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Barriers of online teaching during COVID-19 pandemic: Students' perceptions

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Abstract---Objective: To understand the various barriers faced by students of dentistry during online teaching programmed in COVID 19 pandemic. Material and Methods: A questionnaire comprising questions regarding various barriers for online learning was designed in google form which was later sent to the students of one to fourth year dentistry electronically. Respondents were asked to respond on a five-point Likert's scale of strongly agree, agree, neutral, disagree and strongly disagree. Questions were basically focused on cost and access to the internet, lack of peer collaboration, difficulty contacting faculties, insufficient time etc. Results: Out of 1440 responses, agreed 51.38% of participants strongly agreed that technical problems or

issue act as a major barrier in online learning, followed by timing issues (40.2%) and access to internet (25%). Conclusion: Students have faced technical and timing issues and accessibility as major barriers.

Keywords---online learning, COVID-19, barriers.

Introduction

The COVID-19 has resulted in education center's shut all across the world. While countries are at different points in their COVID-19 infection rates, worldwide there are currently more than 1.2 billion children in 186 countries are affected.^[1] UNESCO has estimated that 1.26 billion children around the world have had their education interrupted due to pandemic and a large number of children's are from what UNESCO calls the "low tech or no tech" phase, with India contributing 300 million of the 1.26 billion children.^[2] There are challenges to overcome, as the popularity of the Internet grows, so does the potential for online learning but some students without reliable internet access and/or technology struggle to participate in digital learning. ^[3]

To the extent that these students' perceptions are negative regarding their past, present, or future online learning experiences, the students' perceptions may contribute to such outcomes as higher dropout rates, low motivation of students to learn, and lower student satisfaction with the learning experience.^[4,5] Still, these outcomes are not true for all students, in all situations, and at all times.^[6] We want for the better understanding which students will face barriers when attempting to learn online, those barriers are, and ultimately how we can help individuals in their learning by understanding and ameliorating their particular obstacles.^[7,8] The present study was carried out to understand the various barriers faced by students of dentistry during online teaching programmed in COVID 19 pandemic.

Material and Methods

The present study has been carried out after obtaining clearance from Institution Review Board of the institute. The present study has been conducted among first to final year dental students from various institutes of India. A self-designed, self-administered, pretested and validated questionnaire was designed. Closed ended questionnaire which comprised questions regarding various barriers for online learning was designed in google form which was later sent to the students electronically. Respondents were asked to respond on a five-point Likert's scale of strongly agree, agree, neutral, disagree and strongly disagree. Questions were basically focused on cost and access to the internet, lack of peer collaboration, difficulty contacting faculties, insufficient time etc.

Pretest

The questionnaire was prepared in English for ensuring comprehension by first to fourth year dental students and pretested in a pilot study in which questionnaire

was filled out by 30 students of our institute to find its deficiencies and improve the clarity of the questions. One of the authors of this research was present when students filled out the questionnaire to explain any possible ambiguity and record them. The shortcomings regarding the clarity of the questions were corrected and then the questionnaire was administered again among another 30 students. After ensuring the accuracy and clarity of the questionnaire, the final questionnaire was prepared. Test-retest analysis showed a good reliability (Cronbach's alpha ($\alpha=0.84$)) of the questionnaire. Questionnaire was given to dental students and information regarding purpose of the study was given. Sufficient time was given to answer the question. All the responses received in a span of one-month duration i.e. from 1 June to 30 June were taken into consideration

Statistical analysis

The data collected was entered into MS Office Excel Sheet 2010 and subjected to statistical analysis using the Statistical Software SPSS version 20.0. Descriptive statistics in terms of frequency, mean and standard deviation were used to summarize the results.

Results

In the present study, we received 1440 fully filled responses via Google forms. Among total participants, 650 were male while 790 were female participants. The responses received were from first to final years under-graduate students, total number of participants in each year were shown in Table 1. In the present study, 15-item questionnaire was used to assess the barriers in online teaching faced by under-graduate students. A 5-point likert scale was used to assess the responses of students from strongly agree, agree, neutral, disagree and strongly disagree.

