

6-30-2021

Clinical teaching and learning in the COVID-19 era and beyond: The emergent and emerging scenarios

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Recommended Citation

Bhat, Shashikala K.; Manja, Veena; Shankar, Vinutha; and Umakanth, Shashikiran (2021) "Clinical teaching and learning in the COVID-19 era and beyond: The emergent and emerging scenarios," *Manipal Journal of Medical Sciences*: Vol. 6 : Iss. 1 , Article 8.

Available at: <https://impressions.manipal.edu/mjms/vol6/iss1/8>

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Cover Page Footnote

Acknowledgements We gratefully acknowledge Dr Komattil Ramnarayan, Professor of Pathology, former Vice Chancellor and current Vice President - Faculty Development, Manipal Academy of Higher Education (MAHE), Manipal, India, for his comments and suggestions that have greatly improved this manuscript.

Clinical teaching and learning in the COVID-19 era and beyond: The emergent and emerging scenarios

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Abstract

The need for social distancing due to the COVID-19 pandemic has compromised traditional medical education. Educators and students in low-resource settings face diverse challenges in clinical teaching, learning, and assessment. The pandemic has necessitated a rapid transition from traditional pedagogical strategies to virtual platforms. Challenges in low resource settings include knowledge and training in technology, limited resource allocation for faculty development in virtual teaching methods, and financial constraints limiting the use of available technologies. There is also a lack of constructive alignment between outcomes, instructional strategies, and assessment of curriculum delivery in virtual platforms as the earlier curriculum design was not planned for this sudden change. We discuss the challenges students, teachers, and administrators face and propose some feasible options to bolster virtual learning.

Key words: Clinical teaching, virtual learning, medical education, low-resource setting, COVID-19, PPE.

Introduction

Medical curricula across the globe are packed with content. They must be mastered in a minimal amount of time due to the fixed duration and must embody subtle comprehensions of professionalism gained during students' routine clinical exposure to faculty.¹⁻³ Social distancing efforts to limit the spread of coronavirus disease 2019 (COVID -19) have complicated all aspects of medical education. The impact of limited social interactions with

patients and teachers restricts students' ability to gain clinical skills, with these challenges being more pronounced in low-resource settings.^{4,5}

Upon successful completion of medical school, students are expected to possess a mastery of clinical competencies (knowledge and skills), to have an astute clinical acumen, to be proficient in the nuances of communication and epistemology⁶, and to have gleaned the wisdom of ethical values to blossom into a kind and humane patient-centred professional. Keen observation of teacher-patient interactions by the student influences the development of these skills.

Teaching is affected in both undergraduate and postgraduate medical education and across all specialities. For undergraduates, though knowledge can be imparted through online lectures, the focus and attention of students during a face-to-face didactic lecture are missing. This is due to the inability to observe all students simultaneously in a virtual classroom, especially in large groups. Furthermore, the practical small group hands-on sessions have also shifted to online demonstrations thus affecting the training of core competencies needed by the graduating medical student.⁷ For

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Manuscript received: 1 May 2021

Revision accepted: 29 June 2021

How to cite this article: Bhat SK, Manja V, Shankar V, Umakanth S. Clinical teaching and learning in the COVID-19 era and beyond: The emergent and emerging scenarios. *MJMS*. 2021; 6(1): 43-49

example, though the cardiovascular and respiratory system examinations can be demonstrated virtually, they can never substitute the complete head-to-toe clinical examination of a real patient! For postgraduates, the clinical expertise in their chosen speciality has taken a backseat as most medical schools have deputed postgraduates from all specialities to work in COVID-19 wards and intensive care units (ICUs). In addition, as elective surgeries in most surgical specialities are deferred during surges of COVID-19 infections, learning of competencies in these areas is limited due to lack of exposure.

