

RESEARCH

Open Access



Impact of COVID-19 pandemic on specialty training in obstetrics and gynaecology in Hong Kong: is there a concern about the future prospect?

Janice Tsz Ching Leung¹, Yan Yu Li^{1*}, Choi Wah Kong¹ and William Wing Kee To¹

Abstract

Introduction The COVID-19 pandemic in the past few years led to major adjustments in the provision of healthcare. This study aimed to investigate trainees' perception of impact of the pandemic on specialty training in Obstetrics & Gynaecology (O&G) in Hong Kong.

Methods A cross-sectional questionnaire survey was performed on all the O&G trainees and the young fellows of the Hong Kong College of Obstetricians and Gynaecologists (HKCOG). The questionnaires included 5 parts: demographic data, impact on clinical activities, redeployment, educational activities and career progression.

Results A total of 104 questionnaires (92.9%) were received for final analysis. The majority of the participants had reductions in elective and emergency operations, as well as exposure to in-patient admissions and out-patient clinics in both obstetrics and gynaecology. The reduction was most significant in elective gynaecology operations. One-third (34.6%) of the participants had been redeployed to other departments, and educational activities were reduced during the pandemic. Around 58% of the trainees were concerned with the reduction in clinical exposure, and 78% worried they would not be able to log sufficient number of surgical procedures. Basic trainees were significantly more worried than higher trainees. Around half of the trainees had doubts or regrets about choosing to undergo O&G specialty training.

Conclusion The O&G trainees in Hong Kong perceived that the COVID-19 pandemic had significant negative impacts on their training. Many trainees were worried they would not be able to attain the required level of competence when they complete their specialist training.

Keywords COVID-19, Training, Obstetrics, Gynaecology, Hong Kong

*Correspondence:

Yan Yu Li

eliyyli@gmail.com

¹Department of Obstetrics & Gynaecology, United Christian Hospital, Kowloon, Hong Kong



© The Author(s) 2024. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc-nd/4.0/>.

New knowledge added by this study

- O&G trainees in Hong Kong perceived that COVID-19 pandemic had negative impacts on their training due to the reduction in elective and emergency operations, as well as clinical exposure to in-patient admissions and out-patient clinics.
- Many O&G trainees were worried they will not be a competent specialist in future and had doubt or regrets in their career choice.

Implications for clinical practice or policy

- Trainers in O&G departments should attempt to identify the individual gaps in clinical exposure and insufficiencies in procedure logging for each trainee, and then adopt targeted training plans tailored for each of them to make up for the deficient areas before they approach their exit assessment.
- The Hong Kong College of Obstetricians and Gynaecologists should explore means to and improve the training programme for O&G trainees in order to prevent high attrition rates for existing trainees, and to boost the currently low preference for O&G among medical graduates seeking specialty training.

Introduction

The global pandemic of Coronavirus disease 2019 (COVID-19) has posed a significant burden and a major challenge to the health care system all around the world. The pandemic has led to overwhelming surges of hospitalizations, leading to redeployment of trainees in many specialties to care for COVID-19 patients and significant reduction in elective surgeries [1]. Obstetrics and gynaecology (O&G), being one of the surgical stream, was inevitably affected by the COVID-19 pandemic. A study in the United States found the surgical volume in two large O&G organizations had dropped to 48–67% in 2020 compared with 2019 [2]. A study on 103 O&G trainees in Turkey found 98% of them reported decrease in the number of surgeries, so that 63% of the trainees thought that their surgical skills were hindered by the reduced number of surgeries and 67% reported insufficient outpatient clinic experience to meet education targets [3]. Up to 60% of the O&G trainees in European countries were worried on their training [4] and 84% of the trainees in Italy had anxiety about their professional future and 59% of them had the perception that their training was irreversibly compromised [5]. A study in United Kingdom performed a survey on O&G trainees after the peak of the COVID-19 pandemic with restoration of normal clinical activities

and they still found the pandemic had negative impact on their overall training [6].

The impact of COVID-19 on O&G training in Hong Kong has not been studied. The resident training programme in obstetrics and gynaecology (O&G) in Hong Kong is organized by the Hong Kong College of Obstetricians and Gynaecologists (HKCOG), and trainees have to undergo 4 years of basic training and 2 years of higher training in various public training hospitals. They are required to pass an exit assessment at the end of the six years before they can be recognized as specialists and as fellows of the College.

