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A Doctor's Training in COVID Era

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Abstract

Doctors have severely been impacted by COVID19 not only by overburden but also by a shift in training programmes. With objective to identify the impact of COVID19 on the present training programme of doctors and delineate the possible future impact and find ways to reduce it, a literature review was carried on. Various impacts and adaptations were found. These could be different for different individuals, specialities, and regions based on available resources and the direct impact of COVID19. Although long-term effects are yet to be seen, it has raised several brows, especially questioning the traditional way of training and competency of individuals trained in specialities. We recommend a hybrid model—a mixture of virtual and real training and assessment—for medical education even in the post-COVID era to reap the benefits of both.

Keywords: trainee, resident, impact, medical education, psychological, COVID19

1. Introduction

When it comes to saving lives, looking throughout the pandemic, this is dignified sacrifice that each doctor made to look after the ill with uncertainty of disease course, limited supplies of protection gear, working overtime and holding not just onto the duties as a doctor but also a member of family and responsibilities towards non-medico friends and acquaintances. But, rather than seeing all doctors from a single profession, we shall see them as cluster of different specializations in progress. Doctors have severely been impacted by COVID19 not only by overburden but also by a shift in training programmes [1–3].

The aspect of training and duties in COVID19 has been rightly dealt by Cate et al. but at the same time, it is also important to see how trainees perceive the impact of pandemic on their training [4]. Johnson and Blitzer noted how the shift in duties is observed by residents as decrement in competency development. Similar reports were made by Upadhyay et al. [5, 6]. In addition to this, the training also got affected by redeployment, overburdening and secondary traumatic stress disorders [2, 3, 7]. Identifying the root cause and mapping the response can help deal with psychological impact on trainees [8]. Let us look at the impact on training and different adaptive modalities used for the continuation of medical education.

2. Methodology

2.1 Objectives

- i. To identify the impact of COVID19 on present training programme of doctors.
- ii. To delineate the possible future impact and find ways to reduce it.

2.2 Data acquisition

Literature was reviewed from PubMed and Google Scholar to find out articles describing the impact of COVID19 on training of health care workers. A search was also carried out to find the possible ways to deal with the problem.

2.3 Data analysis

The compilation of effects was studied and a way was formulated to better understand the impact. The impact was categorically studied in three stages viz., general impact on training and associated adaptation, the difference of impact in different regions of the world and difference of the impact on different specialities.

3. Results and discussion

3.1 Impact on training and adaptation

Cate et al. questioned the competence of medical education from three levels—micro, meso and macro levels. Micro-level is from the individual's perspective, the meso level is from institution's perspective and the macro level is from regulatory and societal system's perspective. These perspectives ask several questions that need to be answered. From a micro level, one can ask whether applicants' attributes associated with adaptability and willingness to work in uncertain circumstances be assessed in medical school selection processes? Or, should a level of altruism or courage be expected? From a meso level, there are questions regarding training and emergency deployment like should training be considered over after a fixed duration of time or should it be based on skill set acquired? Should the institute maintain an inventory of skill sets of their employees so that in times of need they can be quickly reassembled? When talking about the perspectives of the administration or society, it is a big question whether the emergency licensing to practice given during the time of crisis is valid after the pandemic and if not, was it ethical to do so in times of crisis? Again, what are the reciprocal obligations of local, state, and federal authorities when requesting redeployment of health care workers, such as adequate infection control policies, sufficient personal protective equipment, training opportunities, and reward structures [4]. It becomes rather imperative to question the competency of training in the pandemic. If eligibility for passing an undergraduate examination was considered to be after a set amount of years—say 5–6 years in majority of countries, will the loss of 2 years to a pandemic affect the eligibility? This becomes more evident when talking of post-graduate examination where the training period can be as less as 3 years.

