



Medical Student Education in the Time of SARS-CoV-2 Pandemic: Indian Scenario

Saurav Misra* and Ajay K Shukla

Department of Pharmacology, AIIMS Bhopal, India

Abstract

The SARS-CoV-2 pandemic has wreaked havoc on the medical education and health-care industries. All schools and universities, including medical colleges, were closed as part of a nationwide lockdown to prevent the spread of the disease. During this period medical education was delivered through online lectures and interactive tutorials using newer efforts such as Zoom, Google Classroom, and Google Meet. As there is uncertainty for how long this situation will last, we should embrace modern online teaching approaches to ensure that medical education continues during this hard time. Involvement of medical students and residents in pandemic activities can benefit their development of comprehensive non-cognitive traits as leadership and adaptability, in addition to textbook knowledge.

Introduction

SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) has wreaked havoc in 213 countries, impacting over 0.29 billion people and killing over 36,059,059 individuals. On January 30th, 2020, the first case of SARS-CoV-2 illness in India was reported. The World Health Organization (WHO) declared the outbreak a public health emergency of worldwide significance on the same day [1]. In India, a nationwide lockdown was declared on March 24th, 2020, as a preventive step against the SARS-CoV-2 pandemic. As there was no vaccine or recognized therapy for this disease, social distance remains the most effective way to prevent it from spreading. School and college closures have thrown education into disarray at all levels. Medical school was no exception. Medical education in India has also been suspended as a result of this [2-4]. Most medical schools have quickly adapted to online classes, substituting virtual clinical experience for live clinical experience. With the expansion of telemedicine, adaptive research procedures, and clinical trials with flexible techniques to produce outcomes, the SARS-CoV-2 pandemic marks a shift in medicine [5-7]. The "Flipped Classroom Approach" means that students are exposed to new material outside of the classroom, usually through reading or watching lecture videos, and then use class time to do the more difficult work of assimilation, such as problem-solving, discussion, or tutorials in the presence of the teacher [2,8].

Medical Education

Undergraduate medical education in India is divided into 30 months of preclinical and paraclinical training followed by 24 months of clinical training or clerkships in medical colleges that follow the traditional model [5]. This is followed by an internship, during which the student learns methods and modalities for conducting actual medical and health-care practice while also gaining skills under supervision in several fields. Finally, during the final year of medical school or during internship, the medical student applies for/applies for entrance exams to specialized courses (residency or post-graduation) according to the norms of the concerned university. Class lectures, small group discussions, tutorials, and laboratory sessions are typical preclinical teaching methods. The medical community has been attempting to improve over the last decade by integrating technology-based innovative concepts such as flipped lectures and simulation-based learning [9,10]. Following the SARS-CoV-2 pandemic, a number of medical schools quickly switched their whole pre-clinical and paraclinical curricula to online form that included online lectures, webcasting, and virtual group discussions. Online formats provide students with convenient access to instructional content in their preferred locations, at their own pace and convenience. Result of moving from a medical school setting to a home environment, diminished interactions with peers, increasing reliance on email and constant internet access, and a reluctance to draw a line between work and home life are all disadvantages of online education [3,5].

OPEN ACCESS

*Correspondence:

Saurav Misra, Department of
Pharmacology, AIIMS Bhopal, India,
E-mail: saurav181087@gmail.com

Received Date: 04 Jan 2022

Accepted Date: 24 Jan 2022

Published Date: 07 Feb 2022

Citation:

Misra S, Shukla AK. Medical Student
Education in the Time of SARS-CoV-2
Pandemic: Indian Scenario. *Am J
Otolaryngol Head Neck Surg.* 2022;
5(2): 1176.

Copyright © 2022 Saurav Misra. This
is an open access article distributed
under the Creative Commons Attribution
License, which permits unrestricted
use, distribution, and reproduction in
any medium, provided the original work
is properly cited.

What We Can Do as Medical Educators?