The first confirmed COVID-19 case in Hong Kong was on 23 January 2020. Waves of the pandemic have hit Hong Kong within the past 4 years with the fifth wave in January 2022 resulting in a total of 1,049,959 reported confirmed cases and 5,906 death cases from 6 January to 21 March in 2022 [7]. After battling with the virus for more than three years, WHO finally announced that COVID-19 is no longer defined as a Public Health Emergency of International Concern in May 2023 [8]. The Hong Kong government has lifted the quarantine requirements for travelers since September 2022 and dropped the mask mandate in March 2023. However, compared to other western and Asian countries, Hong Kong had adopted mandatory quarantine for COVID-19 infected patients and for persons having close contacts as well as for international travellers for almost three years. The impact of the pandemic on resident training in our hospitals could therefore be more profound than in other countries.

The objective of this study is to investigate the perception of the O&G trainees in Hong Kong on the impact of COVID-19 pandemic on their specialty training and their self-confidence on their competence as future O&G specialists.

Methods

This was a cross-sectional questionnaire survey conducted from 1 to 31 August 2023 in all the eight O&G training units in Hong Kong (Kwong Wah Hospital, Pamela Youde Nethersole Eastern Hospital, Prince of Wales Hospital, Princess Margaret Hospital, Queen Elizabeth Hospital, Queen Mary Hospital, Tuen Mun Hospital and United Christian Hospital). The questionnaires were distributed to all trainees and young fellows obtaining their fellowship in 2021 or after and who were still working in the Hospital Authority during the time of the questionnaire study. The questionnaires were anonymous, self-administered, and was in English format (Appendix 1). The questionnaires consisted of 43 questions with five domains, including (1) demographic data of the participants (2) impact of COVID-19 on their clinical activities (3) impact of redeployment on training (4)

impact of COVID-19 on educational activities (5) impact on career progression. A written consent with a printed questionnaire was distributed to all eligible participants. They were asked to complete the questionnaire by their own estimation based on their loggings and return the completed questionnaires as well as the signed consent to the principal investigator by fax or internal mail.

SPSS software (Windows version 20.0; IBM Corp, Armonk [NY], United States) was used for data entry and analysis. Descriptive categorical data were expressed as numbers and percentages; they were compared and analyzed by the Chi squared test or Fisher's exact test as appropriate. A *P*-value of <0.05 was considered statistically significant.

Results

A total of 112 questionnaires were sent out to all the eligible participants and a total of 106 completed questionnaires were returned. Two questionnaires were excluded due to missing answers in key items. The overall rate of participation for analysis was 92.9% (104/112), of which 31.7% were basic trainees who had less than 4 years of recognized O&G training, 34.6% were higher trainees who had at least 4 years of recognized training and 33.7% of them were young fellows who had obtained their fellowship in 2021 or after. The majority of them (80.8%) were female. (Table 1)

The trainees were asked to compare their changes in clinical activities during the COVID pandemic with pre-COVID period or the changes with previous trainees in pre-COVID periods. The majority of the participants reported significant decreases (over 25%) in clinical

activities during COVID-19 pandemic as compared to pre-COVID levels. For gynaecology activities, 92.3% and 78.8% of participants had reduction in elective and emergency operations respectively, 86.5% and 67.3% of participants had reduction in exposure to in-patient admissions and exposure to out-patient clinics respectively. For obstetrics activities, 87.5% and 76.9% of participants had reduction in elective and emergency caesarean sections respectively, 88.5% had reduction in instrumental deliveries, 90.4% and 88.5% had reduction in exposure to in-patient admissions and exposure to out-patient clinics respectively. (Table 2)

Over one-third (36/104, 34.6%) of the participants had been redeployed to other departments during the COVID-19 pandemic. Among them, the most common department or facility for redeployment was Department of Medicine (16/36, 44.4%), followed by Asia Expo (9/36, 25%) and Penny Bay (8/36, 22.2%), and 27.8% (10/36) of them had been redeployed for less than 4 weeks, 52.7% (19/36) had been redeployed for 4–7 weeks, 5.6% (2/36) had been redeployed for 8–11 weeks and 13.9% (5/36) had been redeployed for 12 weeks. Around 44.4% (16/36) in the redeployed group regarded the redeployment experience as having a positive impact on their professional training, increasing their knowledge and experience in managing medical diseases, while 25% (9/36) thought redeployment had negative impact on their training.

