

The gaps in undergraduate medical education due to the ongoing pandemic: An experience from a private medical college in Kerala

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ABSTRACT

The Covid-19 pandemic affected undergraduate medical education worldwide. By March 2020, colleges in India had to close following a national lockdown. Most of the colleges including ours started using e-platforms. Our earlier studies highlighted concern for lack of patient examination in clinical settings and successes of the online teaching programmes were limited to didactic teaching. The year 2020 also was the year in which the National Medical Commission (NMC) introduced a competency-based system, which was new to all stakeholders. We assessed the impact of Covid-19 on the ongoing teaching pattern in our institute. Actual coverage of theory classes and practical/clinical teaching sessions were gathered from departments across all years of undergraduate medical education and the gap percentage was calculated against the NMC/Medical Council of India requirements. The gap percentage was calculated as missing classes divided by required classes multiplied by hundred. The heads of departments were consulted, and details of theory, practical and clinical classes taken for each batch before and after lockdown were gathered using a questionnaire. These were compared against the mandated teaching by the NMC guideline for theory, practical and clinics. The results showed a gap ranging from 2% to 83% for theory classes, the least being in anatomy and the highest being in medicine. As there were no practical or clinical sessions during the lockdown, the gap was zero. Various challenges were faced due to online medical education. There was a dilemma over choosing the type of training that would produce adequate numbers with low quality or a delayed training but of assured quality. Various solutions including suspending the ongoing course and converting it to short-term skill training sessions to deal with pandemic care and strategies to improve online teaching were considered.

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INTRODUCTION

The emergence of the Covid-19 pandemic did affect training of medical students worldwide.¹ Our medical college, which is in

the district from where the first case of Covid-19 was reported in India, followed directions from the government to contain the disease.² The lockdowns at different times resulted in the closure of medical colleges. Institutions around the globe attempted to cope by shifting to online modes of teaching.³ Our college also utilized e-platforms for teaching.⁴

The online mode deprives students of the essential requirement of contact with the patient.⁵ Whereas during a pandemic, the student can get infected at bedside and transmit infection to other students, teachers or patients. Students graduating and entering practice are required more during pandemic times. Hence, there was an urge to continue the courses. The colleges opened with teaching in online mode only, making use of various e-facilities.⁶ Our faculties opined that the success of the online teaching programmes was limited to didactic teaching only and it could not replace actual patient examination in a clinical setting.^{7,8}

In 2020, the National Medical Commission (NMC) introduced a new competency-based medical education (CBME) curriculum in medical colleges. This emphasizes students' training in clinical settings, practice with patients and regular visits to outpatient clinics.⁹ It also provides for early and increased clinical exposure, compared to the previous curriculum by the Medical Council of India (MCI).

How far the pandemic affected the actual training of a medical student in India has not been assessed so far.

METHODS

This study was done at the Jubilee Mission Medical College and Research Institute, a medical college in central Kerala established in 2003. This is part of a 1600-bedded missionary-run multispecialty hospital in the private sector. It offers 100 undergraduate (MBBS), 33 postgraduate (MD/MS) and 3 superspecialty (DM) seats every year. The courses are affiliated to the Kerala University of Health Sciences (KUHS).

The NMC/MCI mandates 23 different departments that are involved in MBBS teaching. The heads of all these departments were consulted and information was gathered systematically using a pre-designed proforma sent as a Google survey. The details regarding the theory, practical and clinical classes taken for each batch before and during the Covid-19 lockdown in the form of online classes were collected. These were added up semester-wise/year-wise. These were assessed against the requirement of theory and practical/clinics sessions mandated by the NMC/MCI/KUHS. Theory classes for clinical subjects are spread across various semesters; hence, the average for each subject was calculated. Gap percentages were calculated separately for each subject, besides the total.

In the year 2020, CBME-based curriculum (Box 1) was started. The 1st-year students were following the current curriculum of NMC and four other batches were following the previous curriculum of MCI (Box 2).