SARS-CoV-2 Medical educators can use Pandemic to teach undergraduate and postgraduate medical students using technology. Newer projects are being tested, such as Zoom, Microsoft teams and G Suite for Education, which uses Google Classroom in conjunction with Google Meet for online classrooms and interactive lessons [2]. Face-to-face contacts in large-group settings (such as lectures) can potentially be hotbeds for disease propagation and transmission due to the highly infectious nature of SARS-CoV-2 sickness and most emerging infections. To combat this, video conferencing and other e-learning platforms (distance learning and computer assisted learning) have been utilized to provide lectures and tutorials remotely *via* handheld devices and computers. Faculty, residents, and medical students can log in at pre-determined times to participate in real-time discussions *via* teleconferencing applications [2,3,11,12]. Teleconferencing apps can be used to demonstrate medical procedures and surgical techniques in addition to lectures. Short movies on lab procedures and case-based clinical examinations may be made and shared on the virtual classroom to promote engagement and closely recreate the laboratory and clinical environment. Students should be encouraged to use the chat box and turn on their mics whenever possible to make online classes more participatory. Teachers or faculty members can create their own educational movies, but this takes time, needs expensive software, and necessitates specialized knowledge [11,12]. PowerPoint has several features, including the ability to add narration, record it as a video, and attach a quiz or questions for in-class activity; it might be a useful tool for flipping. The 'hyperlink' option in PowerPoint has been shown to allow viewers to advance from one slide to another in the presentation by clicking on a specified word, shape, or image, providing for a more dynamic and engaging experience [12,13]. A flipped classroom accomplishes three objectives: It helps students to develop critical thinking skills, it fully engages students and teachers, and it promotes the development of a thorough comprehension of the content [8]. We can use systems like TUSK, which provides full-text syllabi, slides, lecture recordings (audio and video), class schedules, course evaluations, dissection instructions, a quiz and case maker, grade book, and other faculty-provided materials. It has been used by Christian Medical College in Vellore to educate its undergraduates while they labor in rural areas. The FAIMER fellowship, which is being conducted at multiple centers across India, is using online Google groups like Listserv as an e-learning platform. The Centre for Development of Advanced Computing telemedicine software system connects numerous Indian medical colleges, and EDUSTAT is the first Indian satellite dedicated solely to distant education, such as lectures for medical undergraduates in Punjab that can also be tried in other states [14,15]. Finally, residents and medical students should be encouraged to utilize internet resources (Open Access and Free Medical e-resources) to help them learn more effectively. Instruction *via* instructional videos or online webinars can be incorporated into training program for procedural specialist residencies in particular. Faculty can continue the conversation online to help medical students and residents consolidate their knowledge. Subjects stressing open communication skills, medical ethics, and even clinical research or statistics might be organized for medical students or residents using online methods to help them evolve into more holistic medical practitioners. Medical education entails more than only the transmission of domain-specific information and skills. Participating in crisis relief activity by medical students and residents is also beneficial to their growth. Residents

from various specialties were rostered for shifts on the frontline during the COVID-19 crisis, where they assisted (and continue to assist) with the screening of suspected cases in the emergency department. This has helped develop camaraderie among residents as a medical community, mobilizing them to confront the pandemic on a single front, in addition to alleviating the staffing shortage. Medical students and residents have learned valuable lessons in courage, empathy, and teamwork as a result of this. It has also given specialty residents the chance to brush up on their general medical skills, which might be neglected after years of highly specialized training [3,16]. This will only help them grow as holistic medical practitioners.

What Does the Future Hold?

There is ambiguity about how long this scenario will last, and there is growing realization that quarantine or isolation, as well as social separation, may be required in the future after re-engagement in a "new normal" setting [5]. Additional academic difficulties will need to be addressed, such as student assessments when examination centers are closed and the medical curriculum timeline. Recognizing the prospect of a health-care worker shortage as a result of the SARS-CoV-2 pandemic, students may need to be involved in the workforce and entrenched in the clinical setting [3,5]. In these frightening times, it may be appropriate to allow medical colleges to decide which medical students have fulfilled the required competences for graduation to the next level, as has previously been done in the United States [5,17]. This would not only help students, but it will also increase the number of healthcare workers available to meet the needs of the circumstance.

The same transitional circumstance exists in India for final-year residents on the verge of completing their post-graduate studies. They have been instructed by the National Medical Commission (NMC)/ earlier called as Medical Council of India (MCI) to continue working in their respective universities in order to increase the anti-COVID workforce. It's worth considering an early post-graduation for these residents based on solid evaluation. NMC may organize an internal committee to determine the conditions for eligibility for such an accelerated degree [3]. Many medical students are increasingly squandering the chance for personal growth that conference speeches provide. These presentations are crucial in narrowing down the residency application process. As a result, these missed chances may operate as a roadblock in the career planning of medical students. The impact of COVID-19, on the other hand, is enormous, and the fear around it is causing confusion among students, who are unsure how to proceed in these vital times. COVID-19, a novel coronavirus, has gone from an ambiguous research tool to a major worry in the development of future career plans for medical students and faculty in recent weeks [3,5,6].

Limitations of Online Learning

While talking about online/e-learning/digital/simulation-based learning may seem appealing, the fact is that we are still a long way from such technology in India. Many elements have an impact on online learning. Administrative challenges, social contact, academic skills, technical skills, learner motivation, time and support for studies, technical problems, cost, health, and internet connection are all impediments to online learning. Others, such as inadequate design and layout of multimedia resources, could result in low-quality online learning [18,19]. To run an e-learning program, one has to need technological infrastructure in the shape of hardware and

software. The costs of the hardware, as well as a paucity of units and a lack of technical competence to run it, are all issues. The needs for licensing and frequent upgrades are among the software concerns, and online education necessitates round-the-clock access from both home and off-campus. The success of e-learning is also determined by the availability of internet access. To allow appropriate downloading of study materials and live streaming of online classes, adequate bandwidth would be required at various levels. The incentive for creating these programs is the financial cost of installation, operation, and maintenance of the e-learning program for both students and institutions. Data security and privacy must be preserved and protected. With the growing online world, cybercrime is on the rise, necessitating the use of the most up-to-date antivirus software and operating systems. Plagiarism of internet content is also a problem that needs to be addressed. Even if the infrastructure is in place, there is a lack of technical help to run the system, awareness of support materials, and timely resolution to technical issues. One of the most well-known challenges of online learning is the lack of face-to-face interaction. Language is another impediment to e-learning application. The instructions in e-learning, like those in traditional learning, are presented in English, which may make adoption harder for people who are not fluent in the language [3,15,20].