Two-thirds of the participants (65.4%) reported significant reductions (60.6%) or even total cancellations (4.8%) of teaching sessions/ grand rounds during the pandemic. Attendance of seminars or lectures was reduced in around half of them (49.0%), while paradoxically 27.9% of participants reported an increase in attendance, which was mostly attributable to availability of online lectures and webinars. The majority of participants (71.2%) would prefer online or virtual seminars rather than physical ones even after COVID-19 pandemic. While 76.9% of participants reflected the pandemic had no effect on their research training, 59.6% found the pandemic had no impact on their personal study time and 31.7% of them even found more time to study. (Table 3)

With regard to the trainees' views on their specialty training programme and their career prospects, around one third (34.8%) of the trainees had at least some degree of dissatisfaction in their current training schedule, with 71.0% worrying they would not have enough number of procedures when applying for fellowship examination and 58.0% worrying they would not have enough clinical exposure in their training. Basic trainees were more significantly concerned in these aspects than higher trainees ($p=0.003$ and $p=0.017$ respectively). The majority of the trainees (76.8%) had worries about not being able to be a competent specialist after completion of their training,

Table 1 Demographic data of the participants ($n=104$)

Demographic data	Number (%)
Current level of training	
Basic trainee	33 (31.7%)
Higher trainee	36 (34.6%)
Junior specialist	35 (33.7%)
Age	
<=25	3 (2.9%)
26–30	61 (58.7%)
31–35	35 (33.7%)
36–40	4 (3.8%)
>=41	1 (1.0%)
Gender	
Female	84 (80.8%)
Male	20 (19.2%)
Marital status	
Single	65 (62.5%)
Married	39 (37.5%)
Any children	
No	92 (88.5%)
Yes	12 (11.5%)

Table 2 Changes in clinical activities during COVID-19

Clinical activities	Number (%)
Gynaecology	
Reduction in elective gynaecology operations	96 (92.3%)
Less than 25%	14 (13.5%)
Reduced 26–50%	37 (35.6%)
Reduced 51–75%	31 (29.8%)
Reduced more than 76%	14 (13.5%)
Reduction in emergency gynaecology operations	82 (78.8%)
Less than 25%	41 (39.4%)
Reduced 26–50%	27 (26.0%)
Reduced 51–75%	12 (11.5%)
Reduced more than 76%	2 (1.9%)
Reduction in exposure to gynaecology in-patient admissions	90 (86.5%)
Less than 25%	31 (29.8%)
Reduced 26–50%	38 (36.5%)
Reduced 51–75%	16 (15.4%)
Reduced more than 76%	5 (4.8%)
Reduction in exposure to gynaecology out-patients	70 (67.3%)
Less than 25%	40 (38.5%)
Reduced 26–50%	18 (17.3%)
Reduced 51–75%	9 (8.7%)
Reduced more than 76%	3 (2.9%)
Obstetrics	
Reduction in elective caesarean sections	91 (87.5%)
Less than 25%	37 (35.6%)
Reduced 26–50%	40 (38.5%)
Reduced 51–75%	8 (7.7%)
Reduced more than 76%	6 (5.8%)
Reduction in emergency caesarean sections	80 (76.9%)
Less than 25%	44 (42.3%)
Reduced 26–50%	25 (24.0%)
Reduced 51–75%	10 (9.6%)
Reduced more than 76%	1 (1.0%)
Reduction in instrumental deliveries	92 (88.5%)
Less than 25%	40 (38.5%)
Reduced 26–50%	34 (32.7%)
Reduced 51–75%	15 (14.4%)
Reduced more than 76%	3 (2.9%)
Reduction in exposure to obstetric in-patient admissions	94 (90.4%)
Less than 25%	43 (41.3%)
Reduced 26–50%	34 (32.7%)
Reduced 51–75%	14 (13.5%)
Reduced more than 76%	3 (2.9%)
Reduction in exposure to obstetric out-patients	92 (88.5%)
Less than 25%	48 (46.2%)
Reduced 26–50%	31 (29.8%)
Reduced 51–75%	11 (10.6%)
Reduced more than 76%	2 (1.9%)

and 44.9% of them had some degree of doubts or regrets about their choice of undergoing training to be an O&G specialist. Almost half (47.8%) of them had recalled transient or even persistent thoughts of quitting their