Table 1: Gender-wise distribution of study participants according to their academic year

S.No.	Year	Male	Female	Total
1	First year	114(7.9%)	128(8.88%)	242(16.80%)
2	Second year	166(11.52%)	186(12.91%)	352(24.44%)
3	Third year	197(13.68%)	253(17.56%)	450(31.25%)
4	Final year	163(11.31%)	233(16.18%)	396(27.50%)
	Total	650(45.13%)	790(54.86)	1440(100%)

Table 2 shows various questions asked from student related to internet problem and connectivity problems. Out of 1440 responses, access to internet was a major barrier in online learning and 42.36% of participants agreed to it whereas only 3.05% disagreed to it. Majority of study participant strongly agreed (51.38%) that technical problems or issue act as a major barrier in online learning. Other major barriers were lack of timely feedback and difficulty contacting instructor in which 49.23% and 40.20% gave neutral response respectively. Similarly, 0.55% of the students strongly agreed that cost of internet is major barrier in online learning while only 25 % disagreed to it.

Table 2: Distribution of questions related to major barriers from connectivity on Likert scale

S. No	Barriers	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Cost of internet	8(0.55%)	12(0.83%)	530(36.8%)	530(36.8%)	360(25%)
2	Access to internet	350(24.3%)	610(42.36%)	420(29.16%)	44(3.05%)	16(1.11%)
3	Technical problem	740(51.38%)	430(29.86%)	220(15.27%)	45(3.1%)	5(0.34%)
4	Lack of timely feedback	149(10.34%)	420(29.16%)	709(49.23%)	139(9.65%)	23(1.59%)
5	Difficulty contacting instructor	149(10.34%)	390(27.08%)	580(40.20%)	279(19.37%)	42(2.91%)

Table 3: Distribution of questions related to barriers from online teaching on Likert scale

S. No	Barriers	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Lack of peer collaboration	200(13.9%)	440(30.5%)	627(43.5%)	139(9.65%)	34(2.34%)
2	Autophobia/Emophobia	68(4.72%)	270(18.7%)	770(53.4%)	230(15.9%)	102(7.08%)
3	Unfamiliar with online learning tools	119(8.26%)	309(21.4%)	450(31.2%)	489(33.9%)	73(5.06%)
4	Insufficient time	139(9.65%)	279(19.3%)	659(45.7%)	299(20.7%)	64(4.44%)
5	Lack of support from family and friends	71(4.93%)	270(18.7%)	489(33.9%)	420(29.1%)	190(13.1%)
6	Technophobia	120(8.33%)	260(18.00%)	550(38.10%)	430(29.8%)	80(5.55%)
7	Lack of social context cues	124(8.61%)	339(23.5%)	630(43.7%)	299(20.7%)	48(3.33%)
8	Lack of motivation	200(13.9%)	370(25.7%)	489(34%)	270(18.8%)	109(7.6%)
9	Lack of interaction among students	200(13.8%)	400(27.7%)	499(34.6%)	220(15.2%)	119(8.26%)
10	Timing issues	580(40.2%)	400(27.7%)	270(18.7%)	120(8.33%)	70(4.86%)

Other barrier in online learning were also assessed and in context to lack of peer collaboration 43.5% gives neutral response while only 2.34% strongly disagree. Autophobia was also asked to students in response 53.4% gave neutral responses while only 4.72% strongly agreed. 33.9% students disagreed being unfamiliar with

online learning tools while 8.26% strongly agreed to it. 45.7% student's gives neutral responses on insufficient time question while only 4.44% give strongly disagreed. Majority of student gave neutral responses in lack of support from family and friends(33.9%), technophobia(38.10%), lack of social context cues(43.7%), lack of motivation(34%), lack of interaction among students(34.6%). 40.2% students strongly agreed to timing issues as a barrier in online learning.

Discussion

As described by Howlett et al. ^[9], "Electronic (e) or online learning can be defined as the use of electronic technology and media to deliver, support and enhance both learning and teaching and involves communication between learners and teachers utilising online content". Online learning can provide students with "easier and more effective access to a wider variety and greater quantity of information". ^[10] Many factors can influence whether or not an online learning programme will succeed or fail, ranging from student led factors to staff led factors.

Timing issues

The online teaching schedule should be flexible scheduling is favourable for students and they expect it because they usually have responsibilities outside of education center's, such as work and family. This can make juggling school, work, and personal responsibilities a challenge. Great time management skills are crucial to succeed.^[11,12] In our study 45.7% student's gives neutral responses on insufficient time question while only 4.44% give strongly disagreed. 40.2% students strongly agreed to timing issues as a barrier in online learning.

Lack of motivation

Online learning requires motivation to complete tasks, stay engaged, and make progress. When students not surrounded by classmates and instructors in a physical setting, it may be tempting to procrastinate. Online learners may start out fully engaged and then discover that their motivation wanes. When this happens, they may fall behind. Lack of motivation is a common challenge for all types of students.^[13] In our study lack of motivation (34%), lack of interaction among students (34.6%). We should be the aware that this may be an issue and know how to overcome it. The teachers need to be more involved and connect with students and share the mutual ideas or perspectives and students must be encouraged to communicate with faculty.

