

ORIGINAL ARTICLE

COVID-19 pandemic impact on urology residencies in Asia - An observational study

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Abstract

Objective: The Coronavirus Disease 2019 (Covid-19) pandemic affected surgical training in many ways. This observational study was carried out to evaluate the impact of Covid-19 on urological residencies across Asia.

Methodology: An open-ended survey questionnaire examining key areas in a urology training program was distributed to several urologists in Asia. The survey evaluated seven areas including the burden of Covid-19 disease, the need for re-deployment of residents, the impact on clinical work, the effect on research work for residents, the delivery of teaching to the residents, the impact on training and assessments, the effects on mental, personal health and social welfare of residents.

Results: Reports from 11 Asian countries were analysed. There is stark variability in Covid-19 disease burden across Asia. Re-deployment occurred in selected Asian countries. Affected residents reported challenges obtaining personal protective equipment and training. Clinical workload and research were generally reduced except for countries reporting low volume Covid-19 cases. Residents teaching evolved from in-person to online platforms. Almost all residency program postponed their examinations. Mental health disturbance was more pronounced than personal health.

Conclusions: The Covid-19 pandemic presented multiple obstacles to Asian urology residencies. The understanding of these challenges will assist program directors in developing mitigating measures.

KEYWORDS

Covid-19, pandemic, residency, urology

1 | INTRODUCTION

The outbreak of the Coronavirus Disease 2019 (Covid-19) infection has affected medical practice across the board in many unprecedented ways. When the World Health Organization declared Covid-19 disease as a pandemic on January 30, 2020, governments and medical authorities in many Asian countries took multiple different steps to mitigate the effects of this unknown viral infection. Invariably, this involved shifting human resources to areas of need while non-urgent performance indicators such as residents' training had to take a back seat.

According to one of the earliest publications on the impact of Covid-19 in Asia on surgical training, ophthalmology residents in India reported that they were deployed to Covid-19 areas of need. Many residents felt the pandemic had impacted negatively on their training, emotional and social wellbeing.¹ It is hypothesized that urology residents will also share the same experience as their ophthalmology counterparts, given both are non-critical specialties in the COVID-19 pandemic.

As the Asian continent accounts for almost 60 % of the world population with varying healthcare systems, socio-economic status and residential training programs (Table 1); we aim to illustrate how urology residents in various parts of Asia are impacted by the on-going pandemic.

2 | METHOD

We identified several areas in a surgical residency program that will provide a summative picture of how the Covid-19 pandemic may impact the life of a resident:

- The burden of Covid-19 disease
- The need for re-assignment or re-deployment of urology residents
- The impact on clinical work for residents
- The impact on research work for residents

- The delivery and accessibility of didactic teachings to the residents
- The impact on long-term training and assessments
- Effect on mental and personal health as well as social welfare of residents

An open-ended observational survey questionnaire on all these key areas were sent to regional senior urologists in Asia, who are involved in the management of, and who frequently interacted with residents in their countries. The areas selected cover countries with a substantial number of residents such as in East Asia, South East Asia and South Asia regions. The period of observation was made until the middle of May 2020.

3 | RESULTS

The impact of the Covid-19 pandemic on urology residents was gleaned from 11 reports obtained from Hong Kong, Japan, South Korea, Taiwan, Indonesia, Malaysia, Thailand, the Philippines, Vietnam, Bangladesh and India.

3.1 | Covid-19 disease burden

The number of infected patients due to Covid-19 disease varied widely across Asia (Table 2). The stark variability in the burden of Covid-19 disease across Asia may influence how medical resources and personnel are re-directed. The dates of implementation of social restrictions were similar apart from Taiwan.

3.2 | Re-assignment

Once the burden of Covid-19 cases began to build up, urological residents were re-deployed to Covid-19 care areas. In Bangladesh and

TABLE 1 Format of urology training/residency programs across Asian countries

Country	Urology training program features		
	General surgery post-graduate (PG) qualification prior to entry	Compulsory surgical internship prior to entry	Duration of training (years)
Bangladesh	Optional	No	3: with PG degree 5: without PG degree
Hong Kong	No	Yes	6: (2) basic + (4) higher surgical training
India	Yes	No	3: higher surgical training
Indonesia	No	Yes	5: (1) basic + (4) higher surgical training
Japan	Optional	Yes	4
South Korea	No	Yes	4
Malaysia	Optional	Yes	4: with PG degree 5: without PG degree
Philippines	Yes	No	6: (2) basic + (4) higher surgical training
Taiwan	Optional	Optional	4
Thailand	No	Yes	4
Vietnam	No	No	3

