



Original Research Article

Knowledge, attitude, and perception of dental students regarding online learning program during COVID-19 pandemic – A cross-sectional study

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ABSTRACT

Objectives: The COVID-19 pandemic compelled most of the countries to impose a lockdown bringing the whole world to a standstill and everyone had to quickly adapt to different ways of working, learning, communicating, and adjusting at every step of life. In response, online education was implemented in India because of the unprecedented nationwide closure of all academic institutions. Initially, a complete shift to online learning was a difficult process for both students and teachers but eventually they got familiarized as it was being used partly over the past few years in dental and higher educational institutes all over the country. The objectives of the study are as follows: (1) To evaluate the efficacy of e-learning, (2) To assess knowledge, attitude, and perception of dental students regarding the online learning program during COVID-19 pandemic.

Materials and Methods: A self-administered questionnaire was formulated and validated by the subject experts and IEC permission was obtained. Online feedback was collected from UG and PG students of Dental colleges in Central India using Google forms.

Results: Total questionnaire received was 600 in which 520 responses were complete. Out of which 453 (87.2%) were Bachelor of Dental Surgery and 67 were (12.8%) Master of Dental Surgery students. Around 500 students had a considerable knowledge of computers with 411 (79.1%) of students claiming to have an appropriate internet access. Almost 62.4% of the students agreed that technology has helped them in understanding concepts and improved their ability to retain information. Students gave varied responses regarding their perception of online learning but agree that this is the only way to continue with their dental education in these unprecedented times of the pandemic.

Conclusion: The use of online lectures, webinars, and continuing dental education has proved to be informative for dental students and has played a substantial role in completion of the curriculum in these pandemic times. Therefore, a mixed model online and offline education can be developed for effective learning.

Keywords: Attitude, COVID-19, Dental students, Knowledge, Online learning, Pandemic, Perception

INTRODUCTION

“Education is the most powerful weapon you can use to change the world”, a quote by Nelson Mandela which denotes the significance of education in our lives. Not very long ago, online or digital education was still considered a very futuristic or utopian situation in India. Discussions among students used to be about the European and North American countries where electronic devices were used instead of physical books to save paper and ultimately the environment.^[1]

The COVID-19 pandemic compelled most of the countries to impose a lockdown bringing the whole world to a standstill and everyone had to quickly adapt to different ways of working, learning, communicating, and adjusting

at every step of life.^[2,3] In response, online education was implemented in India because of the unprecedented nationwide closure of all academic institutions.^[1] Initially, a complete shift to online learning was a difficult process for both students and teachers but eventually they got familiarized as it was being used partly over the past few years in dental and higher educational institutes all over the country.^[1,4] Online learning, a student-centered way of education, increases competency of the students and helps them to stay connected and build a positive relationship with teachers and friends.^[3,5,6] The course outcome of these online courses is influenced by certain factors such as the need of the dental students, conducive language, computer literacy, access to internet facilities, and acceptance of

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distant learning.^[7] E-learning strategies have ensured basic learning outcomes but it is a paradigm shift from the traditional teaching learning methods and students are missing out on interpersonal interactions, discussions and lack of practical knowledge which is essential for becoming good clinicians.^[8] The students, teachers, and administrators need to collaborate collectively to overcome infrastructure and policy hindrances for the effective implementation of online programs.^[9] Hybrid learning where online and traditional classroom experiences make a blend is very much going to be the new normal in the times to come. Hence, this study was carried out to evaluate the students' attitude and perception toward online learning in this unviable situation.

Aims and objectives

The objectives of the study are as follows:

- To evaluate the efficacy of e-learning
- To assess knowledge, attitude, and perception of dental students regarding the online learning program during COVID-19 pandemic.

MATERIALS AND METHODS

A self-administered questionnaire was formulated using electronic forms. The study was approved by the Institutional Ethical Committee. Questionnaire was validated by the subject experts and online feedback was collected from UG and PG students of dental colleges of central India using Google forms. The questionnaire consisted of 10 questions in which nine were close ended and one was an open-ended question. A total of 520 students participated in the study, their responses were obtained and the data were subjected to statistical analysis. The data were analyzed question wise and their percentage values were calculated.

RESULTS

A total of 520 students participated in the online survey of which, 453 (87.2%) were undergraduate students and 67 (12.8%) were postgraduate students.

[Table 1] depicts the knowledge, attitude, and perception of the dental students toward online learning. Most of the students had a good (49.8%) to fair (46.4%) knowledge of computers and a negligible amount of 20 (3.8%) had a poor knowledge of computers. Most of the respondents about 411 (79.1%) had a proper access to internet connectivity.

Out of 520 participants, only 333 (64%) of the students believed that online learning has improved their concentration levels and the remaining 187 (36%) felt that they were distracted during the learning sessions.

A majority of the students 324 (62.4%) felt that online learning has improved their ability to retain information and they preferred the traditional classroom teaching as shown in figure.

