 24  |
| Time to respond (s), SD (range)       |                    | 480±222 (125–976) |
| Age (yr), SD (range)                  |                    | 45±9 (30–71) |
| Gender, n (%)                         |                    |     |
| Male                                  |                    | 100 (93.46) |
| Female                                |                    | 7 (6.54)  |
| Current position, n (%)               |                    |     |
| Consultant (senior)                   |                    | 46 (42.99) |
| Head of department                    |                    | 32 (29.91) |
| Board-certified urologist (junior)    |                    | 15 (14.02) |
| Resident                              |                    | 5 (4.67)  |
| Clinical fellow                       |                    | 5 (4.67)  |
| Research fellow                       |                    | 2 (1.87)  |
| MSc/PhD student                       |                    | 2 (1.87)  |
| Hospital type, n (%)                  |                    |     |
| University hospital                   |                    | 68 (63.55) |
| Public hospital                       |                    | 27 (25.23) |
| Private clinic/hospital               |                    | 26 (24.30) |
| Tertiary center                       |                    | 10 (9.35)  |
| Government-based research hospitals   |                    | 2 (1.87)  |

SD = standard deviation.
congresses, and 88.8% of them have missed the opportunity to have an active role as a speaker (ie, accepted abstracts, scheduled lectures, workshops, etc.). About half of the respondents were involved in projects, trials, and laboratory experiments that are likely to be discontinued because of the COVID-19 pandemic outbreak.

3.4. Personal and social aspects

Approximately half of the respondents believe that the COVID-19 outbreak will have a substantial negative impact on their scientific, academic, and educational activities, and 82.3% feel that their quality of life will be affected negatively, with long-lasting consequences after the pandemic. Moreover, 92.5% of the respondents believe that the pandemic will have a moderate to severe impact on the healthcare system of their own countries (Fig. 1).

4. Discussion

A recently published survey found that the bed occupancy in the urological departments was reduced by 48.6% in order to hospitalize COVID-19 patients, and the clinical activities were halted in 54.2% of the hospitals [4]. In our study, participants reported that up to 37% of total hospital beds were occupied by COVID-19 patients (Table 3). Additionally, more than half (52.3%) of the participants suffered problems related to the lack of personnel, with illness being the most frequent cause.

The bed occupancy has always been an important indicator for the hospital administrators [5]. The main reason for the reduced bed occupancy was the prohibition of the hospital managements (63%). Most of the participants (71.03%) declared to be more concerned about their reduced bed occupancy than before. The urologists were obligated under these extraordinary conditions to use the already reduced bed capacity, probably with a higher turnover, and its impact on the patients remains to be seen.

Strategies such as providing medical care only to a selected group of patients with nondeferrable or urgent conditions have been implemented. Moreover, there have been attempts to promote conservative treatment, limiting as much as possible the use of resources such as medications, hospital beds, and theaters for patients with elective conditions [6]. As seen in our study, elective urological surgeries decreased significantly by 85% during the pandemic and the preoperative pathway of the patients undergoing surgery has been modified in 82.24% of the participants’ clinics aiming to increase the detection of positive cases. Indeed, the COVID confirmatory test was performed in almost half of nonsymptomatic and suspected cases. On the contrary, chest imaging was performed routinely in nonsymptomatic and suspicious cases only in the minority of centers. It has been shown that chest CT had a low rate of missed diagnosis of COVID-19 (4%), and may be useful as a standard method for the rapid identification of positive patients and optimization of the management. Moreover, authors showed that CT findings were able to detect infected patients before the laboratory results in almost 70% of cases [7].