Table 3 Changes in educational activities during COVID-19

Educational activities	Number (%)
Teaching rounds/ Grand rounds	
All cancelled	5 (4.8%)
Decreased	63 (60.6%)
No change	33 (31.7%)
Increased	3 (2.9%)
Seminars / lectures attended	
Decreased	51 (49.0%)
No change	24 (23.1%)
Increased	29 (27.9%)
Scientific conferences or courses	
All cancelled	7 (6.7%)
Decreased	41 (39.4%)
No change	29 (27.9%)
Increased	10 (9.6%)
Not applicable to his/her level of training	17 (16.3%)
Research training	
Negative effect	16 (15.4%)
Positive effect	8 (7.7%)
No effect	80 (76.9%)
Personal study time	
Less time	9 (8.7%)
No change	62 (59.6%)
More time	33 (31.7%)

training. (Table 4) Among those with doubts or regrets on choosing this specialty, major concerns included not being able to be a competent specialist even after six years of training, and promotion aspects in the specialty being not as promising as before. Around two-third of them (45/69, 65.2%) felt that their department had already tried to maximize the number of procedures for them to perform by swapping duties on ad hoc basis, or arranging rotations to other O&G units for them. More than half of them (53.6%, 37/69) hoped that the HKCOG can adopt more flexible assessment criteria at the time of their exit assessment, such as accepting the use of OSAT as proof of competence for certain procedures if they were unable to log the minimum number to satisfy training requirements.

Discussion

Our data showed there was a significant overall reduction of clinical exposure during the COVID-19 pandemic. This was compatible with the trends of diversion of clinical resources away from O&G during the pandemic worldwide. Our data showed that the degree of reduction in clinical exposure was apparently more profound in gynaecology compared with obstetrics. Almost half of our trainees (43.3%) perceived the number of elective gynecological operation sessions assigned were reduced by more than 50% while half of them (48.1%) perceived that elective caesarean sections assigned was not reduced or reduced by less than 25%. This was compatible with

Table 4 Views of the trainees on their O&G training and career with comparison between basic trainees and higher trainees

View on their training and career	Total number of trainees (n=69) (%)	Number of basic trainees (n=33) (%)	Number of higher trainees (n=36) (%)	P value
Were unsatisfied about the current training	24 (34.8%)	13 (39.4%)	11 (45.8%)	0.441
Worried for not having enough number of procedures when applying for fellowship examination	49 (71.0%)	29 (87.9%)	20 (55.6%)	*0.003
Worried about not having enough clinical exposure in their training	40 (58.0%)	24 (72.7%)	16 (44.4%)	*0.017
Worried about not being able to be a competent specialist after completion of training	53 (76.8%)	28 (84.8%)	25 (69.4%)	0.130
Had doubts about choosing O&G for specialty training	31 (44.9%)	14 (42.4%)	17 (47.2%)	0.689
Had considered to quit O&G training	33 (47.8%)	13 (39.4%)	20 (55.6%)	0.179

* statistically significant

the findings from other countries. A study on the impact of COVID-19 in United Kingdom on 87 O&G trainees found that almost all the trainees (99%) felt their surgical training on benign gynaecological conditions had been negatively affected compared while only 43% felt their obstetric training was negatively affected [9]. Another study conducted on 476 Italian O&G trainees found benign gynaecology procedures, infertility treatments and urogynaecology related activities underwent a significant reduction with a reported total suspension from 54 to 60%, while labour/ delivery training and prenatal diagnosis was less reduced with a total suspension of training from 8.2 to 23.1% only [5]. This was logical as urgent and non-deferrable surgeries such as labour/ delivery and oncologic procedures had to be maintained despite elective gynaecological surgeries for benign conditions being postponed. However, reduction on obstetric services in public hospitals in Hong Kong was still remarkable as a significant proportion of women opted to deliver in private hospitals instead of public hospitals during the pandemic. The practical reasons for this trend included the strict prohibition of all visiting in public hospitals and the cancellation of husband accompanying labour programme during the peaks of the pandemic. In addition, the risk of contracting COVID-19 was believed to be lower when delivering in private rather than public hospitals, as private hospitals would not admit confirmed COVID patients [10, 11].