Beside teaching is the best method to teach clinical medicine during assigned outpatient and inpatient rotations. Students learn by taking history and performing clinical examinations while clerking in the hospital wards, clinics, operating theatres, ICUs, and rural-field postings. The transition from traditional teaching methodologies to virtual platforms necessitated by the pandemic has led to an intensifying concern globally regarding the ability to impart comprehensive medical education at the undergraduate and postgraduate levels.⁸ This concern is in the context of social distancing to limit the spread of COVID-19 and ensure student safety.⁹ With the need to acquire competencies expected within a limited time frame, medical schools are committed to providing meaningful curricula transcending knowledge, skills, and attitude domains. In the current context of a shift in teaching methods from traditional to online mode, the major constraint in low resource settings is the dearth in the availability of technological tools apart from the less than optimum knowledge and support. Teachers will need to adapt rapidly and develop the technical skills needed to facilitate meaningful clinical delivery.

The necessary changes due to COVID-19 pose challenges in teaching and learning core competencies, including history taking and clinical examination at the bedside, both for the teacher and the student. All undergraduate and postgraduate clinical learning years are adversely affected, though the proportion of clinical exposure is different in different years.¹⁰

Traditional clinical teaching

Clinical teaching often happens tacitly, more by observation of the physician-patient interaction than by actual teaching. Students learn to analyze history, elicit physical signs, interpret investigations, deduce differential diagnoses, and formulate a management plan for their patients. Through impromptu discussions and debates during field trips, in hallways and corridors, they explore the humanistic side of medical practice.

In the initial stages, as students watch experienced clinicians, they imbibe and learn to integrate the preclinical and paraclinical subject knowledge and understand the pathophysiologic basis of diseases in clinical settings. They begin to hone analytical skills empowered by their competency in the knowledge that they have acquired with years of training along with the right attitude modelled by teachers to provide patient-centered care.

As the students graduate, years of observational, experimental learning become areas of supervised clinical practice during compulsory rotatory internships. Their diagnostic approach to patients' clinical presentations improves, and they become better counsellors and leaders who can navigate complex medical, social, ethical, and moral issues. Years of hands-on training help improve surgical competencies. Armed with well-honed interpersonal and communication skills (including breaking bad news), they adapt to the demanding work culture of being a clinical doctor and recognizing the limitations of medicine. Finally, they develop into confident, competent, ethical clinicians with empathy, ready to handle cases ranging from stable, elective cases to critical emergencies.

Challenges for the student

Learning in the traditional format with in-person interactions has many advantages for the student. Bedside learning is the most engaging form of education. Direct communication with their teachers and peers at the bedside while comprehending patients' diseases and needs in real-time provide experiences that lay the foundations of basic clinical knowledge. Observing the teacher's reaction to the patient's statements, body language, nudging,

and coaxing the patient to increase involvement in decision making are all essential skills learned at the bedside. Live discussions and grand rounds further consolidate these skills. Although synchronous virtual online small group clinical sessions can replicate some of these experiences, close observation of essential bedside clinical skills may be lost when students participate, in solitude, via an electronic gadget. Of course, virtual learning may avoid the embarrassment that students often experience in clinical sessions, but they will also miss learning with subtle humour. The virtual inter-connectedness may not translate to the same level of peer engagement or teacher-student discourse, not to mention the lost opportunities in bonding and camaraderie that invariably happen in real life. During this transition to virtual clinical learning environments, students must be adept at using online platforms.

Challenges for the teacher

The traditional clinical teacher modifies the style of curriculum delivery based on the students' body language, expressions, and visual cues. The sudden necessity to transform into a virtual mode of student engagement is met with apprehension by most teachers. Clinical teachers need the training to use online platforms, and their learning curve depends on how tech-savvy they are. Then again, just like the students, the teachers should have the required electronic gadgets, access to virtual platforms, and possess high-speed internet connectivity to facilitate e-learning.