The European Association of Urology (EAU) has recently published an updated version of guidelines, including the recommendation for patient selection and guiding urologists in their practice to optimize the resources [3,8,9]. How-
Table 3 – Summary of hospitals’ clinical activities during COVID-19

| Hospital data | |
|---------------|--|
| COVID-19 hospital’s bed occupancy (%) | 37.01 |
| Urology bed reduction (%) | 48.63 |
| Modifications in clinical activity, n (%) | |
| Yes | 58 (54.21) |
| No | 45 (42.06) |
| Elective procedure cancellation, n (%) | |
| Yes | 91 (85.05) |
| No | 16 (14.95) |
| % | 84 |
| Main reason, n (%) | |
| Department assigned to COVID-19 pts | 34 (31.78) |
| Hospital management prohibition | 67 (62.62) |
| Patient’s decision | 38 (35.51) |
| Personal decision | 22 (20.56) |
| Other | 13 (12.15) |
| Follow recommendation/guidelines, n (%) | |
| Yes—international recommendations | 18 (17.98) |
| Yes—internal protocols | 73 (80.22) |
| No | 0 (0) |
| Patients’ preoperative pathway, n (%) | |
| COVID-19 test performed routinely | 44 (41.12) |
| COVID-19 test in suspected cases | 45 (42.06) |
| Chest CT performed routinely | 12 (11.21) |
| Chest CT in suspected cases | 22 (20.56) |
| No | 19 (17.76) |
| Minimally invasive surgery, n (%) | |
| Yes—malignant cases | 69 (64.49) |
| Yes—benign cases | 11 (10.28) |
| No | 38 (35.51) |
| Insufflation system, n (%) | |
| With integrated smoke evacuation | 19 (17.76) |
| With intelligent flow system | 23 (21.50) |
| Standard 2-way system | 36 (33.64) |
| Concerns about bed occupancy, n (%) | |
| Yes | 76 (71.03) |
| No | 31 (28.97) |
| Shortage of medical staff, n (%) | |
| Yes—due to sickness | 31 (28.97) |
| Yes—increased workload | 27 (25.23) |
| No | 51 (47.66) |
| Operating COVID-19—positive patients, n (%) | |
| Yes—elective and urgent | 9 (8.41) |
| Yes—only urgent cases | 62 (57.94) |
| No | 36 (33.64) |
| Specially equipped theaters, n (%) | |
| Yes | 62 (57.94) |
| No | 36 (33.64) |
| PPE availability, n (%) | |
| Every time | 18 (16.82) |
| Almost every time | 49 (45.79) |
| Occasionally | 29 (27.10) |
| Almost never | 7 (6.54) |
| Never | 4 (3.74) |
| PPE usage, n (%) | |
| Every time | 42 (39.25) |
| Almost every time | 37 (34.58) |
| Occasionally | 24 (22.43) |
| Almost never | 2 (1.87) |
| Never | 2 (1.87) |
| Recruited as a front-line provider, n (%) | |
| Yes | 34 (31.78) |
| No | 73 (68.22) |

COVID-19 = coronavirus disease 2019; CT = computed tomography; PPE = personal protective equipment; pts = patients.

Moreover, hospital management administrations have reacted mainly according to the country’s ministry of health recommendations. All participants stated in our survey that their hospitals had, in some way, modified the routine model of care since the COVID-19 outbreak. Although most of the institutions created independent protocols (80.2%), 19.8% followed the recommendations contained in international guidelines. Recently though, urologists have shared the EAU COVID-19 guidelines in webinars and social media, which have gained wide acceptance among the European urological community and undoubtedly influenced medical practice.

An interesting aspect was also the fact that many urological departments continued to perform laparoscopic and robotic surgery. With regard to this, the EAU Robotic Urology Section (ERUS) released a version of emergency guidelines with recommendation focused on robotic surgery [8].

Along with maximal protection of healthcare professionals implementing the highest level of PPE and minimizing the side effects for patients with proper selection and testing, a proper use of the insufflation systems was recommended to avoid the aerosol spread of the virus [10]. Kwak et al [11] reported that hepatitis B virus has been detected in the surgical smoke during laparoscopic surgery. This issue may also be true for COVID-19, where small viral particles can be released along with surgical smoke during laparoscopic surgeries. Regarding this issue, our data showed that only 40% (18% smoke evacuation and 22% smart insufflation systems) of the respondents were using adequate smoke evacuation and insufflation systems [8].