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Box 1		
Scheme of undergraduate training according to the National Medical Commission guidelines (2020 onwards)		
Phase	Duration	Subjects
I	13 months	1 month Foundation Course Anatomy, physiology, biochemistry
II	11 months	PSM, pathology, pharmacology, microbiology
III	Part-1 12 months	PSM, forensic medicine, ENT, ophthalmology Medicine, paediatrics, psychiatry, dermatology, surgery, orthopaedics, anaesthesia, obstetrics- gynaecology, radiology
	Part-2 14 months	
PSM preventive and social medicine		ENT otorhinolaryngology

Box 2		
Scheme of undergraduate training according to the Medical Council of India (up to 2020)		
Phase	Duration	Subjects
I	12 months	Anatomy, physiology, biochemistry
II	12 months	PSM, pathology, pharmacology, microbiology
III	Part-1 18 months	PSM, forensic medicine, ENT, ophthalmology Medicine, paediatrics, psychiatry, dermatology, surgery, orthopaedics, anaesthesia, obstetrics- gynaecology, radiology
	Part-2 12 months	
1 year compulsory rotatory internship		
PSM preventive and social medicine		ENT otorhinolaryngology

RESULTS

A total of 402 MBBS students were studying at the Jubilee Mission Medical College in various years of study during the Covid-19 pandemic; 377 of them were from the regular batch and 25 were in the additional/supplementary batch.

It was found that the percentage gap is less in preclinical and paraclinical subjects with anatomy and physiology being the subjects with the least gap (Table I). On calculating the gap percentage in theory according to the year of MBBS studies, the gap was more in clinical subjects: general medicine 86%, general surgery 83.1%, and obstetrics and gynaecology 83%.

Practical sessions were done in the preclinical and paraclinical subjects in the form of online demonstration by the faculty (Table II).

No clinical sessions were conducted during the lockdown period. The gap was higher for practicals/clinics than for theory. The gap percentage varied among various departments, highest being in general medicine and the least being in anatomy.

DISCUSSION

Medical education matters because the best medical facilities and education pave the way for the development of a nation.¹⁰ The Covid-19 lockdown during 2020 had serious repercussions on medical education, disrupting the well-established traditional mode of medical learning in India. The clinical rotation and rural postings were stopped and replaced by the new online distance education system. The gap in our study is the result of this complete disruption.

The NMC, which came into being in late 2019, did recognize the importance of online education, but it was rarely used.^{3,11} All the medical schools moved to online classes, cancelling face-to-face lectures, clinical postings, practical classes and demonstrations. The students, especially final year students, were anxious about the academic loss and course year. Those doing internships also lost the chance to acquire clinical skills due to hospitals devoid of non-Covid patients.¹²

Suspending face-to-face teaching to bring down the spread of Covid-19 among medical students was a necessity, but it adversely affected their learning and professional development. Burnout due to lack of personal communication with teachers became an issue.¹³ Both ensuring protection of learners and minimizing harm to medical education needed consideration during these pandemic times.¹⁴ This balancing became a challenge to medical educators and policy planners.

The findings of our study show a large gap in classes completed against the NMC requirement and it warrants urgent attention. The gap was more in clinical subjects and it could be attributed to the faculty's involvement in Covid-19 care. The online mode of teaching, as at present, is inadequate to fill the gap. New batches of students graduating and passing out as inadequately trained doctors will be a concern in the future for several years. It will negatively affect the health of people, besides lowering the morale of the trained. The need for regularly supplementing healthcare human resource is a challenge. Supplying enough numbers with compromised quality or delaying the supply but ensuring quality will be a dilemma.^{15,16}

TABLE I. Details of theory classes taken in different modes and gap percentage against actual requirements

Subject	Theory classes taken			Requirement*	Gap (%)
	Before lockdown	Online	Total		
Physiology	209	143	352	360	2.2
Anatomy	80	69	149	131	-13.7
Biochemistry	134	45	179	320	44.1
Preventive and social medicine (II)	17	52	69	130	46.9
Pathology	69	67	136	230	40.9
Pharmacology	74	78	152	225	32.4
Microbiology	67	80	147	340	56.8
Preventive and social medicine (III)	46	54	100	130	23.1
Forensic medicine	34	55	89	80	-11.3
Ophthalmology	0	52	52	100	48
Otorhinolaryngology	42	48	90	110	18.2
Medicine	26	98	124	900	86.2
Paediatrics	5	66	71	200	64.5
Surgery	42	110	152	900	83.1
Obstetrics and gynaecology	35	67	102	600	83
Orthopaedics	19	59	78	200	61
Anaesthesia	0	20	20	20	0
Dermatology	0	10	10	30	66.7
Psychiatry	0	13	13	20	35
Pulmonology	0	14	14	15	6.7
Radiology	6	0	6	20	70
All subjects	133	457	590	2905	79.7

