Original Article

Impact of COVID 19 Lockdown on the Study of Medical Students: A Cross Sectional Survey

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Abstract

Introduction: During the pandemic of COVID 19, the traditional teaching of MBBS students has been shifted to online teaching. We conduct an online survey to know and record the impact of COVID 19 lockdown on the study of medical students of GDMC, Dehradun. The present study aimed to investigate the MBBS student's perception of online teaching. The results of this study may provide further inputs which might be of help to the students and faculty for further informed decisions. **Materials and Methods:** A cross sectional online survey during July 1–7, 2020 was applied to 334 medical students to evaluate the perception of online teaching among medical students. A questionnaire was prepared in Google form and divided into two sections. The first part covered demographics information of the respondent and the second part assessed with behavior and attitude toward online teaching. **Results:** The mean assessment, behavior, and attitude scores have significantly differed across age groups and previous experience. The medical students who had no exposure to online teaching their assessment score is higher than who had little exposure also found to be significant. The participants were agreed with the teaching way of the course (59.3%) and with the content of the course (56.9%). Majority of participants (58.4%) also agree that there are barriers in online learning. Most of the students agree (62.3%) and strongly agree (61%) that the course allowed them to take responsibility for their learning. **Conclusions:** We can conclude that the online learning program is a good alternative to classroom teaching in this era of the COVID 19 pandemic. This study can provide the basic architecture for making further strategy of course content.

Keywords: COVID 19, medical, online, pandemic, students, teaching

Introduction

The scenario of modern life is different from life, 20 years back. Today, every aspect of our life is affected by the Internet so as our medical education. Now, we can take a lecture on PowerPoint. To give the orientation of a particular concept, we can insert adaptive tutorials, audiovisual clips, and virtual models in PowerPoint. E-learning is widely used by medical schools globally.[1] This approach is having many advantages over chalk and board teaching as we can give the latest evidence-based information to students. It gives the flexibility of time and content to the students. Most medical students believe that E-learning is enjoyable and effective but would not eventually replace traditional didactic methods of teaching.[2]

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The scenario of medical education using E-learning in India is quite different. The laptops, computers, and smartphones came into the lives of medical students, but most residents end up being the biggest users of E-learning activity for a search of published literature, thesis work, etc., before the pandemic of COVID-19.

Now, with newly instated social distancing guidelines touted as the most effective preventative measure against the emergence of the current pandemic of COVID-19, excludes gathering of medical students in enclosed space of lecture halls, or demonstration rooms.[3] The impact of COVID-19 lockdown

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also occurs on the study of medical students. We cannot predict the long-term effects of the COVID-19 pandemic on medical education, therefore documenting and study of the full impact of the changes being made is of paramount. Because of the pandemic, students cannot attend medical institutes; therefore, there is a rapid emergence of distance online teaching programs for filling up the gaps in their study.

For this, technology has been rapidly and innovatively used in an attempt to maintain teaching and learning. Therefore, distance learning programs are started in the form of ZOOM Clouding, Google Classrooms, Microsoft Team, and CESCO. And now, didactic lectures, tutorials, preclerkship, preclinical exposure, clinical rotation, and electives all are replaced by an online platform. Competency-based medical education comes in action from August 2019. It is also not being applied because of the COVID-19 pandemic. Therefore, we conduct an online survey to know and record the impact of COVID-19 lockdown on the study of medical students of GDMC, Dehradun. The perceptions and feedbacks of the medical students regarding the current E-learning scenario may provide additional inputs which might be of help to the students and faculty for further informed strategy.

Materials and Methods

Study design

A cross sectional online survey during July 1–7, 2020 was applied to 334 medical students to evaluate the perception of online teaching among medical students.

Study setting

After taking ethical approval with number- IEC/GDMC/2020/90 from the IEC of college for this study, with the help of questions asked in the study of Zhang *et al*.,[4] a questionnaire was prepared in Google form and divided into two sections. The first part covered demographics information of the respondent and the second part assessed with behavior and attitude toward online teaching. Demographic variables included age, gender, and residence and type of residence. The self-designed questionnaire comprises six questions regarding assessment with, five and three questions related to attitudes and behavior, respectively. This prevalidated questionnaire uses a 5-point Likert scale which would convert responses to scores. Since we aimed to evaluate the opinion about online teaching among medical students, therefore our target population was the students enrolled in the MBBS program from Government Doon Medical College, Dehradun. The link of form was sent through the Gmail account to all medical students. The study participants were informed about the details of study objectives, procedures, the average time required for answering questions, and clause of confidentiality at the beginning of the survey. Their informed consent in digital form was collected.