Challenges for educators and governing bodies

During this pandemic, many educational institutions need to invest in technical expertise and online faculty development programs amidst an eroding economy to engage the students and thus gainfully protect their academic interests. Many administrators have to prioritize equipping the hospitals for the sudden deluge in COVID-19 patients and fulfil the growing demands of the safety of clinical personnel, including personal protective equipment (PPE) and respirators (N95, FFP2) while ensuring that clinical teaching continues for medical students and trainees.¹¹

Modes of curriculum delivery in a pandemic situation

Innovative modes of teaching and learning¹² have been used in varying proportions by different universities and institutes for many years. However, the current pandemic has upended slow adapters to embrace teleteaching for the seamless delivery of their curriculum.¹³ While the early adopters seem to have better infrastructure, technology is likely to level the playing field over the long term.

There are various options for effective online curriculum delivery and learner-teacher interaction. However, any platform chosen should be learner-centred and flexible.

Lectures are probably the easiest of teaching modalities in the virtual setting. However, they often tend to be heavily teacher-centric unless these sessions are taken for smaller groups to promote active interaction and student participation. Platforms like Microsoft Teams, Google Classroom, Google Meet, Zoom, Big Blue Button, and Skype can support such interactive lectures. Most of these platforms have many features that allow synchronous as well as asynchronous interactions between teachers and students. PowerPoint and Whiteboard are useful in demonstrating complex concepts. Verbal discussion, as well as live chat for text-based clarification of questions, are feasible. They work akin to WhatsApp groups that can be a useful supplement during clinical rotations.¹⁴ The difference between the chat features of WhatsApp and online learning platforms is that the latter does not require the teachers' phone numbers. The option of recording the sessions for later revision by students is beneficial for students to catch up on what they may have missed. Questions displayed in the middle of a lecture session with polling for answers may keep the students involved. Video conferencing with Google Hangouts was useful for daily online teaching for confined surgery residents during this pandemic¹⁵. Each university or institute must select a platform based on the number of students, their infrastructure, costs involved, and the features required.

Small group sessions, including student seminars, problem-based learning, flipped classrooms, and group discussions, can also be efficiently conducted with technology-enabled active interaction. The virtual platforms discussed above are useful for these too. Some platforms have an option for the teacher not only to recommend the reading material but also to upload such documents so that students can access them. Devices with instant messaging applications are also useful in problem-based learning.¹⁴ While many dedicated online learning platforms have these options built-in, Canvas, and Moodle integration with video conferencing apps like Zoom or Google Meet may enable similar capabilities. Furthermore, assignments can be incorporated into these sessions to maintain a high level of engagement. These applications are compatible with most devices, including laptops, desktops, tablets, and mobile phones.

Clinical skills are the toughest to teach effectively online. William Osler aptly observed, “He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all”.¹⁶ The pandemic is forcing the learning of sailing without going to the sea. However, we have something that William Osler did not have – the luxury of the internet. Though bereft of feelings, smell, and touch, students get to learn clinical medicine using live as well as a recorded demonstration of clinical examination techniques. The teacher, using trained simulated patients and professional audio-visual teams can create a real-life environment that fosters student learning.

A similar use of technology in simulation labs can be used to demonstrate procedures like nasogastric tube insertion, abdominal paracentesis, and lumbar puncture using mannequins. Surgery with simulation is evolving¹⁷. Live sessions have an advantage over recorded sessions as there is an opportunity for synchronous student-teacher interaction. Using multiple cameras from different angles, and some at close range to show the details of the procedures requires professional audio-visual support. Ethical issues should be addressed while using real patients or live streaming from operation theatres and hospital settings.

If privacy is not an issue, students can observe the functioning of teachers in outpatient departments as well as telemedicine for selected patients with prior consent. Such observations may be a valuable supplement to other modes of learning. Students can also be a part of a virtual shared care delivery system.¹⁸ Supervised live relay of emergency room management and elective surgeries can give a glimpse of real-life scenarios for better understanding. Medical mannequins can facilitate the learning of common acute clinical conditions and surgeries.¹⁹ Role-plays and drills by students can further enhance the training for emergency conditions. Students mature from acting in simulations and representing in roleplaying to becoming in real-life situations.²⁰

Virtual clinical assessments are challenging and can pose considerable hurdles to teachers. Remote assessments without patients may not be reliable. It may be difficult to assess students’ comprehension and clinical skills and if they perform these independently.

