

The impact of COVID-19 related lockdown on ophthalmology training programs in India – Outcomes of a survey

Deepak Mishra¹, Akshay Gopinathan Nair^{2,3}, Rashmin Anilkumar Gandhi⁴, Parikshit J Gogate^{5,6,7}, Satanshu Mathur⁸, Prashant Bhushan¹, Tanmay Srivastav¹, Hemendra Singh¹, Bibhuti P Sinha⁹, Mahendra Kumar Singh¹

Purpose: In 2020, in response to the emergence and global spread of the disease COVID-19, caused by a new variant of coronavirus 2019-nCoV, the government of India ordered a nationwide lockdown for 21 days, which was then extended to a total of over 50 days. The aim of this study is to assess the effect of the lockdown on ophthalmic training programs across India. **Methods:** An online survey was sent across to trainee ophthalmologists across India through various social media platforms. **Results:** In all, 716 trainees responded; the average age was 29.1 years. Results showed that majority of the respondents were enrolled in residency programs (95.6%; 685/716) and the others were in fellowship programs. About 24.6% (176/716) of the trainees had been deployed on 'COVID-19 screening' duties. Nearly 80.7% (578/716) of the trainees felt that the COVID-19 lockdown had negatively impacted their surgical training. Furthermore, 54.8% (392/716) of the trainees perceived an increase in stress levels during the COVID-19 lockdown and 77.4% (554/716) reported that their family members had expressed an increased concern for their safety and wellbeing since the lockdown began. In all, 75.7% (542/716) of the respondents felt that online classes and webinars were useful during the lockdown period. **Conclusion:** Our survey showed that majority ophthalmology trainees across the country felt that the COVID-19 lockdown adversely affected their learning, especially surgical training. While most found online classes and webinars useful, the trainees' perceived stress levels were higher than normal during the lockdown. Training hospitals should take cognizance of this and reassure trainees; formulate guidelines to augment training to compensate for the lost time as well as mitigate the stress levels upon resumption of regular hospital services and training. Going ahead, permanent changes such as virtual classrooms and simulation-based training should be considered.

Key words: Cataract training, coronavirus, fellowship, medical education, post-graduation, residency training, resident, SARS, simulation, virtual reality

In late 2019, multiple cases of pneumonia of unknown aetiology were observed in the city of Wuhan in Hubei province in China. Soon, following genomic sequencing, it was found that these cases were caused by a novel virus, which was called Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2); also known as 2019 novel Coronavirus (2019-nCoV).^[1-3] This coronavirus infection (COVID-19) spread throughout the world, leading to the World Health Organisation declaring it a global pandemic.^[3,4] In an effort to restrict the spread of this disease, many governments across

the world enforced 'lockdowns' of varying degrees: in India, the government put in place a total lockdown in March 2020. The lockdown came into force at midnight local time on 24th March 2020 and was enforced for 21 days.^[4,5] **Subsequently, on April 14th, 2020, this lockdown was extended up to 17th May 2020,** taking the total number of days under lockdown to beyond 50 days.^[6] As per government directives, all non-emergency out-patient departments (OPDs) across hospitals and clinics in India were to be shut; all elective surgeries to be deferred and only emergency healthcare services to function.^[4] Ophthalmology, being a branch of medicine which largely deals with elective surgeries, was significantly affected. Nair and colleagues conducted a survey during the lockdown period to assess the effect of the lockdown on ophthalmic practice in India.^[4] In their survey, most of the respondents who took the survey (775/1260; 61.5%) were in private practice

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

Cite this article as: Mishra D, Nair AG, Gandhi RA, Gogate PJ, Mathur S, Bhushan P, et al. The impact of COVID-19 related lockdown on ophthalmology training programs in India – Outcomes of a survey. Indian J Ophthalmol 2020;68:999-1004.

Access this article online

Website:

www.ijo.in

DOI:

10.4103/ijo.IJO_1067_20

Quick Response Code:



¹Regional Institute of Ophthalmology, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, ²Ophthalmic Plastic and Ocular Oncology Services, Advanced Eye Hospital and Institute, A Unit of Dr. Agarwal's Eye Hospitals, Sanpada, Navi Mumbai, ³Aditya Jyot Eye Hospital, Wadala, Mumbai, ⁴Foresight International, Hyderabad, Telangana, ⁵Community Eye Care Foundation, Dr. Gogate's Eye Clinic, Pune, ⁶Padmashri D.Y. Patil Medical College, Pimpri-Chinchwad, Maharashtra, India, ⁷School of Medicine, Dentistry and Biomedical Sciences, Queen's University, Belfast, United Kingdom, ⁸Hi-Tech Eye Institute and Laser Centre, Kashipur, Uttarakhand, ⁹Regional Institute of Ophthalmology, Indira Gandhi Institute of Medical Sciences, Sheikhpura, Patna, Bihar, India