Sample size

The total strength of students in college is 650. We have circulated the structured questionnaire among all the students and received 336 responses with a good response rate of 48%. Among 336 responses, 4 responses were incomplete; therefore, our final sample is 332.

Statistical analysis

After the collection of data, we extracted the same in Microsoft excel, then it was transferred, coded, and analyzed using SPSS, version 22 IBM, City – Chicago, U.S after data cleaning at the appropriate stage. Descriptive statistics utilized frequencies and proportions. Independent samples *t*-test and one-way analysis of variance were used for comparisons of scores among students with different demographic characteristics (like gender, age, and residence). The statistical significance was taken as $P \leq 0.05$.

Results

The age range of the participants was 17–26 years with a mean of 21.44 years and standard deviation of 2.07 years. The total number of medical students who participated in an online survey was 332. The percentage of female respondents was higher than male respondents. Majority of the respondents were in the age group 17–20 years. More than half of the respondents belong to an urban residence. About 80% of respondents belonged to Uttarakhand state. About three-fourth of them had no exposure to online teaching. Only 8.73% of the respondents have much previous experience in online teaching.

Table 1 describes the difference between mean score according to age, gender, residence, and their previous experience of online learning. There is no significant difference between assessment, behavior, and attitude scores according to gender and residence. The mean assessment, behavior, and attitude scores have significantly differed across age groups and previous experience. The medical students who had no exposure to online teaching their assessment score is higher than those who had little exposure but also found to be significant. On responding to the question [Table 2] that whether online teaching gave benefit, 37.7% of respondents agreed, but 40% were neutral. However, most (59.3%) found it useful and many (38.6%) agreed that it could be combined with classroom learning in the future.

The attitude of the study participants [Table 3] showed mixed results with more than 40% agreeing that they had acceptance for online learning whether in the learning phase or future professional work and showed interest in online learning mode. However, 58.4% also felt that presently, they faced barriers in online learning.

Table 4 depicts, in percentage form, the frequency of students to the 3 items constituting the behavior scale. Most of the students agree (62.3%) and strongly agree (61%) that the course allowed them to take responsibility for their learning (item number 3) which also covers the portion of self-directed learning as mentioned in the new curriculum of competency-based medical education. Participants agree that they felt comfortable interacting with the teacher and other students (28.6%) (item number 1).

Table 1: Different characteristics, categories, number of participants, assessment score, attitude score, and behavior score

Characteristics	Category	Number of participant, *n* (%)	Assessment score		Attitude score		Behavior score	
			Mean (SD)	*t*/*F* (*P*)	Mean (SD)	*t*/*F* (*P*)	Mean (SD)	*t*/*F* (*P*)
Gender	Male	159 (47.89)	18.52 (4.47)	0.863 (0.369)	13.65 (2.59)	0.293 (0.770)	9.77 (2.39)	1.224 (0.222)
	Female	173 (52.11)	18.92 (4.07)		13.73 (2.01)		10.06 (1.90)	
Age-group (years)	17-20	159 (47.89)	19.32 (4.10)	3.436 (0.033)	14.16 (2.02)	6.668 (0.001)	10.37 (1.94)	6.778 (0.001)
	21-23	154 (46.38)	18.08 (4.10)		13.23 (2.45)		9.52 (2.16)	
	24+	19 (5.72)	19.00 (5.85)		13.47 (2.57)		9.42 (3.04)	
Residence	Urban	186 (56.02)	18.74 (4.41)	0.316 (0.729)	13.67 (2.26)	1.907 (0.150)	9.99 (2.20)	0.352 (0.704)
	Rural	77 (23.19)	18.45 (3.78)		13.37 (2.41)		9.92 (1.80)	
	Suburban	69 (20.78)	19.01 (4.32)		14.11 (2.25)		9.74 (2.39)	
State	Uttarakhand	264 (79.52)	18.82 (3.95)	1.610 (0.108)	13.81 (2.16)	2.181 (0.030)	9.96 (2.04)	0.841 (0.401)
	Non-Uttarakhand	60 (18.07)	17.87 (5.08)		13.10 (2.83)		9.70 (2.71)	
Ever did online teaching?	None	243 (73.19)	19.09 (4.01)	2.56 (0.011)	13.81 (2.18)	1.543 (0.124)	9.95 (2.04)	0.361 (0.718)
	Little	89 (26.80)	17.75 (4.72)		13.37 (2.59)		9.85 (2.45)	
Previous experience	None	49 (14.76)	18.02 (4.74)	8.148 (0.000)	13.31 (2.33)	6.298 (0.000)	10.00 (2.50)	3.971 (0.008)
	Little	98 (29.52)	17.43 (4.58)		13.13 (2.55)		9.38 (2.20)	
	Middle	156 (46.98)	19.32 (3.64)		13.92 (2.03)		10.08 (1.88)	
	Much	29 (8.73)	21.13 (3.72)		15.00 (2.15)		10.79 (2.44)	