Table 1: Numerical summary of dental students' response to survey questions (No of respondents-520).

S. No.	Question	Yes %	No%
1.	You are pursuing which course	87.2-BDS	12.8-MDS
2.	How do you rate your knowledge of computers/technology?	96	4
3.	Do you have proper access to internet	79.1	20.1
4.	Has this change to 100% e-learning due to the COVID-19 pandemic lockdown affected the duration of your study hours.	78.7	21.3
5.	Has this change affected your study pattern?	82.5	17.5
6.	Has this e-learning concept changed/improved your concentration levels	64	36
7.	Do you think the online teaching has improved your ability to retain information better	62.4	37.6
8.	Does this digital conversion of classrooms because of the lockdown enable better teaching and learning?	66.7	33.3
9.	Do you think that the use of technology helps you in understanding concepts in a better way	62.4	37.6
10.	What is your perception about this sudden change to 100% e-learning from the more prevalent traditional classroom teaching?	Varied responses	

BDS: Bachelor of Dental Surgery, MDS: Master of Dental Surgery

Almost 347 (66.7%) students believe that these online classes enabled better teaching and learning as shown in pie chart-3. About 325 (62.4%) of the students felt that there is no improvement in their understanding of concepts because of the technology used.

In the open-ended question, students gave varied responses regarding their perception of online learning but a majority of them agree that in this period of national lockdown, online learning is the only way to facilitate continuity in dental education. Despite the challenges, dental students could adapt to the new learning methods and a majority of them agreed that blended learning which combined classroom and online learning could be more effective for proper learning.

DISCUSSION

This study was designed to assess the knowledge, attitude, and perception of the dental students regarding online learning program during COVID-19 pandemic which was essential considering the norms of social distancing and closure of all educational institutions.^[10] We received 520 responses from

the dental students which included undergraduate (87.2%) and postgraduate (12.8%) students. In this study, 96.2% of students had a fair to good knowledge of computers as a result of which they overwhelmingly accepted e-learning and these findings were in accordance to a study by Hendricson *et al.* conducted as early as in 2004.^[11] In the present study, it is observed that 79.1% of the students have a good access to internet, smart phones, or laptops whereas 20.9% did not have proper access, which has affected their attitude toward online learning.^[12] E learning may also be the only option for gaining access to information for students residing in remote areas as concluded in a study by Grimes.^[13]

Around 78.7% of students have confirmed that e-learning has definitely affected the duration of their study hours giving them more time to study and an opportunity to access a lot of information from e books and recorded lectures [Table 1]. As the commuting time was saved, students had more time to relax and follow their hobbies. Similar results were found in a study by Fidalgo *et al.*^[14]

Only 36% of the students found that the e-learning improved their concentration levels while 64% of the participants felt that they were easily distracted by devices like mobiles and hence preferred traditional classroom teaching [Figure 1].

Around 66.7% of students found that digital conversion of classrooms does not enable better ability to retain information [Figure 2]. In fact, majority of them believe that the traditional classroom teaching is a better option than e-learning and found it to be the golden standard wherein teachers engage their pupils at every moment which is missing in online learning. Students perceive that e-learning is not too effective but the only option in the COVID-19 pandemic.

Only 33.3% of the students preferred digital conversion of classrooms which enabled better teaching and learning but a majority, 66.7% of the students do not think that online classes have facilitated their learning process [Figure 3].

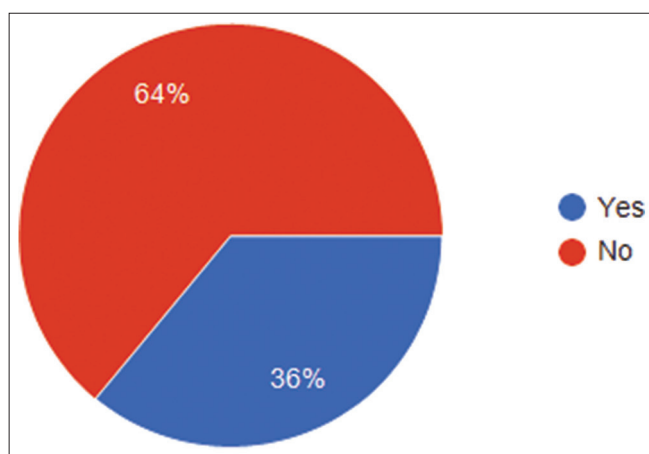


Figure 1: Has this e-learning concept changed/improved your concentration levels? (Pie-chart-1).

