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Original Research Article

Perceptions of undergraduate medical students towards online learning during the COVID-19 pandemic-experiences from a medical college in Delhi

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ABSTRACT

Background: COVID-19 pandemic has caused upheaval in all aspects of our lives and education system has also faced disruptions. Medical teaching is of paramount importance as it is preparing future doctors for such emergencies. Though online teaching by the institutions and faculties has continued but it is also equally important to know the learners' perspective, i.e.., the undergraduate medical students who have to cope-up with the change in teaching practices**.** To assess the perceptions of medical students regarding online learning during the COVID-19 Pandemic. To understand the problems and apprehensions faced by these students.
Methods: A cross-sectional study was conducted among undergraduate medical students of a medical college in Delhi. To ensure reliable results, a sample size of 50% was decided with equal representation from students studying in different professional years of MBBS.
Results: Although medical students had used online learning earlier but it was not very preferable. Students faced challenges both due to unsatisfactory learning atmosphere at home and also technological issues associated with online learning. Students are also worried about lengthening of duration of the course and inadequate clinical exposure.
Conclusions: Medical education system has to be prepared for blended learning by use of resources to overcome challenges associated with technological problems so as to facilitate learning of the students.

Keywords: COVID-19 pandemic, Medical students, Online learning

INTRODUCTION

Universities and other educational institutions across the country were closed on 16th March, 2020 when the Government of India announced a countrywide lockdown as one of the measures to contain the COVID-19 outbreak.[1] Closure of medical colleges disrupted the learning and education of future health professionals. Medical education is a combination of theoretical and hands-on practical/clinical learning. The new NMC curriculum focuses increasingly away from the former and more emphasis is on acquisition of competencies through the latter. After the first wave, all educational institutes including medical colleges started adapting to the online teaching learning mode The pandemic has presented the challenge of continuing education of future health care providers and medical education faculty have quickly transitioned curriculum to online formats.[2] Some of these lessons came from past experience of SARS epidemic when several resourceful initiatives were implemented, leading to progress in medical education; and have become popular ever since.[3,4] The changes included the development of new distance-learning platforms on which content was released, remote delivery of lectures using platforms and the use of question banks and other online active recall resources.[5] Learning

environment also plays a role in the outcome of the learning process, more so, since the students were not in classrooms but at home where their surroundings are far different from that in the college. The teaching faculty have also faced problems in maintaining the continuity of the teaching process due to increased clinical/administrative/ public health duties during the pandemic as health system struggled to cope with the disease burden. Blended learning is probably the need of the hour. It maybe the future of medical education or we may switch over to more traditional ways of teaching once things go back to normal, but right now we are dependent on technology for medical pedagogy.[6,7] But how feasible and comfortable is online learning for those whom it is intended, i.e., the undergraduate medical students? The present study aims to assess the concerns and challenges faced by undergraduate medical students during online learning.

Aims and objectives

Aim and objectives of the study were to assess the perceptions of medical students regarding online learning during the COVID-19 pandemic and to understand the problems and apprehensions faced by these students during online learning.

METHODS

A cross-sectional study was conducted among undergraduate medical students of a medical college in Delhi. To ensure reliable results, a sample size of 50% was decided with equal representation from students studying in different professional years of MBBS. A minimum sample of 200 was thus expected from the 400 students studying in the college during September-October 2020. The study was conducted after 4 months of regular online classes with a dedicated institutional platform (MS Teams) and one online end-semester exam. Those pursuing internship were excluded from the study. Expecting a non-response rate of 10% the questionnaire was administered to 60 randomly selected students in every batch. Data collection was done using a pre-tested questionnaire administered as a google form. The questionnaire was self-administered without intervention by the authors, and it did not contain any identifying data of the participants to ensure confidentiality. Questionnaires with incomplete information or missing data were excluded from the analysis. The data was entered into MS excel and analyzed. Percentages were calculated and Chi square test was used to assess differences in proportion.

RESULTS

The 214 responses were received and a total number of 202 completed responses from medical students studying in the four professionals were analyzed.

Table 1: Profile of students.

Variables	Number	Percentage (%)
Gender		
Male	92	45.5
Female	110	54.5
Year of study		
First professional	50	24.8
Second professional	54	26.7
Third professional part I	51	25.2
Third professional part I	47	23.3
Age (years)		
18-20	70	34.7
21-23	93	46.0
≥24	39	19.3

The proportion of females in the sample was more than males. All the four professionals were almost equally represented in the study sample. Majority (>80%) of the students were less than 23 years of age.

Table 2: Resources used for online classes.