Clearly defined pathways must be available to healthcare professionals when operating COVID-19–confirmed patients. Almost 70% of the responders stated that they had been operating COVID-19–positive patients, but most of them (57.9%) being only in case of urgent and nondeferrable conditions. All suspected COVID-19 patients requiring surgical intervention should be treated as positive until proven otherwise, in order to minimize the spread of infection [12].

In 33.64% of the hospitals, dedicated and specially equipped operating theaters were not available. The risk of infection can be minimized by ensuring an adequate air exchange cycle rate within the theaters and keeping the number of people working on COVID-19–positive cases as low as possible. Specifically allocated filter areas designed for COVID patients must be equipped with PPE, and any unnecessary equipment should be moved away from COVID patients’ transit route [13].

The shortage of PPE due to COVID-19 pandemic is creating immense distress and heightened anxiety among healthcare workers [14]. In addition to general hygiene measures, it is suggested that different levels of protection should be adopted depending on the situation, and administrative measures are encouraged to minimize contact with infected patients [15,16]. In our study, more than half of the surveyed urologists (62.6%) stated that their center always or almost always had adequate PPE to cope with COVID-19 patients.

During the COVID-19 pandemic, the scientific, academic, and educational activities have also undergone profound
Table 4 – Scientific activities and quality of life (QoL) data

| Scientific activities and QoL data | n (%)       |
|------------------------------------|-------------|
| Negative impact on scientific/academic/educational activities | 78 (72.90)  |
| Yes                                | 78 (72.90)  |
| Undecided                          | 11 (10.28)  |
| No                                 | 18 (16.82)  |
| Time dedicated to academic activity (h/wk) | 9.92        |
| Before COVID-19                    | 9.92        |
| After COVID-19                     | 4.78        |
| Remotely conducted meeting/grand rounds/lectures | 75 (70.09)  |
| Yes                                | 75 (70.09)  |
| No                                 | 32 (29.91)  |
| Scientific meeting/congress cancellation | 89 (83.18)  |
| Yes                                | 89 (83.18)  |
| No                                 | 18 (16.82)  |
| Abstract presentation/lecture/workshop scheduled | 79 (88.76)  |
| Yes                                | 79 (88.76)  |
| No                                 | 10 (11.24)  |
| Inapplicable                       | 82 (77)     |
| Negative impact on QoL | 88 (82.25)  |
| Yes                                | 88 (82.25)  |
| Undecided                          | 6 (5.61)    |
| No                                 | 13 (12.15)  |
| Impact on country’s healthcare system | 32 (29.91)  |
| Severe                             | 32 (29.91)  |
| Major                              | 52 (48.60)  |
| Moderate                           | 15 (14.02)  |
| Minor                              | 6 (5.61)    |
| Insignificant                      | 2 (1.87)    |

COVID-19 = coronavirus disease 2019.

The main strength of our study is the completeness of the data and the selection of one representative per center. The percentage of fulfilled surveys was >90%, and only complete surveys were included in the analysis. The time from the invitation to the collection of data was short, showing good adherence to the survey. Moreover, the responders were mainly urologists with a senior position (consultant and head of department), with a clear view of the situation and access to the numbers of their own centers. Only a few responders were residents and fellows, and they have filled the survey under the supervision of their senior urologists and/or management officials. Our aim is to extend the invitation to centers all around the world to have a wider vision of the situation. Once the pandemic settles down, the extent of the impact of all the measured parameters has to be re-evaluated. A further follow-up study is also planned to assess the change in the guideline consulted following the pandemics’ initial phase.

5. Conclusions

The data collected in this survey provide valuable information about the changes that occurred in clinical and academic settings across the major urological centers in Europe. It outlines the situation regarding the shortage of resources such as bed occupancy and the availability of PPE. It also highlights the negative impact of the pandemic on scientific, academic, and educational activities, as well as on personal and social life of urologists and other healthcare providers. Finally, some positive aspects should be considered as the implementation of new communication channels such as teleconferences as well as new online platforms for “smart working” and educational purposes.

Author contributions: Ali S. Gözen had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Heinze, Umari, Gözen.

Acquisition of data: Guven.

Analysis and interpretation of data: Basulto-Martinez.

Drafting of the manuscript: Heinze, Umari, Guven.

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