Open-book tests are informal, learner-centric practical assessments. Assessment can be quiz-based, problem-solving type clinical scenarios. When time-bound, it may be more dependable.

Limitations of available options

Internet connectivity is quintessential in running virtual platforms. The teacher and students must have access to good internet bandwidth and technical support in case any technical glitch arises during the live sessions. In low-resource settings, this may be formidable in the current scenario.

Nevertheless, newer virtual modes of clinical teaching cannot replace real-life situations, particularly emergencies and life-threatening conditions. Also needed in handling emergencies are instant clinical intuition, clarity of instructions, changing thought processes, and interpretations based on the patient’s clinical status, communication within teams, and counselling patients’ kin.

Virtual settings cannot mimic the ‘feel’ involved in the clinical examination. Surgical skills learned ‘on the go’ during hands-on surgeries are irreplaceable. Students understand that diseases do not always fit into a standard prototype, and accepting wide

variation in presentation, progression, and recovery is necessary.

Research into best practices using virtual platforms for optimal teaching and learning is required to validate approaches that result in exceptional student learning. As we adapt to the evolving needs of medical education, evidence of the effectiveness of these methods to provide the necessary skills for future clinicians is imperative.

Limiting health risks to the students

The educators and regulatory authorities have the responsibility to limit students' exposure and minimize the chances of students becoming victims or vectors of COVID-19 during the compulsory, supervised clinical rotations. While some specialities like anaesthesia, critical care, and pulmonology have a higher risk, other specialities also face risk due to an asymptomatic carrier state. Though this risk of contracting an infectious disease was always present in clinical medicine, the higher R₀, lack of easy SARS-CoV-2 virus testing, shortage of PPE, the unpredictable nature of COVID-19, and mandatory lockdown have forced most medical institutions around the globe to down their shutters temporarily for students.^{21,22}

The reality and the dilemma

Medical curricula across the world have been predominantly designed for traditional real-life teacher-student engagements to meet the learning objectives of knowledge, skill, and attitude. The assessments, too have been designed to test in face-to-face encounters. This pandemic has struck the very root of conventional medical education filled with decision-making, empathy, and professionalism, as it has been envisaged and moulded over years. With lockdowns and social distancing in medical schools, there is a transition to newer forms of curriculum delivery. All forms of skill training have taken a setback due to the imposition of social distancing and the need to safeguard our medical fraternity from the onslaught of COVID-19²³ with mandatory use of personal protective equipment (PPE). Teaching the discerning and deciphering of emotions behind the mask and PPE is a required new skill for a new normal in this pandemic.

For those of us who are academic clinicians, it is imperative that we train the next generation of medical students and residents. COVID-19 has sidelined the experiential learning in daily patient-doctor interactions with the priorities of avoiding disease transmission to the healthcare worker. This has affected the progression in clinical learning with advancing student and resident years and transformation thereof. Most medical schools have suspended compulsory clinical rotations for undergraduate students during the COVID-19 surges, but expectations are rife with comprehension of patients' emotions behind the mandatory mask and physician's PPE for students and residents alike. Nevertheless, daunting as it may seem, learning despite these limitations must begin and continue.

The development of desirable attitudes and interprofessional collaboration, traditionally imbibed by observing how senior faculty and consultants deal with patients, is badly affected. The patient's mask and the physician's PPE have made the understanding of subtleties and nuances of routine patient-doctor interaction incomprehensible and unsatisfactory to the patient, the treating doctor, and the student.²⁴

Training the students and residents in core competencies is the onus of clinical teachers. First, the student and the resident have to learn the basics of infection control and patient safety. Next is to learn the concept of donning and doffing the PPE and practice the same to prevent the spread of the infection to the medical fraternity. The trainee should also develop stamina and adapt to sustain within the PPE for a considerable amount of time. Lastly, the student and resident should learn to perform the necessary clinical examination and make a meaningful interpretation of clinical findings with the PPE. They must learn to perform clinical procedures, deliveries, surgeries with the PPE. They must also elucidate the emotions, feelings that are hidden behind the mask by the voice and body language of the patient.