Variables	Number	Percentage (%)
Device used		
Desktop	6	3.0
Laptop	34	16.8
Smartphone	147	72.8
Tablet	15	7.4
Network connection		
3G	18	8.9
4G	124	61.4
Other	8	4.0
WIFI/broadband	52	25.7

Majority of the students preferred a portable device for online learning like smart-phone (72%), laptop (16%) or tablet (7%). Accordingly, the connection used for learning was 4G connection; only a quarter of them had access to a WIFI or broadband for online classes**.**

Table 3: Use of online learning before the pandemic.

Variables	Number	Percentage (%)
Never used earlier	3	1.4
Occasionally used earlier	78	38.6
Frequently used earlier but preferable	64	31.7
Accustomed and prefer online learning	57	28.3

Though almost all of the students (~99%) had used online learning resources earlier but less than one (28%) were accustomed to and preferred online learning to offline mode. This learning, too, was only related to the study that they did on their own and not part of their curriculum in the college.

Table 4: External environmental constraints hampering satisfactory learning.*

Variables	Number	Percentage (%)
Environmental noise	87	43.0
No isolated space	69	34.1
Family distractions	57	28.2
No distractions	2	1.0

*Multiple responses

Less than 1% of the students felt they had a satisfactory study environment during the online classes at home conducive for learning. Major environmental factors causing disturbance in learning process were environmental noise, no isolated space at home for studying and family distractions.

The 48% of the students reported attending online classes for the sake of attendance only. Most also found doubt clearing to be unsatisfactory during the online learning sessions. Though doubt clearing was reported to be available on request but not as satisfactory as compared to offline classes.

The frequency of problems faced by these students toward online learning and were assessed in form of a 5-point Likert scale scoring format with range of choices from never experienced (score 1) to almost always (score 5). Their apprehensions for assessment of online learning and its future consequences were asked on agreement-assessment 5-point Likert scale for agreement ranging from strongly disagree (score 1) to strongly agree (score 5).

Regarding disturbances in learning, 86% reported technical issues and nuisance created by fellow students creating frequent (score≥3) problems in learning. The 86.1% of students reported being stressed due to online learning while more than two-thirds (69%) said they got distracted during online classes (Figure 1).

More than half (65%) of the students doubted the reliability of available online content. More than two-thirds of the students (69%) were worried that their future role as a doctor might be impacted due to shortcomings of learning. 70% were concerned that the duration of their course might be extended due to the pandemic (score≥3) (Figure 2).

The concern for lengthening of the duration of the course is more for the students in final year (part 1 and part 2) students as compared to those in first and second professional students, taking into consideration those who agree or strongly agree with the statement (65 vs 30). The difference was found to be statistically significant (The chi-square statistic is 28.4519; significant at $p<0.01$).

The clinical postings have also been affected as live interaction with patients for history taking and examination was disrupted. Clinical postings were also conducted virtual way via videos, problem based learning and online discussions. More than half (61%) felt that overall understanding of subject is affected while around 1/3rd was concerned for lack of hands-on experience.

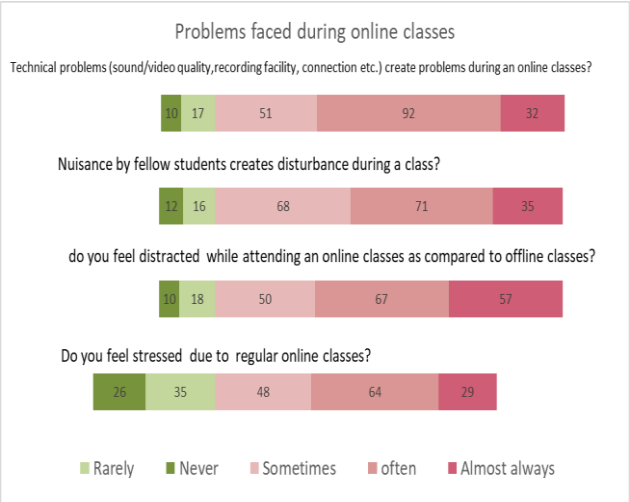

Figure 1: Problems faced during online classes.

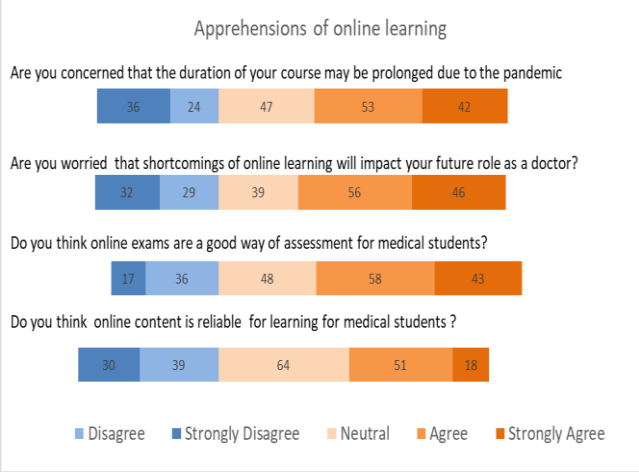

Figure 2: Apprehensions of the students regarding online learning.