The redeployment rate for O&G trainees to other units such as medical department during COVID-19 pandemic varied among different countries. A survey on 110 O&G trainees from 25 different European countries found the redeployment rate was 15%, compared with 34.6% in our study to as high as 65.3% in Turkey [3, 4]. The trainees in European countries valued their experience in redeployment and thought they have increased their knowledge and skills in medicine with a positive impact on their training, which was similar to the views of our redeployed trainees [4]. As our specialty training focused on O&G knowledge and skills, and elective year training in other specialties is no longer mandatory in our training

programme, our trainees seldom had the experience in managing medical diseases or work in other specialties during their training. Our data showed that 44.4% of our redeployed trainees were seconded to the Department of Medicine, which offered them a variety of valuable clinical experiences apart from merely looking after COVID patients to broaden their medical knowledge. Furthermore, the majority of our trainees (86.1%) were redeployed less than 12 weeks, so that the chances of jeopardizing their O&G exposure and training due to the redeployment should be low.

Similar to our findings, around half of the trainees (51.2%) in the Italian study reported a reduction in teaching activities during the COVID-19 pandemic with decreases in teaching/ grand rounds, attendance of seminars and conferences [5]. A virtual continuing medical education program had been constructed for O&G trainees in Singapore in 2020 to replace the traditional face to face continuous medical education program comprising of grand rounds, clinical governance, journal clubs and research presentations and was highly evaluated by their trainees. The majority of their trainees felt increased comfort in the virtual environments, less public speaking fear, less senior intimidation and a dismantlement of the traditional classroom physical space [12, 13]. Indeed, virtual platforms for lectures and conferences had been increasingly used worldwide as well as in Hong Kong during the COVID-19 pandemic. Virtual platform is convenient, and apart from lifting geographic constraints and saving travel time, also allows recording and playback to retain and review information. The majority of our trainees expressed that they preferred online or virtual seminars rather than physical ones even after COVID-19 pandemic. Meanwhile, more evidence is needed to show whether these online or virtual seminars are better, complementary or worse than traditional face-to-face lectures, and in particular, whether these virtual seminars will decrease trainees' communications skills among professionals. However, maintaining a virtual option after the COVID pandemic may still be beneficial to trainees who find difficulties in attend the seminars in-person. In

response to the reduction in elective gynaecology surgery, various authors from different countries had advocated simulation training in O&G during COVID-19 pandemic such as using laparoscopic box trainers and surgical simulators to train tissue handling and laparoscopic suturing [3, 9, 12, 13]. Use of archived surgical videos and live tele-mentoring in operation theaters by experienced seniors had also been advocated so that more trainees can observe the operations simultaneously to compensate for their gap in surgical education and exposure [3, 12, 13]. Although hands-on training cannot be replaced by simulation and e-learning, increased staff confidence and comfort, enhanced technical and clinical performance were confirmed in a systemic review on training in health workers during COVID-19 pandemic [14]. In fact, individual study time was found to be increased in 68.1% of the Italian trainees [5] as well as 31.7% of our trainees during the COVID-19 pandemic. Trainees should make best use of their additional study time to visit such virtual education platforms for learning to compensate for their loss in clinical exposure.

Apart from reduction of elective gynaecology operations, our trainees were also worried about reduction in obstetric procedures and exposure as Hong Kong is currently facing a historically low number of obstetric deliveries during the pandemic. The number of live births in Hong Kong dropped from 53,168 in year 2019 to 32,950 in year 2022. Even after lifting the quarantine requirements for travellers in year 2022 and restoration of most of the normal social activities, the number of live births only showed a slight rise to 33,288 in year 2023 [15, 16] without obvious signs of recovery in the number of deliveries. Basic trainees were significantly more worried than higher trainees on not having enough number of obstetric procedures, such as instrumental deliveries, in our survey. The higher trainees may already have acquired adequate or acceptable numbers before the pandemic, while basic trainees had only very limited number of loggings and exposure in the few years of the pandemic, and with no signs of a significant rebound in the number of deliveries in the coming few years as they enter higher training, the chances they will acquire sufficient numbers in these procedures to satisfy training requirements appear guarded.