Correspondence to: Dr. Akshay Gopinathan Nair, Ophthalmic Plastic and Ocular Oncology Services, Aditya Jyot Eye Hospital, Wadala, Mumbai, Maharashtra - 400 031, India. E-mail: akshaygn@gmail.com

Received: 20-Apr-2020

Revision: 12-May-2020

Accepted: 13-May-2020

Published: 25-May-2020

and 14.8% (187/1260) were affiliated to ophthalmic institutes. Their survey highlighted that an overwhelming majority (72.5%) of ophthalmologists in India were not seeing patients during the COVID-19 lockdown with a near-total cessation of elective surgeries. The survey also highlighted that most ophthalmologists were unsure about how to begin practice once the lockdown restrictions eased off. Therefore, it is clear that the lockdown would not only effect patient care during those 40 days, but long after the lockdown restrictions would ease off.

A collateral casualty of the COVID-19 pandemic is medical training, especially in non-emergency branches, not directly involved in COVID-19 patient care. In the United States, the Association of American Medical Colleges in March 2020, released guidelines strongly suggesting that medical students should not be involved in direct patient contact activities.^[7] Given that the situation is largely fluid and with no effective therapeutic agent or vaccine available yet, it is unclear when the situation would normalize. Across specialties, sweeping changes have been made such as ramping down surgical volume and redeployment of skeleton in-house call schedules to reduce the chances of cross-infection among hospital staff.^[8] The Severe Acute Respiratory Syndrome (SARS) pandemic in 2003 had resulted in some similar changes in training programs in many countries. Following the SARS outbreak in Hong Kong, both medical schools in Hong Kong had to abruptly transition undergraduate medical education from classroom lectures to a recorded lecture format, and students were taken out of clinical rotations temporarily.^[9] Later on, as the disease spread to Canada, the University of Toronto followed suit and suspended student education in teaching hospitals.^[10] Given the global footprint of COVID-19, it is likely that this pandemic would have a far more significant and long-lasting effect on medical education.^[11] With this background, this survey was designed to assess the effect of the COVID-19 related lockdown on ophthalmic training programs across India.

Methods

An online survey (Google Forms) was circulated among Indian trainee ophthalmologists during the lockdown period (April 12 – 14, 2020). An invitation to participate was circulated through multiple groups on social media, namely Facebook, WhatsApp and Telegram. The survey, which consisted of 21 questions [Appendix 1], was open for a period of 72 hours. Respondents had the option of adding their names and email addresses. However, this was not mandatory. Association between categorical variables was assessed using Fisher exact test or Chi-squared test. We considered a $P < 0.05$ as statistically significant. All statistical analysis was performed with GraphPad Prism 6 (GraphPad Inc, La Jolla, CA).

Results

A total of 716 valid responses were received by midnight 14th April 2020. All valid responses were tabulated and analyzed.

Demographics and background

The average age of the respondents was 29.1 years (range: 23-45 years; SD:± 3.14). It was noted that 441/716 (61.6%) of the respondents were female. The residents were asked to specify which training program they were currently enrolled in [Fig. 1]: 474/716 (66.2%) of the respondents were pursuing

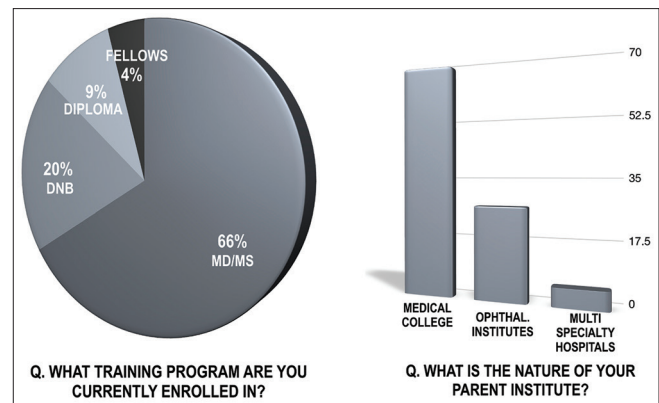


Figure 1: Graphical representation of the training programs that the trainees are enrolled in and the nature of their parent institutes

MD/MS programs; 145/716 (20.2%) of the respondents were in Diplomate of the National Board (DNB) residency programs; 66/716 (9.2%) of the trainees were pursuing Diploma in Ophthalmology programs and 31/716 (4.3%) of the respondents were in fellowship programs/senior residency. Most of the trainees were enrolled in medical colleges (484/716; 67.6%); 193/716 (26.9%) of the trainees were in ophthalmic institutes and 39/716 (5.4%) were in multi-specialty private hospitals. The respondents were asked to specify the funding of their training centers: 407/716 (56.8%) indicated they were in government-owned hospitals, 237/716 (33.1%) mentioned that their institutes were privately owned and 72/716 (10.1%) were in charitable/trust-owned hospitals.