Thailand, all residents were put on new work rosters to cater for Covid-19 care duties. In India, Japan and Malaysia, a limited number of residents in selected hospitals were moved to Covid-19 care areas. In Indonesia, re-assignment to Covid-19 screening and care areas was a voluntary option for the residents. Furthermore, in order to preserve a healthy workforce, some residents in Indonesia were recalled from external rotation in partner hospitals to the main teaching hospital. In other countries, urology residents were not routinely deployed to other areas. In Japan, those re-deployed still get to perform their daily urological tasks without being a big hindrance to their routine. Such parallel work arrangement was also reported in Bangladesh, but this became a source of worry among residents who were working within infrastructures which were already overwhelmed.

3.3 | Clinical work

In all countries except for South Korea, the total volume of cases decreased. This was partly due to the lockdown and cessation of public transport as well as the fear of coming to hospital. In addition, fewer patients could be attributable to loss of jobs hence being unable to afford hospital care. India reported that emergency cases were maintained, and this became the bulk of the work during this period. In Bangladesh all routine admissions were stopped.

In the Philippines, South Korea and Bangladesh, some hospitals moved towards efficient use of manpower by maintaining a skeletal force, in an effort to minimize the number of trainees from getting

exposed to and infected with Covid-19. This, however, would further reduce the clinical work per trainee.

In Hong Kong, certain non-oncological outpatient services, for example, urodynamics and uroflowmetry were stopped. Even prostate biopsies were reserved for those at very high risk of malignancy. Similarly, in Thailand and Malaysia, daycare procedures were postponed if deemed not urgent.

Outpatient clinics were generally restricted. Residents who were not re-assigned to Covid-19 care still attended to patients in clinics but in much lower numbers.

In all the countries surveyed, surgeries were reduced due to factors including lack of intensive care units, lack of staff, reduced resources for example, personal protective equipment (PPE) and lack of blood products. In terms of surgery, Hong Kong only allowed oncological and ureteric stone surgeries. Bangladesh, the Philippines and Vietnam stopped all elective surgery except for cancer operations. In Japan, even malignancies with low potential for progression were postponed. In Indonesia and Thailand only emergency and urgent surgeries were performed.

Most countries did not find a way to mitigate this decrease in clinical work for their trainees. Only South Korea and Taiwan claimed minimal reduction in their residents' clinical work.

3.4 | Research work

The difficulty faced in clinical research was the reduction of potential subjects due to the factors such as restricted mass movements

TABLE 2 The distribution and social impact of COVID-19 positive cases across Asia

Country	Number of COVID-19 positive cases (on 7 June 2020) ^a	Date of first COVID-19 case reported	Date of implementation of social restrictions ^b
Region: East Asia			
Hong Kong ^c	1107	23 January 2020	19 March 2020
Japan	17 141	16 January 2020	7 April 2020
South Korea	11 776	25 January 2020	18 February 2020
Taiwan ^c	443	21 January 2020	No restriction
Region: South East Asia			
Indonesia	30 514	2 March 2020	10 April 2020
Malaysia	8303	25 January 2020	18 March 2020
Thailand	3112	12 January 2020	18 March 2020
Philippines	21 340	30 January 2020	12 March 2020
Vietnam	329	23 January 2020	31 March 2020
Region: South Asia			
Bangladesh	63 026	8 March 2020	25 March 2020
India	246 628	30 January 2020	25 March 2020

^aSourced from covid19.who.int.

^bSocial restrictions in the form of full or partial lockdowns, mass movement controls or similar measures.

^cSourced from www.worldometers.info/coronavirus.

including restricted public transport availability, fear of study subjects to visit hospitals, and socio-economic challenges affecting study subjects. There was also the problem of inaccessibility of certain laboratory facilities due to Covid-19 resource prioritization, and replenishment of laboratory supplies. In India, it was reported that this led to the extension of research datelines for residents, and in exceptional cases, a reduction in sample size.

In Indonesia, Malaysia and Thailand, laboratory research continued with adjustments of work-load distributions, as the laboratories had to prioritize Covid-19 related clinical work. Only Taiwan and Japan reported no effect on clinical research work. While clinical research was largely affected, the reduction in clinical work however meant more time for trainees to perform retrospective research or manuscript writing.