Dedeilia et al. pointed out the challenges in medical and surgical education during the COVID19 era and stated that all aspects of medical education have been severely impacted. The biggest impact seemed to be on medical students who learned through

being part of teams. To avoid unnecessary exposure, they were the first to be removed from these teams. Reducing the time of patient contact has also limited bedside learning opportunities. Surgical trainees are even more affected due to the closure of intake of elective cases and diversion of their posting towards COVID19 wards. Also, the introduction of weekly rotation to limit exposure and ensure backup has limited the time a resident spends in hospital. The de-specialization and redeployment of residents in departments with greater demand for healthcare personnel may address urgent service

Needs but disrupts residency education plans [9]. Another aspect of medical training is by learning through seniors. In usual rounds usually, the junior-most would take a first-round followed by seniors and consultants so a patient would be seen at least 3 times and the chances of missing something would decline, this also helped the juniors to find out what they missed in patient care through continuous scrutiny and surveillance. This part of medical training was hampered and it can lead to gross consequences like learning subpar levels of patient care.

Deployment of technology has made it easy to quickly adapt to changing scenarios however, at times they may not be at par with the conventional techniques of learning and teaching. The conferences have turned to virtual conferences and seminars have gone online too. Case discussions are being done with virtual cases with or without simulation. Online learning has replaced nearly all the aspects of conventional learning except where an assistant is required by specialized personnel like in major surgeries. Group viewing has been proposed by Porpiglia et al. as a more interactive and motivating exercise with additional comments from experts [10]. Dedelia et al. proposed online picture diagnosis quizzes in image-centric specialities like radiology or dermatology, however, this can be used in other clinical specialities too where spot diagnosis of entities can be used to teach differentials and for assessment purposes. Image-based learning is always considered more influential than conventional lectures the reason why bedside clinics have still not lost their importance in clinical teaching [9].

Social media too played an important role in case discussions and 'tweetorials' [10]. Tweetorials refer to clinical tutorials in a series of tweets providing links to educational materials. Telemedicine, which was established as a connecting link between non-emergency patients and doctors too played an important role in training. These were sometimes aided with video conferencing for a better understanding of patients' problems. This was a new learning experience for residents as it led to faster adaptations to technology which might replace the traditional hospital and OPD management in future. Though it was time-consuming for both patients and doctors, it safeguarded against unnecessary exposure and highlighted the significance of conservative management in various diseases.

The highest level of technology helped to create simulations, virtual reality and 3D learning. All these are different technologies aimed to create a real experience for learning. While simulations help to understand and practice medical techniques in a non-human environment and are ethically superior to learning over a human, it is quite expensive to be available at all facilities and for all techniques. Virtual learning has a similar problem but can be very useful on a lower scale such as case presentations which may not require superior technology. 3D technology is being specially used in learning anatomy.

Even though it is difficult to achieve the training levels that are expected conventionally, these rapid adaptations have rebuilt the confidence in a fraternity that any crisis cannot subdue the confidence of humanity. These have not only helped in training but also in assessment. Other than online tests, simulation and virtual cases are aimed to assess objectively. Whether these objective assessments are superior to conventional subjective assessment is still controversial, but it has opened the doors for more transparent and streamlined assessments, especially in those institutes that

still use traditional methods of assessments. Also, one shall look at the impact of training based on the resources available. This became evident as different regions of the world felt the same impact differently as adaptability and patient load differed.

3.2 Regional impacts

Edigin et al. reviewed the impact of COVID19 on postgraduate medical trainees in the US. They observed that a reduction in non-COVID inpatients can markedly reduce the clinical skills of a postgraduate trainee as there will be less to practice physical examination and do inpatient procedures. They also reported that some centres had to waiver the minimum inpatient procedures required for completion of 3rd internal medicine programs which can affect the proficiency of a trainee in these procedures and can also theoretically lower their confidence while handling such patients. They argued that the period of postgraduate training is short and a shift from learning special skills to providing COVID care or having off (to reduce unnecessary exposure) can reduce the learning and this paradigm shift if prolonged can affect the quality of their training. Other than learning basic skills when the patient volume is considerably high, another advantage is to see a typical presentation of common cases or a typical presentation of uncommon cases. This will also reduce and they might not have exposure to many presentations thus limiting their thought process while making decisions later on in their practice. Though this may not severely impact their practice or skill development this may affect their clinical acuity, especially when handling these cases. They also noted another problem in which some of the international medical graduates (IMGs) could not enter the US due to COVID thus reducing the workforce required which will have to be compensated by already overburdened available workforce [11].