Effect of COVID-19 lockdown on training

It was noted that 176/716 (24.6%) of the trainees had been posted on 'COVID screening / patient care' duty [Fig. 2]. Analysis of this data showed that a significantly higher proportion of trainee ophthalmologists in government owned hospitals reported being posted on COVID-19 duty as compared to those in private practice ($p=0.04$). When asked if they felt that protection kits provided by their hospitals were adequate, 423/716 (59.2%) felt that it was not adequate; 174/716 (24.4%) felt that the protection kits were adequate and 118/716 (16.5%) were unsure [Fig. 2]. The trainees were asked if the lockdown had a negative impact on their surgical training; a large majority 578/716 (80.7%) agreed, 53/716 (7.4%) did not agree and 85/716 (11.9%) were not sure. The residents were asked to quantify this impact on their surgical training: 447/716 (62.4%) of the residents felt there was 50% or more reduction in their surgical training during the lockdown [Fig. 3].

The trainees were also asked if the lockdown had a negative impact on their theoretical / classroom learning: 338/716 (47.2%) agreed, 254/716 (35.5%) disagreed and 124/716 (17.3%) of the respondents were not sure [Fig. 4]. In contrast to the surgical training, 467/716 (65.3%) indicated that the lockdown affected their classroom/theoretical learning by less than 50%. In all, 481/716 (67.2%) of the trainees indicated that they received their salary/stipend during the lockdown and 235/716 (32.8%) had not.

Effect of COVID-19 lockdown on wellbeing and state of mind

In response to being asked if the lockdown affected their personal routines, 652/716 (91.1%) replied in the affirmative

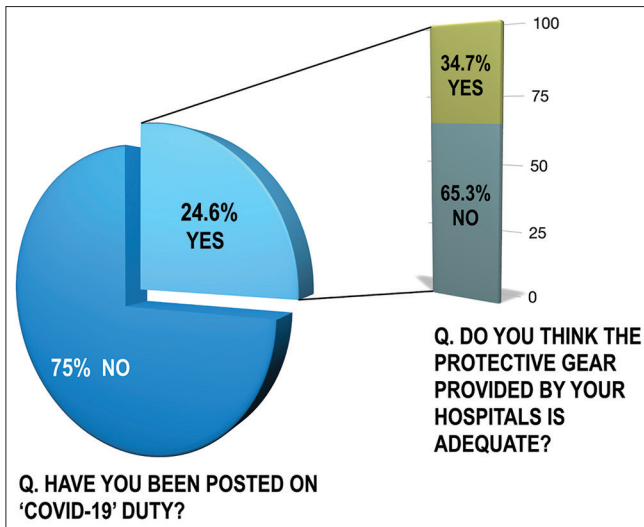


Figure 2: Graphical representation of the trainees who had 'COVID-19 duty' and their perceptions about the adequacy of the protective equipment given to them

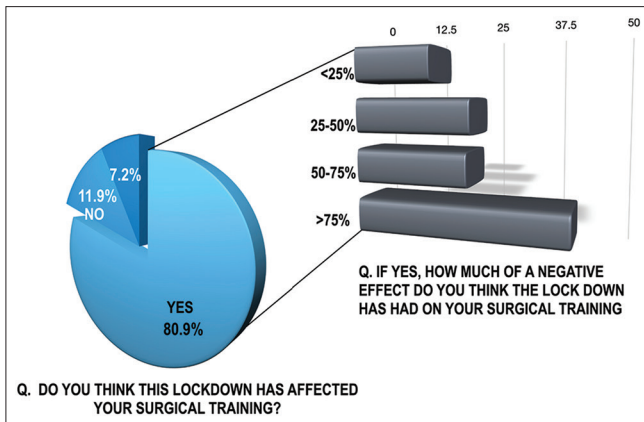


Figure 3: Graphs depicting how the trainees felt the COVID-19 lockdown affected their surgical training