3.5 | Teaching

One of the risk reduction measures in combating Covid-19 is to practice social distancing, hence avoiding large group gatherings. Invariably this has impacted how the teaching of residents was carried out. Among the Asian countries surveyed, in-person teaching virtually vanished except in Indonesia, South Korea and Vietnam. In those countries, clinical skills were still taught in-person albeit with reduced frequency and smaller groups. The format of teaching also evolved into a problem-based format in Malaysia and Thailand. To mitigate the loss in teaching opportunities, many countries migrated to online platforms via webinars, with participation of eminent faculties especially in vast countries such as India. In Japan, the use of simulators and surgical videos was also encouraged to enhance residents' surgical skills.

3.6 | Training progress and assessments

Training progress and assessments during urological residencies require a continuous and methodical evaluation by the supervisors. However, this activity may be hampered by factors such as re-deployment of trainees and the reduction in the number of patients. Generally, many Asian countries surveyed did not impose extension in training period due to the Covid-19 pandemic. However, almost all programs have postponed their examinations. The optimal examination format in a pandemic had yet to be determined (Table 3).

3.7 | Mental and personal health, as well as social welfare

As Covid-19 disease takes its course, the residents may be personally affected by infections or inconvenienced due to the prevailing circumstances. The majority of residents in urology training were not infected. However, in Indonesia, residents who tested positive or had been in contact with an infected person or had entered highly prevalent areas in the hospitals, were provided with facilities for self-isolation. This itself may contribute to a form of mental stress, in

TABLE 3 Impact of urology residency training progress and assessment

Countries	Progress monitoring and assessment ^a	
	Training period	Examination
Bangladesh	Unaffected	Postponed
Hong Kong	Unaffected	Postponed
India	Admissions variable	Unaffected
Indonesia	Extension being considered	Online examination to be considered for national board examination
Japan	Under review	Under review
South Korea	Under review	Under review
Malaysia	Unaffected	Under review
Philippines	Extension done	Postponed
Taiwan	Unaffected	Unaffected
Thailand	Unaffected	Unaffected
Vietnam	Unaffected	Unaffected

^aStatus until mid-May 2020.

addition to the exhaustive physical burden from patient care. Witnessing other medical staff getting infected also contributed to stress among residents in Vietnam.

Among Malaysian, Hong Kong and Filipino residents, stress was also attributable to the immense interruptions in training and the postponement of exit examinations. Academically, Taiwanese residents reported loss of opportunity to present their work in overseas meetings, which had an impact on their examination scores.

Other negative stressors include the fear of being personally infected and thus, passing the infection on to family members. In addition, the uncertainty associated with being separated from family members as a result of restricted inter-state travel during lockdowns featured highly among residents in Malaysia and Thailand. Interestingly, there was not much impact on daily or work life among Taiwan residents as a lockdown was not imposed in that country.

Some measures were introduced to address the mental stress and social wellbeing of the residents. In the Philippines, adequate PPEs, food and much rest were provided to boost the morale of the residents on duty. In Bangladesh, the government provided hotel accommodations, hotel quarantines and financial packages to residents as well. Mentorship during the critical phases of the pandemic was also provided by senior staff to residents in Bangladesh and Indonesia. In other countries, mental health support service was offered to residents such as in Malaysia and Bangladesh.

4 | DISCUSSION

During the Covid-19 pandemic, non-priority areas such as post-graduate training, were significantly affected. In one extreme example from

Europe, the urological residency training program virtually collapsed under the burden of Covid-19 in Madrid, Spain.² With such heterogeneity in Covid-19 impact worldwide, this observational study was performed to illustrate how urology residents in Asia have been affected.