Cost

Though online university is usually much more affordable than traditional school fees (LearnDash estimates savings of up to \$20,000 after one year!) paying for your education is still a challenge. Thankfully, many online universities like AU have "pay-as-you-go" programs; you pay for each course only when you register for it, and course fees include all textbooks, class materials, and access to a tutor or success centre.^[14] In the present study 0.55% strongly agreed that cost of internet is major barrier in online learning while only 25 % disagreed to it.

Lack of awareness on benefits of online learning

Online learning is still at a nascent stage in India and many people are completely unaware of this mode. Even if some information has reached them, still they cannot figure out the relevance/advantages of doing an online course. Lack of information is a major barrier which can again be overcome only through right information reaching to the potential learners.^[15] In our study 33.9% students disagreed being unfamiliar with online learning tools while 8.26% strongly agreed to it.

Lack of Peer Involvement

eLearning is associated with isolation and loneliness. Students may want to expand their knowledge, but they don't want to do it alone. For this reason, an active online learning community should be constructed for eLearning. Social media groups and online forums, blogs or a website with useful articles and multimedia links may be created where students can ask question and interact with their classmates. Start an eLearning blog or website that features helpful articles and multimedia links. Another option is developing online group collaboration activities that allow them to practice problem solving with their peers. There are a variety of Project Management online platforms that can help them communicate, share documents, and assign tasks. eLearning webinars are yet another way to promote community involvement and prevent feelings of isolation.^[16] In our study lack of peer collaboration 43.5% gives neutral response while only 2.34% strongly disagree.

Personal Cognitions

Unfortunately, some of students may be dealing with self-defeating beliefs and opinions. They may feel as though they don't have the skills or abilities to enroll in eLearning. This prevents them from receiving the benefits of the eLearning experience offered. One of the best ways to overcome personal cognitions is to acknowledge and evaluate the students. The teachers must ask thought-provoking questions that prompt the students to examine their beliefs and assumptions. They may not be aware that these negative cognitions exist in the first place.^[16,17] In the present study autophobia was also asked to students in response 53.4% gave neutral responses while only 4.72% strongly agreed. Technophobia(38.10%), lack of social context cues(43.7%), lack of motivation(34%), lack of interaction among students(34.6%). 40.2% students strongly agreed to timing issues as a barrier in online learning.

Technical Issues

Though the internet is a wonderful and necessary resource for online learners, it can also cause problems. Without a strong internet connection or high bandwidth, online learning becomes nearly impossible, and keeping up with technical requirements of a chosen course can be stressful. Students' can access class wherever they have a connected device, but a strong internet connection is required. Low bandwidth and weak internet can affect how quickly they can connect and participate in class.^[16]

If they plan on doing a lot of schoolwork at home, they need a fast home internet connection. They have to Opt for a high-quality home service, and know where to get help if they need technical assistance for internet connection.^[18] Even though differences may exist in the way students perceive their online experiences during online learning, A great deal of evidence exists showing that no significant differences should be expected regarding the effectiveness of well-designed online learning compared with well-designed in-person learning.^[19,20]

There is also the need for more tech-savvy educational institutions to “handhold” lesser tech-savvy ones, putting in place a proper plan-of-action for students, teachers and institutions as well as the ensuring teacher-training in the use of technology for education. The institutions should collaborate to improve the quantity and quality of education provided through technology.^[20] The government must provide better internet connections to its citizens, while educational institutions must move on from just online classes to 100 percent online delivery and assessment and also complete online delivery of course credits. India should try and use the current opportunity to improve its education base with lower costs.^[21,22]

In our study Barrier like access to internet was a major barrier in online learning and 42.36% of participants agreed to it whereas only 3.05% disagreed to it. Majority of study participant strongly agreed (51.38%) that technical problems or issue act as a major barrier in online learning. Other major barriers were lack of timely feedback and difficulty contacting instructor in which 49.23% and 40.20% gave neutral response respectively.

Conclusion

Amid the COVID-19 pandemic and the need for social distancing, this virtual learning platform has significantly reshaped and innovated how we teach and engage with our students. Various virtual learning platforms have the potential to play an important and useful role in the learning. We hypothesized that students have faced accessibility, technical and timing issues as major barriers, in addition to lack of peer collaboration and interaction. It is crucial to address these barriers in our institutes, where the need to continuously train skilled health workers is also greatest.

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