* as per the National Medical Commission, Medical Council of India and Kerala University of Health Sciences II,III phases of undergraduate teaching

TABLE II. Details of practical sessions/clinics taken in different modes and gap percentage against the actual requirements

Subject	Practical classes			Requirement*	Gap (%)
	Before lockdown	Online	Total		
Physiology	48	0	48	120	60
Anatomy	341	7	348	519	32.9
Biochemistry	52	4	56	160	65
Preventive and social medicine (II)	0	0	0	200	100
Pathology	0	32	32	190	83.2
Pharmacology	0	52	52	75	30.7
Microbiology	4	14	18	80	77.5
Preventive and social medicine (III)	124	0	124	200	38
Forensic medicine	0	4	4	20	80

No clinics held in clinical departments * as per the National Medical Commission, Medical Council of India and Kerala University of Health Sciences II,III phases of undergraduate teaching

A study from Japan showed that the online education system hinders hands-on training.¹⁷ Worrying about digital fatigue and lack of clinical skills, laboratory and hands-on learning were the apprehensions felt by students in the USA regarding the online medical education system.¹⁸ The challenges faced by students, especially in the developing world, were mainly technical including poor internet quality, problems with audio and video, security issues, and downloading and streaming issues.¹⁶ The pandemic also disrupted the examinations of medical students which resulted in delay, postponement or cancellation. Even with physical classes starting, examinations will not be conducted early as the students lack the clinical rotation postings, the gap which is seen in our study.

A temporary suspension of all healthcare courses and continuing with short, focused training for Covid-19 care for all students and engaging them in that limited service for the time

being is an option to be considered. Medical students from preclinical to clinical period of training can get involved in positive and preventive campaigns, running of call centres for providing information, managing logistics management of supplies, supporting war rooms for beds, oxygen, intensive care unit and ventilator allocation to the needy, providing expert health care in first-level treatment centres where patient monitoring is the need, extending peripheral support to those in the care rooms (such as writing discharge cards, ward shifting management and ward store management). Resuming the actual course can be considered once the pandemic abates, starting from the point of stoppage.

As the pandemic shows no signs of receding completely and due to its recurrence in waves, other strategies to move forward must be considered. Prioritizing and making vaccines available to medical and paramedical students at the earliest and advocating them to follow Covid appropriate behaviour even

after classes start would be required due to the fear of breakthrough infections. This will ensure availability of trained personnel at the service delivery points and will maintain the standard of graduates.

As the gap was more for practical and clinical postings, various other options need to be tried. Discussion of cases in webinars supplemented by video cases (digital clinical placement) could be adopted.^{19–21} Demonstration of selected procedures through instructional videos giving the learner an opportunity to watch the demonstration and learn at their own pace.²¹ Review of electronic clinical and laboratory data followed by video call to patients already evaluated is another method of clinical teaching–learning process.²²

The feasibility of shifting to online mode varies from subject to subject. Subjects such as radiology can shift largely to the online mode, while obstetrics may be able to shift only a minor part. Forming task forces at the national level to explore possibilities of shifting a few contents in every subject to online mode has been suggested. Scientifically developed and field-tested modules for different subjects would encourage faculty to follow it uniformly in India.

Conclusion

The sudden transition of medical education from the classroom to online has unique challenges for the faculty as well as the student. The didactic part of medical education was well taken care of during the pandemic, but the practical and clinical sessions were seriously affected. The need for trained healthcare workers and a properly working healthcare system is vital, especially after the pandemic. Although online medical education is gaining momentum in India, the high gap percentages in practical sessions and clinics is of concern. The choice of adding numbers with compromised quality or delaying courses to ensure quality puts policy planners in a dilemma. Suspending all health science courses temporarily and training them suitably for different levels of Covid-19 care is an option. Prioritizing and making vaccines available to medical and paramedical students at the earliest and advocating them to follow Covid appropriate behaviour will help resume face-to-face classes at the earliest and ensure the availability of trained personnel at the service delivery points as well as maintain the standard of graduates. The national level task forces for scientifically developing and field-testing online teaching modules will be advantageous for a nationwide uniform pattern and universal use by faculty.

Conflicts of interest. None declared

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