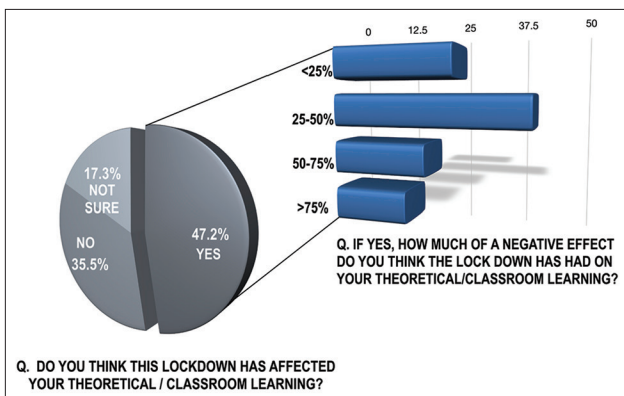


Figure 4: Graphs depicting how the trainees felt the COVID-19 lockdown affected their classroom/theoretical learning

[Fig. 5]. Further, 392/716 (54.8%) reported higher than usual stress levels since the lockdown began; 554/716 (77.4%) indicated that their family had expressed concern for their health and wellbeing, specifically in regard to COVID-19. In

all, 46.5% of the respondents indicated that their state of mind during the lockdown period was 'unhappy'.

Utilization of time

In response to being asked if they were utilizing the internet productively with respect to ophthalmology, 581/716 (81.2%) responded in the affirmative [Fig. 6]. Additionally, 542/716 (75.7%) indicated that they found the ophthalmic webinars being conducted on the internet useful. A detailed break-up of the trainees' daily schedules can be seen in Fig. 7.

Discussion

This survey highlights that the COVID-19 lockdown has brought with it, uncertainty, anxiety and higher stress levels among ophthalmology trainees across India due to the disruption of training program schedules. The foremost issue for all stakeholders in healthcare presently, is to tackle the issue at hand: the pandemic itself. In our survey, we noted that 176/716 (24.6%) of the trainees had been posted on 'COVID screening / patient care' duty. The Accreditation Council for Graduate Medical Education (ACGME) based in the United States noted in an editorial that residents/fellows and attending surgeons will be sidelined for significant periods of time due to known exposure to the virus or becoming infected themselves. Some residents, fellows and attendings will predictably succumb to the virus.^[12] Therefore, the primary focus of program directors during the pandemic should be education and protection: educating the frontline doctors about COVID-related patient care and how to protect themselves from contracting the disease. Alarming, 115/176 (65.3%) of those who were on COVID-19 duties felt that the protective equipment they were using was inadequate. Expectedly, a significantly higher proportion of residents in government owned hospitals/medical colleges had COVID-19 rotations as compared to those trainees in privately owned hospitals/institutes.

Studies have shown that health care workers on the front-line feared contagion and infection of their family, friends, and colleagues; felt uncertainty and stigmatization; and reported experiencing high levels of stress, anxiety, and depression symptoms, which could have long-term psychological implications. The ever-increasing number of confirmed and suspected cases, overwhelming workload and depletion of personal protection equipment, may all contribute to the mental burden of these health care workers.^[13-15] Naser Moghadasi noted that Iranian medical trainees exhibited higher level of anxiety during the COVID-19 outbreak in Iran. It was noted that high level of anxiety can reduce an individual's attention, which is very hazardous, specially for medical personnel.^[16,17] In our survey, while 91% of the respondents indicated that their personal routines were disrupted, 392/716 (54.8%) indicated higher stress levels during the lockdown.

Effect on residency/fellowship training

In the United States, since COVID cases were reported in each of the 50 states across the country, many training hospitals have responded uniformly: they have reduced their nonessential surgery volume, and are performing only surgeries that are emergent, urgent, or time sensitive.^[11] The Indian government's guidelines advised postponement of elective surgeries during the lockdown period, and not surprisingly, 578/716 (80.7%) of