Computer and/or Smartphone use has also been linked to health risks. Individuals who spend too much time on electronic gadgets have trouble focusing and develop an internet addiction, which has a negative influence on students' quality of life and can lead to worse academic accomplishment and even mental diseases like depression. Muscle and joint problems, as well as eyestrain from computer use and other symptoms, are major health issues associated with online education [3,15,20].

Conclusion

Pandemics of infectious diseases have no boundations and have devastating consequences that echo across the world's health-care systems. COVID-19 is not the first, nor will it be the last, global health emergency that we will face as health-care workers in our lifetime. While we are in the midst of the COVID-19 issue, it is critical that healthcare professionals learn from their previous experiences and priorities a forward-thinking and academic approach as viable remedies. There are several examples of how learning from adversity has influenced research, science, and the health-care system. In order to learn and apply new concepts and practices in the future, teachers and students can document and assess the effects of current changes in medical education and the healthcare system. This time can be used to help promote medical education in an environment of ongoing curricular innovation and transformation. With a pause between teaching sessions, we should develop instructional schedules that reduce excessive data consumption by students and prevent high screen time, which has a negative influence on student health. Due to restrictions in our country, such as internet connectivity, technology should be used to aid medical education and courses that emphasize skills such as open communication and medical ethics. Involvement of medical students and residents in pandemic activities can benefit their development of comprehensive non-cognitive traits

as leadership and adaptability, in addition to textbook knowledge. The perfect chance has been offered for medical educators to design and evaluate the applicability and implementation of technology-based learning. We, as medical educators, must rise to the challenge of continuing to teach even in these trying times.

References

1. World Health Organization. Coronavirus Disease 2019 (COVID-19) Situation Report. 2020.
2. Singh K, Srivastav S, Bhardwaj A, Dixit A, Misra S. Medical education during the COVID-19 pandemic: A single institution experience. *Indian Pediatr.* 2020;57(7):678-9.
3. Sahi PK, Mishra D, Singh T. Medical education amid the COVID-19 pandemic. *Indian Pediatr.* 2020;57(7):6527.
4. Medical Council of India/National Medical council. Advisory regarding UG classes in view of COVID-19 epidemic. [Last Accessed on April 8, 2020].
5. Rose S. Medical student education in the time of COVID-19. *JAMA.* 2020;323(21):2131-2.
6. Liang ZC, Ooi SBS, Wang W. Pandemics and their impact on medical training: Lessons from Singapore. *Acad Med.* 2020;95(9):1359-61.
7. Li L, Xv Q, Yan J. COVID-19: The need for continuous medical education and training. *Lancet Respir Med.* 2020;8(4):e23.
8. Singh K, Mahajan R, Gupta P, Singh T. Flipped classroom: A concept for engaging medical students in learning. *Indian Pediatr.* 2018;55(6):507-512.
9. Irby DM, Cooke M, O'Brien BC. Calls for reform of medical education by the Carnegie foundation for the advancement of teaching: 1910 and 2010. *Acad Med.* 2010;85(2):220-7.
10. Skochelak SE, Stack SJ. Creating the medical schools of the future. *Acad Med.* 2017;92(1):16-9.
11. Lamba P. Teleconferencing in medical education: A useful tool. *Australas Med J.* 2011;4(8):442-7.
12. Kim S. The future of e-Learning in medical education: Current trend and future opportunity. *J Educ Eval Health Prof.* 2006;3:3.
13. Stacy GS, Thiel SG. Use of hyperlinks in PowerPoint presentations as an educational tool. *Acad Radiol.* 2017;24(10):1318-24.
14. O'Doherty D, Dromey M, Lougheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education - An integrative review. *BMC Med Educ.* 2018;18:130.
15. Dhir SK, Verma D, Batta M, Mishra D. E-learning in medical education in India. *Indian Pediatr.* 2017;54(10):871-7.
16. Chang Liang Z, Wang W, Murphy D, Po Hui JH. Novel coronavirus and orthopaedic surgery: Early experiences from Singapore. *J Bone Joint Surg Am.* 2020;102(9):745-9.
17. Liaison Committee on Medical Education. COVID-19 updates and resources. (Updated March 25, 2020).
18. Muilenburg LY, Berge ZL. Student barriers to online learning: A factor analytic study. *Distance Educ.* 2005;26(1):29-48.
19. Mayer RE. Multimedia learning. *Psychol Learn Motiv.* 2002;41(1):85-139.
20. Harden RM. Myths and e-learning. *Med Teach.* 2002;24(5):469-72.