Way forward

As there is a lingering unpredictability concerning COVID-19, the ending of which is currently

unknown, clinical teachers and students must shift their focus to novel and virtual immersive learning methods to promote student engagement. Careful consolidation by virtual learning of didactic lectures initially, shift to small group discussions, and finally ending with a virtual posting in the clinical environment would be pragmatic. Such a plan calls for new technical skill development like blended learning²⁵ by the clinical teachers to embark on a new journey of managing patient care via telemedicine and online clinical teaching. The younger technophile students need to adapt to the virtual hospital learning environment too. At present, both the clinical teachers and students must learn using technology to comprehend medicine. Research into effective virtual teaching methods is essential to evolve future curricula. Though the science of making a holistic clinical doctor can be taught and learned online, the art at the heart of being one will need to be understood and communicated in novel and ingenious ways.

Lessons for practice

- Clinical training of medical students is upended due to COVID-19 and needs meticulous transitioning and implementation of blended learning by medical educators.
- Resource allocation to infrastructure and aggressive training of faculty in innovative methods is the need of the hour.
- Immersive and interactive virtual teleteaching should be implemented for gaining knowledge.
- Simulation modelling, video relaying from operation theatres are apt for common procedural and surgical skills.
- Role-playing, live simulators, and videoconferencing with real patients could enhance clinical and communication skills.
- The involvement of clinical residents in managing emergencies with personal protective equipment provides a glimpse into real-life situations.
- Extension of clinical postings and compulsory rotatory internship should be implemented to facilitate the development of minimum core competencies.

Acknowledgements

We gratefully acknowledge Dr Komattil Ramnarayan, Professor of Pathology, former Vice Chancellor and current Vice President - Faculty Development, Manipal Academy of Higher Education (MAHE), Manipal, India, for his comments and suggestions that have greatly improved this manuscript.

Conflict of Interest: Nil.

Funding: Nil.

References

1. Shih KC, Chan JC-H, Chen JY, Lai JS-M. Ophthalmic clinical skills teaching in the time of COVID-19: A crisis and opportunity. *Med Educ.* 2020. doi:10.1111/medu.14189.
2. Rose S. Medical Student Education in the Time of COVID-19. *JAMA.* 2020. doi:10.1001/jama.2020.5227.
3. Arandjelovic A, Arandjelovic K, Dwyer K, Shaw C. COVID-19: Considerations for Medical Education during a Pandemic. *MedEdPublish.* 2020;9(1). doi:10.15694/mep.2020.000087.1.
4. Sandars J, Brown J, Nwolise C, et al. The challenge of conducting qualitative research to understand the factors that influence equity in medical education: A scoping review. *MedEdPublish.* 2020;9(1). doi:10.15694/mep.2020.000084.1.
5. Cecilio-Fernandes D, Parisi MCR, Santos TM, Sandars J. The COVID-19 pandemic and the challenge of using technology for medical education in low and middle income countries. *MedEdPublish.* 2020;9(1). doi:10.15694/mep.2020.000074.1.
6. Evans L, Trotter DRM, Jones BG, et al. Epistemology and uncertainty: a follow-up study with third-year medical students. *Fam Med.* 2012;44(1):14-21. <http://www.ncbi.nlm.nih.gov/pubmed/22241336>.
7. Nik-Ahmad-Zuky NL, Baharuddin KA, Abdul Rahim AF. Online Clinical Teaching and Learning for Medical Undergraduates during the COVID-19 Pandemic: The Universiti Sains Malaysia (USM) Experience. *Educ Med J.* 2020;12(2):75-80. doi:10.21315/eimj2020.12.2.8.