Liang et al. studied the effect of pandemic on medical training in Singapore. They reported similar problems as their counterparts from USA and UK [11–13]. Yuen and Xie reporting on impact on UK trainees suggested three aspects that a trainee can focus on: facilitation of clinical skills supplemented by simulations and virtual reality technologies; preparation for professional examinations and reflection on self for improvement and introspection. While patient care cannot be jeopardized, taking stress for missing out on clinical opportunities in wake of COVID19 crisis is not going to help both in terms of a resident's efficacy to deliver services and mental health [13].

Sahi et al. while addressing the impact on medical education gave a list of available tools and resources for the continuation of medical education. They also proposed that medical education focus on research and development around various aspects of COVID like the development of indigenous PPE along with online assessment and training of both undergraduate and postgraduate medical education. They also argued for development of new ways for training of next generation of health professionals under the guidance of regulatory bodies or faculties [14]. Odedra et al., in a study on Canadian radiology, trainees showed stress levels of high-extreme in nearly 13.5% which according to them was because radiology is a non-patient-facing speciality. The redeployment rate was very less with only 1% redeployed outside radiology and nearly 5% within radiology. They also showed that transfer to online teaching programmes helped to retain their residency teaching programmes [15]. This also points to the fact that different specialities felt the impact differently.

3.3 Impact based on specialities

Agarwal et al., in their article on training in neurology showed the adaptation in times of COVID19 in teaching and training programs. The live sessions were transformed into virtual learning. They noted that online availability of lectures and

teaching sessions have made them more readily available, leading to improvement in attendance of residents, fellows and faculty. They also addressed the problem of residents not being able to present their work at national conference by deviating their research to focus on COVID19 and related neurological effects. Focusing on this aspect, not only helped to keep on their academic research but served as a contribution towards rapidly understanding the disease in a better way. However, loss in terms of ambulatory rotations in neuro-oncology, neuro-ophthalmology, vascular neurology, neuroimmunology, epilepsy, neuromuscular medicine, headache/Botox clinic, neuro-rehabilitation, etc were on hold which would definitely reduce the exposure to a variety of cases and presentations [16].

Bambakidis and Tomei in a study on the impact of COVID19 on neurosurgery training reported that with halting of elective cases and in-person conferences the training was affected for at least one-third of the academic year in 2020 which might have doubled with the second wave of COVID-19 in 2021. Also, the conversion of clinic visits to telemedicine has restricted the exposure of residents to outpatient cases. Rotating weekly to reduce exposure has limited the residents and staff by 50% thus effectively reducing the training period. With curbing of all non-essential cases such as unruptured aneurysm surgery, spine surgery, benign tumours and other less urgent cases from elective surgery, has reduced the resident's exposure to these cases. They also reported a shift to virtual teaching programs for residents [17].

Crosby and Sharma reported on otorhinolaryngology training in COVID19 and pointed out that a national didactic curriculum along with the implementation of a research curriculum at institute level helped to regain the track of training where in-person training was not possible during the crisis. They also noted that faculty, chairs and program directors should be considerate about the impact of the pandemic on residents' psychology and shall give them ample time and space to acclimatize with the environment. Also, the increased role in the management of complications like mucormycosis towards the end of the second wave of pandemic has led to an increased workload among the residents with its own psychological impact [18]. Training in specialities such as otorhinolaryngology and ophthalmology where patients are needed to be examined in proximity are theoretically affected the most as usually their elective surgeries tend to restart late along with physical OPDs.

DeFilippis et al. detailed various challenges and potential adaptations in learning of cardiovascular fellows during the crisis. They noticed similar challenges in training and advocated for simulation training, virtual learning and inclusion of fellows in post-COVID19-related cardiovascular research. They also used 'Stump the Professor' sessions for case-based learning [19].