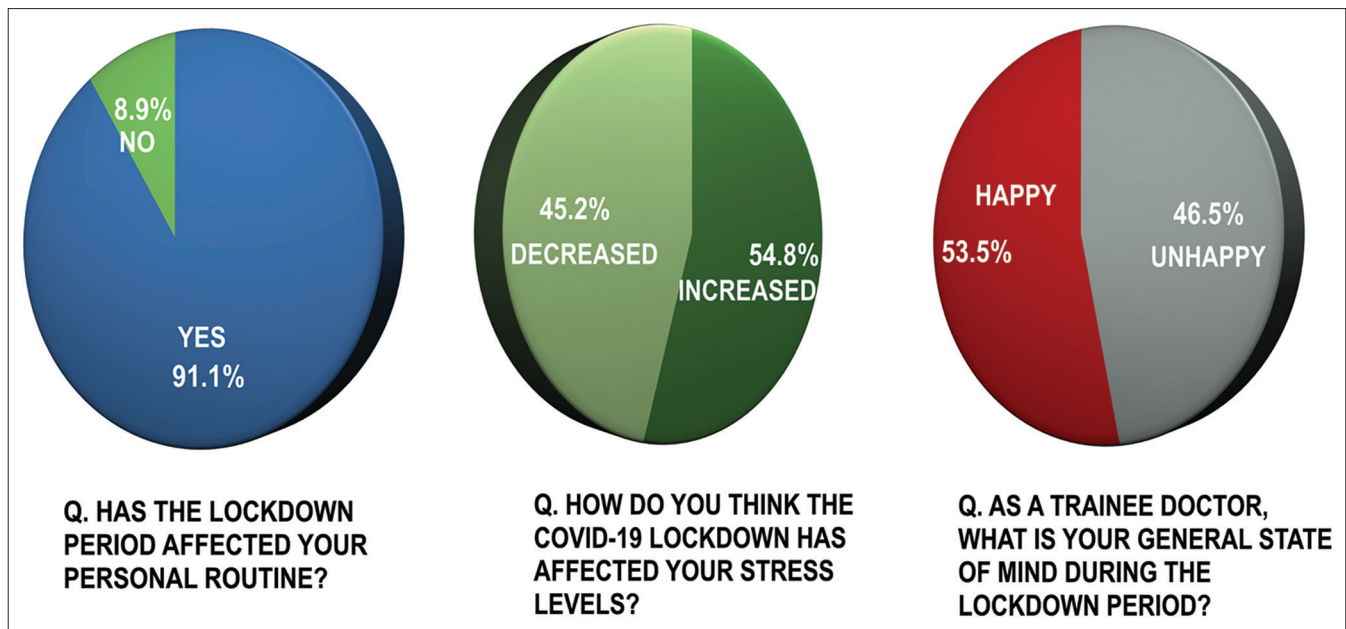


Figure 5: Graphical representation of the trainees' responses to their well-being and mental stress levels during the lockdown

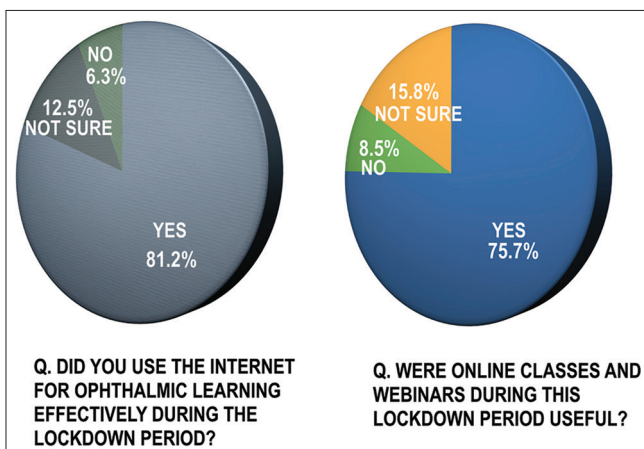


Figure 6: The trainees' perception regarding their use of the internet for academic purposes and the utility of online webinars and classes

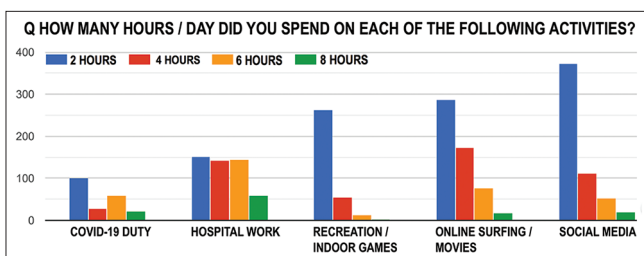


Figure 7: A detailed break-up of the trainees' self-reported daily schedules

the respondents in our survey indicated that the lockdown had a negative impact on their surgical training. While specialty ophthalmic hospitals may not have to directly share the responsibility of providing care for COVID-19 patients, this does not hold true for larger government and private medical

colleges as well as multi-specialty teaching hospitals, where clinicians across specialties would be directly involved with COVID-19 patients. Teaching hospitals must balance priorities between patient care and resident education. Classroom lectures, hands-on clinical demonstrations, and surgical training are crucial components of medical education. Training institutes will have to adapt to conditions such as now when in-person didactics are cancelled, and surgical volume is significantly reduced.^[11]