It is disturbing to note that around half of our trainees had doubts or regrets on choosing O&G for specialty training. The majority of the trainees had worries of not being able to be a competent specialist after completion of training. According to a cross-sectional questionnaire survey on medical graduates in 2016, the career interest in O&G among medical graduates were low and the key influential factors in their career choice included working style and career prospects [17]. In our survey, many of our trainees attributed their doubts in specialty

training to the frequent call schedules and high working hours leading to an undermined work-life balance, and concerns over their competence and career prospects were highlighted. The HKCOG should find solutions on improving the working schedules for O&G trainees in order to prevent high drop-out rate for our existing trainees, to boost the currently low preference for O&G among medical graduates seeking specialty training. Trainers in O&G departments should attempt to identify the gaps in clinical exposure and insufficiencies in procedure logging for each individual trainee, and then adopt training plans tailored for each of them to make up for the deficient areas before they approach their exit assessment. Such targeted remedial training programmes should hopefully make up for any negative impacts posed by the pandemic so that all trainees will be able to achieve the desired comprehensive level of competence when they attain specialist status.

The main strength of our study was that our findings should truly reflect the opinions of the majority of O&G trainees and young fellows in Hong Kong. We achieved a high comprehensive response rate 92.9% of all trainees, whereas other similar studies only reported selected samples with response rates of 51 to 69% [5, 6, 9]. The limitation of this study was that the questionnaires were gathered when the peak of COVID pandemic had passed and there was already gradual restoration of many routine clinical activities, so that the reported impact on training might already be attenuated as compared to the peak of the pandemic. Another limitation of this study was the decrease in number of operative procedures perceived by the trainees were based on their estimation from their logbook recordings but without requiring them to retrieve records or precisely count the number of cases for various categories. Nonetheless, we believe the estimations reported should closely reflect the actual quantitative workload of our trainees. The data should be valuable to uphold the standards of our training system and to ensure the competences of our future specialists.

Conclusion

The O&G trainees in Hong Kong perceived that the COVID-19 pandemic had significant negative impacts on their training. There was an overall reduction in clinical activities and exposure for O&G trainees particularly for elective gynecology operations. O&G trainees were concerned with insufficient clinical exposure and number of procedures for logging to satisfy their training requirements. A significant proportion of them were in doubt about their career choice. Improvements in working schedules and training and assessment systems should be adopted by trainers in different O&G departments and the HKCOG in order to retain current trainees and to attract future medical graduates.

Acknowledgements

The authors would like to thank all participants of this survey study and the COVID-19 Training Impact Study Group consisting of Dr Chan Yuen Yee Yannie, Dr Hung Man Wai Catherine, Dr Luk Hiu Mei, Dr Tang Yuen Chung, Dr Tse Kai Yeung, Dr Wong Kwun Long Natalie, Dr Yuen Tony from Princess Margaret Hospital, Kwong Wah Hospital, Queen Mary Hospital, Tuen Mun Hospital, Queen Elizabeth Hospital, Prince of Wales Hospital and Pamela Youde Nethersole Eastern Hospital respectively, for their coordination in this research project in each O&G unit.

Author contributions

LJTC has made substantial contributions to the conception and the design of the work, the acquisition and analysis of the data as well as the drafting of the manuscript. LYY acquired, analyzed and interpreted the data. KCW contributed to the conception and the design of the work, analyzed the data and drafted the manuscript. TWWK analyzed the data and provided critical revision for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version of manuscript for publication, and take responsibility for its accuracy and integrity.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

Formal ethics approvals for this research were granted by the Central Institutional Review Board / Cluster Research Ethics Committee (Ref No.: CIRB-2023-018-3), the Joint Chinese University of Hong Kong - New Territories East Cluster Clinical Research Ethics Committee (Ref No.: CREC-2023-082) and the Institutional Review Board of the University of Hong Kong / Hospital Authority Hong Kong West Cluster (Ref No.: UW-23-241). Written informed consent was obtained from all subjects.