Upadhyay et al. reported the severe impact of COVID19 on orthopaedic training programmes. 88% reported a decrease in surgical exposure, 57% reported a decrease in teaching time and 72% were redeployed to areas outside orthopaedics. Around 70% considered that their decreased exposure to speciality patients will hamper their training and passing of their final exams. With a wide variety of virtual sessions being conducted across countries, 89% faced difficulty in choosing one and nearly 96% of residents felt stress, the majority for loss of surgical exposure and fear of contracting COVID. Dissertations to be submitted for partial fulfillment of master's degree were also affected due to very low inpatient intakes and nearly nil patients in physical OPD. Also, social distancing has resulted in the abandoning of group studies thus leaving online resources and tools as the only source of learning [5].

Ehrlich et al. observed how the use of virtual learning can help surgical trainees. They also showed that a change in training program where the pandemic time

can be utilized for non-surgical rotations which are planned later in the course can minimize the loss of the surgical training time for medical graduates. To annihilate the effect of decreased operating room (OR) time of a surgical trainee, online courses provided by ACS can be used in addition to virtual learning programmes and simulation devices like gaining basic surgical skills. They can also review laproscopic skills and ultrasound techniques through interactive modules. Also, the time spared due to less travelling can be used to get the steam off from burnouts and be utilized for self-care. Another method proposed by them was to divide the workforce into two groups where one focused on clinical care and the other was kept backup focused on academics. This can help mitigate the effects of loss of training time due to pandemic [20].

Gaur et al. noted similar problems for preclinical training. Since preclinical teaching is often done through lectures, these were not as much affected as clinical bedside teaching and adapted better to the conversion of teaching model to 'online'. They showed how the transformation is not too bad. Newer methods became popular like open-book examination by the Imperial College of London. They also reported studies showing higher interaction satisfaction with online learning in medical field [21]. Sklar noted in his paper on the effect of COVID19 on health professional education, that a lot of flaws in medical education which have been thought of great importance in traditional training like in-person attendance for lectures, standardized content tests for recertification of practising clinicians and clerkship for medical students has been thrown out in this crisis from training and helped to see out-of-box in this context. The author also stressed the shift from bioscientific model of health in curriculum towards inclusion of behavioural, social and environmental factors that influence health [22].

3.4 Far-sighted indirect consequences

There are two far-sighted indirect consequences which may not directly impact the medical training but need a mention to complete the chapter. One is the decrement of empathy in trainees towards patient. Use of masks by both patient and doctor, social distancing while history taking and use of equipments rather than physical examination in patient care has been practised during the pandemic. Lack of tactile stimulation by not touching the patient and inability to get to know the patient from close proximity (not being able to identify or relate to patients due to the use of masks and caps leading to decrement of visual stimulation) can reduce the empathy in trainees or those taking care of patients. Second the increasing mortality among residents and medicos while serving COVID19 patients has made parents and students both think twice before pursuing the profession. This can also demoralize some sharp minds to take up the profession reducing the quality of trainee world will produce in upcoming years.

4. Conclusion

COVID19 has severely impacted the training of medical graduates and post-graduates. The shift to online learning has helped in continuing medical education but also raised a question for traditional methods of teaching as to whether they shall be followed blindly or scrutinized based on available technology. It has also helped include technology inside medical teaching especially in preclinical teaching and for transparent and standardized assessment purposes. However, the loss of surgical time for trainees cannot be compensated for, resorting to simulation and virtual reality training wherever possible can help improve competency.

Virtual case discussions and teachings shall be promoted where patient contact needs to be reduced. We recommend a hybrid model- a mixture of virtual and real training and assessment- for medical education even in post-COVID era to reap the benefits of both. Institutes, where simulations and virtual reality teaching are not possible due to limited resources, shall at least try other modalities of online teaching so that trainees shall not feel left out from rest of the world. In excess of this, the mental impacts of COVID19 on doctors should also be looked for and appropriate actions should be taken. Better preparedness for the next impact with the development of ample resources to backup shall diminish the harsh impacts on medical training in future.

Conflict of interest

The authors declare no conflict of interest.

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