8. Regier DS, Smith WE, Byers HM. Medical genetics education in the midst of the COVID-19 pandemic: Shared resources. *Am J Med Genet Part A*. 2020. doi:10.1002/ajmg.a.61595.
9. Whelan A, Prescott J, Young G, Catanese VM, McKinney R. *Interim Guidance on Medical Students' Participation in Direct Patient Contact Activities: Principles and Guidelines*; 2020.
10. Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infect Dis*. 2020. doi:10.1016/S1473-3099(20)30226-7.
11. Bambakidis NC, Tomei KL. Editorial. Impact of COVID-19 on neurosurgery resident training and education. *J Neurosurg*. April 2020:1-2. doi:10.3171/2020.3.JNS20965.
12. Chiodini J. Online learning in the time of COVID-19. *Travel Med Infect Dis*. 2020;34(April):101669. doi:10.1016/j.tmaid.2020.101669.
13. Mian A, Khan S. Medical education during pandemics: A UK perspective. *BMC Med*. 2020;18(1):18-19. doi:10.1186/s12916-020-01577-y.
14. Raiman L, Antbring R, Mahmood A. WhatsApp messenger as a tool to supplement medical education for medical students on clinical attachment. *BMC Med Educ*. 2017. doi:10.1186/s12909-017-0855-x.
15. Moszkowicz D, Duboc H, Dubertret C, Roux D, Bretagnol F. Daily medical education for confined students during COVID-19 pandemic: A simple videoconference solution. *Clin Anat*. 2020. doi:10.1002/ca.23601.
16. Amedee RG, Seoane L. From the Editor's Desk: Sailing Osler's Uncharted Sea with Innovation and Collaboration at the Helm. *Ochsner J*. 2016;16(1):1-2. <http://www.ncbi.nlm.nih.gov/pubmed/27028013>.
17. Plancher KD, Shanmugam JP, Petterson SC. The Changing Face of Orthopedic Education: Searching for the New Reality After COVID-19. *Arthrosc Sport Med Rehabil*. 2020. doi:10.1016/j.asmr.2020.04.007.
18. Ramdas K, Ahmed F, Darzi A. Remote shared care delivery: a virtual response to COVID-19. *Lancet Digit Heal*. April 2020. doi:10.1016/S2589-7500(20)30101-1.
19. Chick RC, Clifton GT, Peace KM, et al. Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic. *J Surg Educ*. 2020. doi:10.1016/j.jsurg.2020.03.018.
20. Monrouxe L V, Rees CE, Hu W. Differences in medical students' explicit discourses of professionalism: Acting, representing, becoming. *Med Educ*. 2011. doi:10.1111/j.1365-2923.2010.03878.x.
21. Menon A, Klein EJ, Kollars K, Kleinhenz ALW. Medical Students Are Not Essential Workers: Examining Institutional Responsibility During the COVID-19 Pandemic. *Acad Med*. 2020. doi:10.1097/ACM.0000000000003478.
22. Shandro J, Kessler R, Schrepel C, Jauregui J. Advising Medical Students during COVID-19: The Case for a Single Emergency Medicine Rotation for All. *AEM Educ Train*. 2020. doi:10.1002/aet2.10459.
23. Cairney-Hill J, Edwards AE, Jaafar N, Gunganah K, Macavei VM, Khanji MY. Challenges and opportunities for undergraduate clinical teaching during and beyond the COVID-19 pandemic. *J R Soc Med*. 2021;114(3):113-116. doi:10.1177/0141076820980714.
24. Dutta S, Ambwani S, Lal H, et al. The Satisfaction Level of Undergraduate Medical and Nursing Students Regarding Distant Preclinical and Clinical Teaching Amidst COVID-19 Across India. *Adv Med Educ Pract*. 2021;12:113-122. doi:10.2147/AMEPS290142.
25. Jowsey T, Foster G, Cooper-Ioelu P, Jacobs S. Blended learning via distance in pre-registration nursing education: A scoping review. *Nurse Educ Pract*. 2020;44(January):102775. doi:10.1016/j.nepr.2020.102775.