SD: Standard deviation

Table 2: The frequency and percentage distribution of study participants among each assessment question (*n*=332)

Questions	Options				
	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)
The online teaching gives you much benefit	19 (5.7)	43 (13.0)	133 (40.1)	125 (37.7)	12 (3.6)
You are satisfied with the teaching methodology employed	20 (6.0)	0	104 (31.3)	197 (59.3)	11 (3.3)
You are satisfied with the course content	5 (1.5)	39 (11.7)	83 (25.0)	189 (56.9)	16 (4.8)
The online learning meets your expectations	28 (8.4)	68 (20.5)	112 (33.7)	112 (33.7)	12 (3.6)
The online learning is better than traditional classroom learning	109 (32.8)	131 (39.5)	59 (17.8)	22 (6.6)	11 (3.3)
The online learning could be combined with classroom learning in the future	37 (11.1)	51 (15.4)	59 (17.8)	128 (38.6)	57 (17.2)

Table 3: The frequency of study participants among each attitude question (*n*=332)

Questions	Options				
	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)
You have acceptance for online learning whether in the learning phase or future professional work	17 (5.1)	43 (13.0)	115 (34.6)	142 (42.8)	15 (4.5)
You are interested in online learning	17 (5.1)	58 (17.5)	104 (31.3)	136 (41.0)	17 (5.1)
Online education is a necessary component of the medical education system	27 (8.1)	66 (19.9)	83 (25.0)	139 (41.9)	17 (5.1)
You think there are barriers in online learning	3 (0.9)	10 (3.0)	46 (13.9)	194 (58.4)	79 (23.8)

Discussion

As not much is known about how much time COVID-19 will impact medical education, it is there obligatory to study the perceptions and reactions of the medical students which may provide further inputs that might be helpful to the students and faculty for further informed decisions. It is also essential to study and record the extent of the changes being introduced in medical education in response to the COVID-19 elucidating path of recovery from this pandemic.[5]

The present study revealed that most of the participants disagree with the online learning platform as a viable long-term method of learning compared to face-to-face classroom traditional form of learning, indicating that learners perceive difficulty in online learning. Majority of students feel that there are barriers to online learning.

The learning outcomes of a study by Zhang *et al*. suggested that online distance learning is a well-accepted alternative when traditional classes cannot be carried out[4] and this study also supports this approach during of era of the COVID-19

Table 4: The frequency of study participants among each behavior question (*n*=332)

Questions	Options				
	Strongly disagree, *n* (%)	Disagree, *n* (%)	Neutral, *n* (%)	Agree, *n* (%)	Strongly agree, *n* (%)
I felt comfortable interacting with the teacher and other students	19 (5.7)	78 (23.5)	97 (29.2	121 (36.4)	17 (5.1)
Online teaching included activities and assignments that provided students with opportunities to interact with one another	33 (9.9)	88 (26.5)	105 (31.6)	95 (28.6)	11 (3.3)
The course allowed me to take responsibility for my learning	5 (1.5)	14 (13.6)	45 (13.6)	20 7 (62.3)	61 (18.4)

pandemic. For medical students, the advantage offered by online platforms is a choice of controlling the learning pace[6,7] and course contents according to their convenience.[8]

However, this assumption that student's transition from traditional to a hybrid approach of teaching would be easily accomplished may not be always correct.[9] We also observed that medical students are not prepared for online learning as much as for classroom learning.

For further designing online course material, it should depend on the demand and need of students.[10] The student's requirement-based strategies and course design features can promote learning efficacy.[11] The study conducted by Gupta and Saks[12] concluded that the preference of medical students to attend e-lectures/online classes/demonstrations was driven by the content of the course and quality of teaching employed. Zhang *et al*.[4] also found in their study that lecture delivery by experts is the most important aspect of instruction in online courses. Richter and Idleman[13] and Yang. focused on other educational disciplines apart from medical education and derived similar conclusions. The current pandemic has uncovered a deficiency in medical education because contact classes and personnel interactions were more preferred in past, but they are now not possible.[14,15] Hopefully, we learn that pedagogical designs in the medical curriculum need to be more adaptive.[16,17]

Limitations

This study has limitations. The sample size is small. This study can be carried out on students of other medical colleges. There is a possibility of potential information bias from participants due to the use of a questionnaire which was self-administered and had a lesser response rate.

Conclusions

We can conclude that the online learning program is a good alternative to classroom teaching in this era of the COVID-19 pandemic. This study can provide the basic architecture for making further strategy of course content.

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Conflicts of interest

There are no conflicts of interest.

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