During a pandemic, it is not uncommon for residents to be asked to function outside their areas of specialty as they also form the important front-liners. In Asia, urology residents working in populous nations for example, Bangladesh and Thailand, were re-assigned to support Covid-19 care areas, though this was not always mandatory, for example, in Indonesia. Medium-sized countries practiced a more selective approach for re-deployment. In America, about 20% to 26% of residency programs had re-deployment reported.^{3,4} Seventy-seven per cent claimed that this was a compulsory measure.⁵ Various European countries also reported re-deployment exercises.^{6,7} In one of the worst hit Covid-19 countries, Italian urology residents reported that 7.7% were involved in Covid-19 ward duties.⁸

Trainee experience was a paramount consideration when deploying residents to Covid-19 areas.⁹ Japan and Malaysia deployed their most senior residents for Covid-19 duties. In Europe, training in Covid-19 care included retraining in life support and respiratory skills.⁶ Urological residents in Asia were given training on, and access to appropriate PPE as well. In America and some Asian countries self-directed learning of Covid-19 care was expected.⁴

Almost all participant countries reported a decreased volume of clinical work in our study. This was similarly reported in America and Italy.^{4,8} Outpatient clinics were reduced in all countries. This involved a lot of work in contacting patients to reschedule appointments.¹⁰ In some Asian hospitals where the patient information system was not electronic-based or not updated regularly, this was an arduous task.

Generally, it was difficult to mitigate the overall decrease in clinical work. In Malaysia, where the pandemic numbers were not astronomical, segregation of Covid-19 and non-Covid-19 hospitals helped to maintain clinical work and surgeries. A similar method was employed in Madrid, Spain, where patients with planned oncological surgeries were referred to "clean of Covid-19" hospitals.⁶ Another important initiative employed in Europe and America was the use of telemedicine.^{4,6,9,10} However, ethical issues surrounding teleconsultation remain contentious.

For clinical research, only Taiwan and Japan reported no adverse effect of Covid-19. Overall, prospective studies and laboratory-based research were mainly affected. Similarly, in Europe and America, there had been a decrease in laboratory availability, staffing and funding.^{6,9} Conversely, residents allocated more time to work on manuscript writing or retrospective studies.⁴ In addition, the pandemic has given rise to a great number of Covid-19 related works, of which many were spearheaded by residents.

Most of the countries surveyed had successfully applied online platforms for urological teaching during the pandemic. Furthermore, collaboration and sharing of online contents with other organizations outside Asia also enhanced learning, for example, webinars from *Societe Internationale d'Urologie*, European Association of Urology and American Urological Association.⁹ With generally good internet coverage, the online learning platform is set to grow and expand.

Whether the urology training period will be prolonged, presumably due to the lower urological workload, is dependent on the Covid-19 case volume and severity in the respective regions. This fact is reflected in the current survey, as most of the regions which had successfully flattened the curves of Covid-19 infection had not prolonged the period of urology training. Additionally, assessment and examination are essential components of any training system. The Covid-19 pandemic has imposed new challenges in their implementation in the traditional way, which involves a lot of in-person interaction. Therefore, most examinations had been postponed in the regions surveyed. Comparatively, the American Board of Urology has reportedly postponed qualifying examinations for graduating urology residents.⁹ Whether an online assessment or a hybrid system is feasible is debatable. This is an evolving space and there will be confounding factors to be considered, such as the possibility of a second or third wave of pandemic, and the reinstatement of lockdown.

Mental health perturbations during a pandemic can be induced by several factors. The most vulnerable and least experienced health care workers such as residents, are at risk. Around 89% respondents from American residency programs expressed concerns with workplace exposure to Covid-19.³ The continuing calls for cardio-pulmonary resuscitation, the higher than usual proportion that are unsuccessful and being surrounded by the very sick or dying patients were major stressors for those on duty in Covid-19 care areas.¹⁰ French residents reported medium-to-high level of stress working in areas of high epidemic proportions and when Covid-19 patients were present in their departments.¹¹

Several measures were implemented to mitigate the mental health effect and social inconvenience among residents during the pandemic including mentorship, skeletal staffing and mental health support services. In America, hotels and dormitories were also provided to separate health care workers from Covid-19-susceptible family members.¹⁰ Higher levels of support by residency programs was inversely related to residents' anxiety in America as well.⁵

This experiential study is limited by the sampling of only a few select Asian countries and the open-ended nature of the parameters investigated. Nevertheless, we believe it represents the first glimpse into the impact of Covid-19 pandemic on Asian urological residency training which may serve to inform residency program directors with regards to the challenges faced regionally.

In summary, this observational study has reinforced the concern that urology residents in Asia, just like their counterparts worldwide, are affected by Covid-19 in various ways. Program directors and governments across Asia need to be cognizant of all these potential challenges and act swiftly to mitigate the situation. This is to ensure that residents can continue to function and be trained adequately.

CONFLICTS OF INTERESTS

The authors declare that they have no conflict of interest.

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