It is likely that in this calendar year (2020), most residents and fellows, not just in ophthalmology but across all specialties, may not be able to fulfil their clinical rotations, complete the minimum required surgical cases and participate in non-operative patient care. The impact of those deficient experiences will be greatest on residents/fellows in their ultimate or penultimate years of training.^[12] And the degree of impact will be inversely correlated to the length of the training program. A few months of reduced clinical activity for a first-year resident in a 3-year ophthalmology residency program can be compensated later on in the program. But in contrast, a 3-month long loss of surgical training for a fellow in the last 6 months of a 15-month long fellowship program is extremely detrimental.^[12]

Mitigation measures

Virtual classrooms

Since the beginning of the lockdown, there has been a surge in the number of webinars and online CME programs in ophthalmology. Our survey showed that 542/716 (75.7%) of the respondents found ophthalmic webinars being conducted useful. Training programs elsewhere have transitioned to remote learning and have used spaced learning tools to keep the trainees learners actively engaged: with podcasts, email-based clinical vignettes with associated questions and clinical images, and "tweetorials" (tutorials composed of several linked tweets, available only on Twitter, which may include

links to other sites and short videos).^[18] Program directors need to be innovative and include both live online classrooms as well as pre-recorded classes that can be accessed anytime into the training curriculum. This would require considerable investment of time and resources to develop and create a library of classrooms.

Conferences

Medical conferences are a traditional part of medical training and continuing education. While presenting posters and papers, residents and fellows can engage with leading experts from around the world and use the opportunity to discuss their work with them. Furthermore, conferences present a rare opportunity to get expert opinions on how to improve and advance current research. However, in view of the 'social distancing' requirements, many conferences across the globe have been cancelled or postponed. One of the largest ophthalmic conferences, the World Ophthalmic Congress, which was supposed to be held in Cape Town, South Africa has gone completely online with a virtual conference.^[19] The spring meeting of the American Society of Ophthalmic Plastic Surgery and the annual conference of the American Society of Cataract and Refractive Surgery will both now be conducted virtually.^[20,21] The transition of conferences from physical meetings to virtual ones offers trainees the unique opportunity to attend these meetings, hear the speakers and participate in the scientific deliberations without bearing the otherwise prohibitive expenses of travel and accommodation. Residency directors could take advantage of these virtual conferences and allow maximum resident/fellow participation not just as attendees, but as presenters as well.

Simulation based surgical training

While there is no substitute for learning and practicing clinical examination techniques on patients and surgical procedures in real life; recent advances in simulation technology have opened up new avenues in training. The COVID-19 lockdown and the period that follows could bring in drastic changes. It is likely that hospitals will see fewer patients the next few months and residents/fellows may have fewer surgical rotations as a result of decreased clinical surgical demands and as a means of mitigating their exposure to the virus.^[12] Reduced time in the clinics and/or will adversely affect their clinical and surgical skill acquisition. Medical simulators may be useful in this scenario.

In addition to non-surgical simulators, there are cataract surgery simulators available: Eyesi (VRmagic Holding AG, Mannheim, Germany), PhacoVision® (Melerit Medical, Linköping, Sweden), and MicroVisTouch™ (ImmersiveTouch, Chicago, IL, USA) and the HelpMeSee (HMS) Eye Surgery Simulator (HelpMeSee Inc. NY, USA).^[22] These simulators permit trainees to practice surgical procedures repeatedly in order to improve their surgical skills.^[23] Some simulators also allow objective measures of performance and trainees can experience a wide range of clinical scenarios without any actual risk to the patients.

For the Indian scenario, in particular where the Manual Small Incision Cataract Surgery (MSICS) is a commonly performed surgery, the HelpMeSee Eye Surgery Simulator can be extremely useful for training residents.^[24] The HMS

simulator is the only virtual reality based simulator that supports the training for MSICS and combines realistic computer graphics, physics modelling, motion controls and tactile feedback to accurately recreate the MSICS procedure. Each feature of this high-fidelity simulator, such as the training tools and customisable starting points, make it an extremely useful asset for training, given that surgical opportunities for elective surgeries is likely to reduce in the near future. The face and content validity of the HelpMeSee Eye Surgical Simulator's Tunnel Construction Course has already been demonstrated earlier.^[25] In New York, one of the worst hit areas in USA, there has been suspension of elective surgery for training. Program directors there have had to adapt and change the way they teach ophthalmic surgery with fewer total surgical cases. While more frequent surgical video teaching conferences can help in a certain way, the undoubted logical conclusion is that virtual simulation platforms must play an even larger role in the surgical training of residents. It is anticipated to see a greater reliance, in the foreseeable future, on simulation training prior to actual surgery as it will benefit both trainees and patients.^[26]

Supportive measures

In a survey of health care workers in Wuhan and other regions in China, participants reported experiencing psychological burden, especially frontline health care workers directly engaged in the diagnosis, treatment, and care for patients with COVID-19.^[13] For residents and fellows, in addition to the stress, brought about by the fear of contracting the disease, there is the added anxiety that comes with the lack of active surgical rotations and reduced training opportunities. Training institutes must offer psychological counselling and psychiatric support to those who seek it. Apart from these steps, program directors may also consider extending the duration of fellowship programs or allowing residents/fellows and other trainees to return to their parent institutes for short periods subsequently, even after their stipulated duration is over.