Table 5: Apprehensions for the clinical learning outcome.

Variables	Number*	Percentage (%)
Can properly understand theory but lacking hands-on exposure	68	33.7
Worried about practical exams	26	12.8
Overall understanding of subject is affected	124	61.3
Learning Not affected at all	36	17.8

*Multiple response

DISCUSSION

The profile of the students in the study was similar to overall enrolment of the college; proportion of females is a little larger than the males. Most students were in less than 23 years of age.

Most students (73%) used a smartphone for online learning. Similar findings were reported among 3368 medical students in Libya where 93% had access to a smartphone for e-learning during the pandemic.[9] However, in the current study only 27% used a laptop, tablet or desktop for learning as compared to the findings in the Libyan study where 75% had access to a computer. Use of smartphone may be associated with increased strain and other physical problems in these students. Most students (70%) used a mobile connection (3G or 4G) for online learning in the present study as compared to the study in Libya where 40% had access to a static internet connection.

Almost all students had used internet for learning previously but out of those, only a third found online learning preferable. In the study in Libya, 86.1% reported that they used the internet for medical education purposes.[9] Learning through the internet has been increasing but it is only during the pandemic that it has become the primary source for learning.

Almost half of the students said they were attending online classes for the sake of attendance only. Doubt clearing was also found to be not-satisfactory by the students. Similarly In a nationwide survey of 2721 medical students in UK overall, students did not find online teaching to be engaging or enjoyable, with limited opportunities to ask questions.[5]

Environmental noise, lack of isolated space for learning and family distractions were cited as environmental factors hampering learning in the current study by almost one-third of the students. Less than one percent of students' felt that they had a satisfactory environment for learning at home. In a survey of medical students in the UK, students stated that family distractions (26.76%), timing of tutorials (17.31%), anxiety (11.08%) and lack of space (11.03%) as barriers to effective online teaching.[5]

This means that institutional learning is an important aspect which improves learning in the students and therefore opening of medical colleges should be given precedence over other educational institutions.

Technical problems like issues with internet connectivity, disturbances created problems in the learning process for 86% of the students. Poor internet connectivity as an issue in online learning was reported by 40% medical students in Sudan while a similar percentage of medical students in first year in a medical college in South India reported problems in internet connectivity hampering online learning.[10,11] In the survey done in UK, poor internet connection (21.53%) was cited as a barrier to online learning by one-fifth of the students.[5] Since connectivity issues are a major problem with online learning across various countries, especially developing nations, having pre-recorded set of videos which are downloadable maybe the way forward along with long term strategy of availability of good internet services.

National medical commission had given guidelines for reopening and time frame for teaching activities of the medical colleges with regard to classes and examinations for various batches. Some delays in the examinations were inevitable and the future again is unpredictable as the pandemic is unfolding various waves. Two-thirds of the students of senior batches (Final year part I and II) have reported feeling worried about lengthening of the course as it will impact post-graduate entrance and admission. A career in Medicine already involves a long learning period and further lengthening of the duration is likely to have impact on the future planning. 'Increasing the length of the course and postponing graduation" were cited as tertiary effects of the pandemic on medical education in a study done in medical colleges in Iran.[12]

The students also felt that shortcomings for online learning may affect their future role as a doctor. Similarly, in the study in UK, students scored lower on being asked about being 'well prepared for my profession', during the pandemic, compared with previous studies.[5]

Almost two-thirds of the students felt that inadequate clinical exposure to real patients affects overall understanding of the subject. With implementation of CBME, understanding clinical implications is an important aspect of learning and assessment for all subjects. Not having enough clinical exposure puts the students at a disadvantage during the exams. One third felt that they were not getting adequate hands-on experience from online learning. In a study at a medical school in the US, 4th-year medical students did not find tele-education and e-learning to be as effective as traditional medical education that combines in-person didactic classroom instructions and in-person face-to-face in hospital clerkships that give exposure to "real "patients; only 35% were satisfied with e-learning of cases through Aquifer.[13]

Interestingly, more than half of the students felt that online exams are a good way of assessment; probable because they think that teaching and exams should be in the same format.

CONCLUSION

This study demonstrates the perceptions regarding online learning among medical students in a medical college in India after an emergency such as COVID-19. Medical students have shifted to online learning through various

platforms but there are many challenges for effective learning through electronic technologies. These challenges should be systematically evaluated and that effective strategies should be developed to overcome them.

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