Consent for publication

Not applicable as no individual person's data in any form has been included in the manuscript.

Competing interests

The authors declare no competing interests.

Received: 12 March 2024 / Accepted: 1 July 2024

Published online: 19 August 2024

References

1. Fu MZ, Islam R, Singer EA, Tabakin AL. The impact of COVID-19 on surgical training and education. *Cancers (Basel)*. 2023;15:1267.

2. Liang AL, Turner LC, Voegtline KM, Olson SB, Wildey B, Handa VL. Impact of COVID-19 on gynecologic and obstetrical services at two large health systems. *PLoS ONE*. 2022;17:e0269852.
3. Topçu G, Özçivit İB, Erkinç S. Effects of the COVID-19 pandemic on obstetrics and gynecology residency training in Turkey. *Turk J Obstet Gynecol*. 2021;18:304–10.
4. Boekhorst F, Khattak H, Topcu EG, Horala A, Gonçalves Henriques M. The influence of the COVID-19 outbreak on European trainees in obstetrics and gynaecology: a survey of the impact on training and trainee. *Eur J Obstet Gynecol Reprod Biol*. 2021;261:52–8.
5. Bitonti G, Palumbo AR, Gallo C, et al. Being an obstetrics and gynaecology resident during the COVID-19: impact of the pandemic on the residency training program. *Eur J Obstet Gynecol Reprod Biol*. 2020;253:48–51.
6. Duggan I, Hablase R, Beard L, Odejinmi F, Mallick R. The impact of COVID-19 on O&G trainees; where are we now? *Facts Views Vis Obgyn*. 2022;14:69–75.
7. Smith DJ, Hakim AJ, Leung GM, et al. COVID-19 mortality and vaccine coverage - Hong Kong special administrative region, China, January 6, 2022-March 21, 2022. *MMWR Morb Mortal Wkly Rep*. 2022;71:545–8.
8. Sarker R, Roknuzzaman ASM, Hossain MJ, Bhuiyan MA, Islam MR. The WHO declares COVID-19 is no longer a public health emergency of international concern: benefits, challenges, and necessary precautions to come back to normal life. *Int J Surg*. 2023;109:2851–2.
9. Mallick R, Odejinmi F, Sideris M, Egbase E, Kaler M. The impact of COVID-19 on obstetrics and gynaecology trainees; how do we move on? *Facts Views Vis Obgyn*. 2021;13:9–14.
10. Lok WY, Chow CY, Kong CW, To WWK. Knowledge, attitudes, and behaviours of pregnant women towards COVID-19: a cross-sectional survey. *Hong Kong Med J*. 2022;28:124–32.
11. Hui PW, Ma G, Seto MTY, Cheung KW. Effect of COVID-19 on delivery plans and postnatal depression scores of pregnant women. *Hong Kong Med J*. 2021;27:113–7.
12. Kanneganti A, Lim KMX, Chan GMF, et al. Pedagogy in a pandemic – COVID 19 and virtual continuing medical education (vCME) in obstetrics and gynecology. *Acta Obstet Gynecol Scand*. 2020;99:692–5.
13. Chan GMF, Kanneganti A, Yasin N, Ismail-Pratt I, Logan SJS. Well-being, obstetrics and gynaecology and COVID-19: leaving no trainee behind. *Aust N Z J Obstet Gynaecol*. 2020;60:983–6.
14. Boutros P, Kassem N, Nieder J, et al. Education and Training Adaptations for Health Workers during the COVID-19 pandemic: a scoping review of lessons learned and innovations. *Healthc (Basel)*. 2023;11:2902.
15. Hong Kong Monthly Digest of Statistics February. 2021. https://www.censtatd.gov.hk/en/data/stat_report/product/B1010002/att/B10100022021MM02B0100.pdf. Accessed 26 Feb 2024.
16. Hong Kong Monthly Digest of Statistics February. 2024. https://www.censtatd.gov.hk/en/data/stat_report/product/B1010002/att/B10100022024MM02B0100.pdf. Accessed 26 Feb 2024.
17. Lam CY, Cheung CS, Hui AS. Factors influencing the career interest of medical graduates in obstetrics and gynaecology in Hong Kong: a cross-sectional questionnaire survey. *Hong Kong Med J*. 2016;22:138–43.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.