Limitations

Like any other survey, our report too has the inherent drawbacks of self-reported surveys. The survey questions are not standardised and given the rapidly changing scenario. It was not possible to conduct a validated survey. The authors felt it necessary to keep the survey open only for a short period of time during the lockdown itself.

Conclusion

The COVID-19 pandemic has changed the way ophthalmology will be practiced in the future. It is prudent that the leaders recognise the impact this will have on trainees currently in training. While regulatory organisations and societies must issue clear guidelines to help resume patient care without compromising on safety, medical education cannot be neglected. Short-term measures that have been enumerated in this communication should be taken into consideration and similar guidelines may along with instituting sound support-systems locally to assist those trainees in distress. These are tough times and hence we must not have a knee-jerk reaction by making drastic changes in the educational system that has largely served the ophthalmic community well. That aside,

when we do come out of this crisis, there are issues that need to be tackled in order to create a more strong, flexible and responsive system with contingency measures in place for emergencies.

Financial Disclosures

Akshay Gopinathan Nair:

a. Lecture Fees: Carl Zeiss Meditec

b. Consultant: HelpMeSee Inc. NY, USA

References

- Wang C, Horby PW, Hayden FG, Gao GF. A novel coronavirus outbreak of global health concern. *Lancet* 2020;395:470-3.
- Xia J, Tong J, Liu M, Shen Y, Guo D. Evaluation of coronavirus in tears and conjunctival secretions of patients with SARS-CoV-2 infection. *J Med Virol* 2020. doi: 10.1002/jmv.25725.
- Khanna RC, Honavar SG. All eyes on Coronavirus—What do we need to know as ophthalmologists. *Indian J Ophthalmol* 2020;68:549-53.
- Nair AG, Gandhi RA, Natarajan S. Effect of COVID-19 related lockdown on ophthalmic practice and patient care in India: Results of a survey. *Indian J Ophthalmol* 2020;68:725-30.
- Available from: <https://www.bbc.com/news/world-asiaindia-52024239>. [Last accessed on 2020 Apr 15].
- Available from: <https://www.livemint.com/news/india/lockdown-extended-till-17-may-what-will-open-remain-closed-11588340829516.html>. [Last accessed on 2020 May 12].
- Available from: <https://www.aamc.org/system/files/2020-04/meded-April-14-Guidance-on-Medical-Students-Participation-in-Direct-Patient-Contact-Activities.pdf>. [Last accessed on 2020 Apr 15].
- Choi BD. Editorial. A neurosurgery resident's response to COVID-19: Anything but routine. *J Neurosurg* 2020. doi: 10.3171/2020.4.JNS201028.
- Patil NG, Chan Y, Yan H. SARS and its effect on medical education in Hong Kong. *Med Educ* 2003;37:1127-8.
- Clark J. Fear of SARS thwarts medical education in Toronto. *BMJ* 2003;326:784.
- Bambakidis NC, Tomei KL. Impact of COVID-19 on neurosurgery resident training and education. *J Neurosurg* 2020. doi: 10.3171/2020.3.JNS20965.
- Potts JR 3rd. Residency and fellowship program accreditation: Effects of the novel coronavirus (COVID-19) Pandemic. *J Am Coll Surg* 2020. doi: 10.1016/j.jamcollsurg.2020.03.026.
- Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, *et al*. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020. doi: 10.1001/jamanetworkopen.2020.3976.
- Maunder R, Hunter J, Vincent L, Bennett J, Peladeau N, Leszcz M, *et al*. The immediate psychological and occupational impact of the 2003 SARS outbreak in a teaching hospital. *CMAJ* 2003;168:1245-51.
- Lee AM, Wong JG, McAlonan GM, Cheung V, Cheung C, Sham PC, *et al*. Stress and psychological distress among SARS survivors 1 year after the outbreak. *Can J Psychiatry* 2007;52:233-40.
- Naser Moghadasi A. Evaluation of the Level of anxiety among Iranian multiple sclerosis fellowships during the outbreak of COVID-19. *Arch Iran Med* 2020;23:283.
- Najmi S, Kuckertz JM, Amir N. Attentional impairment in anxiety: Inefficiency in expanding the scope of attention. *Depress Anxiety* 2012;29:243-9.
- Rakowsky S, Flashner BM, Doolin J, Reese Z, Shpilsky J, Yang S, *et al*. Five questions for residency leadership in the time of COVID-19: Reflections of chief medical residents from an internal medicine program. *Acad Med* 2020. doi: 10.1097/ACM.0000000000003419
- Available from: http://www.icoph.org/refocusing_education/world_ophthalmology_congress.html. [Last accessed on 2020 Apr 16].
- Available from: <https://annualmeeting.ascrs.org/>. [Last accessed on 2020 Apr 16].
- Available from: <https://asoprscnf.memberclicks.net/members-only-spring-meeting> [Last accessed on 2020 Apr 16].
- Lee R, Raison N, Lau WY, Aydin A, Dasgupta P, Ahmed K, *et al*. A systematic review of simulation-based training tools for technical and non-technical skills in ophthalmology. *Eye* 2020. doi: 10.1038/s41433-020-0832-1.
- Singh A, Strauss GH. High-fidelity cataract surgery simulation and third world blindness. *Surg Innov* 2015;22:189-93.
- Gogate P. Effect of wet-laboratory training on resident-performed manual small-incision cataract surgery. *Indian J Ophthalmol* 2018;66:798.
- Nair AG, Bacchav A, Ahiwalay C, Sheth T, Lansingh VC, Maniar R, *et al*. Face and content validity of the HelpMeSee (HMS) manual small incision cataract surgery (MSICS) simulator. Poster presented at Annual Meeting of the American Academy of Ophthalmology, San Francisco, USA; 2019 Oct 12-15.
- Chen RWS, Abazari A, Dhar S, Fredrick DR, Friedman IB, Dagi Glass LR, *et al*. Living with COVID-19: A perspective from New York area ophthalmology residency program directors at the epicenter of the pandemic. *Ophthalmology* 2020. doi: 10.1016/j.ophtha.2020.05.006.

Appendix 1: The list of questions asked in the online survey

1. What is your age?
2. Gender: M/F
3. Which training program are you currently enrolled in:
 - a. MS
 - b. MD
 - c. DO
 - d. DNB
 - e. Fellowship / Senior Residency
 - f. Others
4. In which year of training are you currently in?
 - a. 1st
 - b. 2nd
 - c. 3rd
5. What is the nature of your institute?
 - a. Medical College
 - b. Multidisciplinary Teaching private institute
 - c. Ophthalmic Institute
6. What is funding source of your present institute?
 - a. Government
 - b. Private
 - c. Partly government owned
 - d. Other
7. Did you receive your salary in time during this lockdown?
 - a. Yes
 - b. No
8. Have you been posted on COVID-19 duty?
 - a. Yes
 - b. No
9. Do you think the protective gear provided by your hospital is adequate?
 - a. Yes
 - b. No
 - c. Not Sure
10. Do you think this lockdown has affected your surgical training?
 - a. Yes
 - b. No
 - c. Not sure
11. If yes, how much of a negative effect do you think the lock down has had on your surgical training?
 - a. <25%
 - b. 25-50%
 - c. 50-75%
 - d. >75%
12. Do you think this lockdown has affected your theoretical learning / classroom training?
 - a. Yes
 - b. No
 - c. Not sure
13. If yes, how much of a negative effect do you think the lock down has had on your theoretical learning / classroom training?
 - a. <25%
 - b. 25-50%
 - c. 50-75%
 - d. >75%
14. As a training doctor, what is your general state-of-mind during the lockdown?
 - a. Happy
 - b. Unhappy

15. Did the COVID-19 lockdown effect your daily routine?

- a. Yes
- b. No

16. How do you think the COVID-19 lockdown has affected your stress levels?

- a. Increased
- b. Decreased
- c. No effect

17. Did your family members express concern for your safety during this COVID-19 lockdown?

- a. Yes
- b. No
- c. Not sure

18. How do you spend time during the lockdown?

	2 hours/day	4 hours/day	6 hours/day	8 hours/day
COVID duty				
Hospital duty				
Indoor games				
Web series/movies				
Social media				
Studies				
Other				

19. Did you use the internet for ophthalmic learning effectively during the lockdown period?

- a. Yes
- b. No
- c. Not sure

20. Were online classes and webinars during this lockdown period useful?

- a. Yes
- b. No
- c. Not Sure

21. How is the food quality in the hostel during your stay there during the COVID-19 lockdown?

- a. Same as before
- b. Improved
- c. Deteriorated
- d. Not Applicable