These findings were consistent with those of Mehta *et al.* who found that e-learning strategy enhanced the learning experience but it did not improve the subject knowledge of the students.^[15] A study by Lam *et al.* concluded that the initial response for online learning was very good with 90% of the students finding it innovative but gradually the enthusiasm of the students faded away.^[16]

Another 62.4% of the students found that use of technology and [Figure 4]. Audio-visual aids enhanced understanding of difficult concepts because of actual visualization of certain facts and this finding was consistent with a study carried out by Christensen.^[17] A study by Moazami *et al.* showed that virtual learning package is feasible and more effective in comparison with lecture-based learning.^[18] The results of studies carried out by Khee *et al.*, Kaurani *et al.*, and Cheng *et al.* were contradictory to the results of the present study which showed that students had a very positive attitude and perception toward online learning and believe that it can be the future in developing countries.^[19-21]

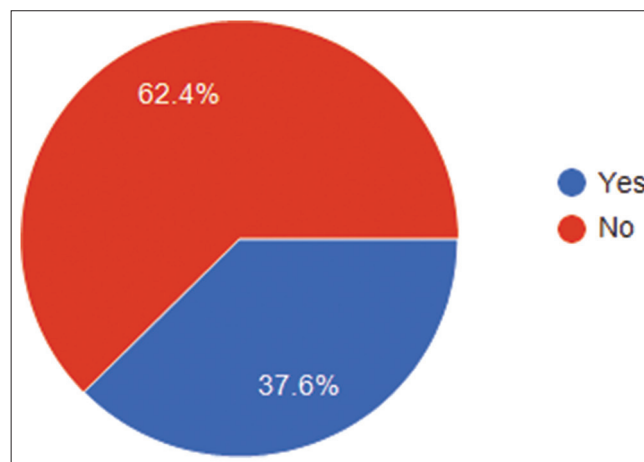


Figure 2: Do you think the online teaching has improved your ability to retain information better? (Pie chart 2).

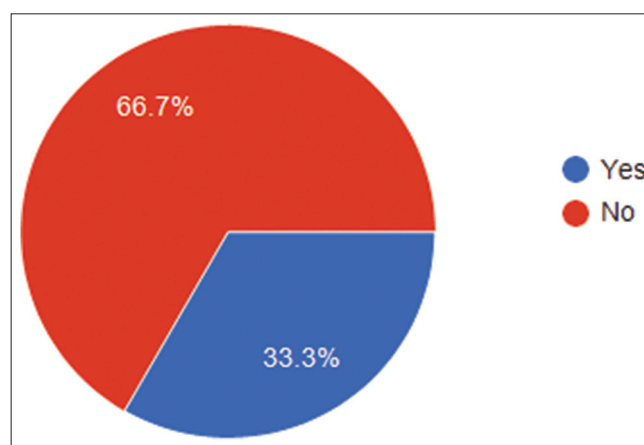


Figure 3: Does this digital conversion of classrooms because of the lockdown enable better teaching and learning? (Pie chart 3).

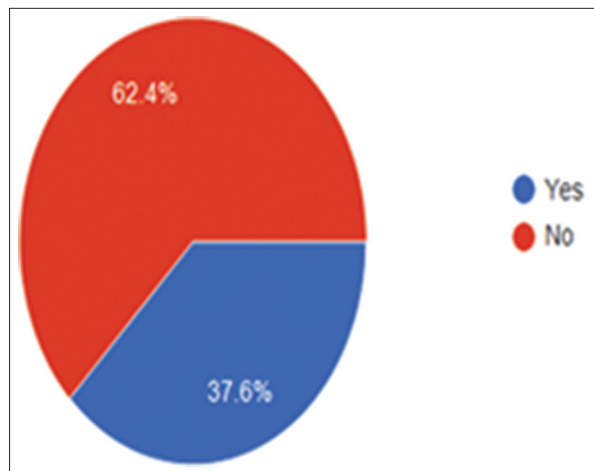


Figure 4: Do you think that the use of technology helps you in understanding concepts in a better way? (Pie chart 4).

Students realized that coming to college gave them a lot of positive energy, generated interest, provided a more focused environment to study and helped in improvement of their communication skills. Students felt that mentoring, personal attention, and face to face interaction by teachers improved their focus and concentration levels. These findings were also in accordance to a study by Allen and Seaman which showed that lack of motivation and interaction with teachers increased the dropout rate of students from 20% to 50%.^[22] However, a study by McCutcheon *et al.* showed that online learning improved communication skills among students.^[23] Studies by Yaghoubi *et al.* and Buzzetto showed that learners were more satisfied with their e-learning experience which offered them more choices, flexibility, and opportunities depending on the content, competency of the teachers, easy accessibility of internet, and appropriate devices.^[10,24]

Students' perception is that e-classes in home environment has helped them to be in touch with their studies theoretically, but they feel that dentistry is a more practical oriented profession and they are missing out on this opportunity to improve their clinical skills. A study by Thompson. showed that isolation is a barrier in distance learning and therefore, organizations are looking more and more to blended learning — a method of teaching that blends traditional classroom instruction with digital media.^[25-27]

Online learning requires both the teachers and learners to master and adapt to this skill and technique as it is systematic and simple, but students feel that it can only be an adjunct to the traditional delivery of learning materials.^[28] This finding is supported in a study by Yip and Barnes.^[29] Experts in the field of human psychology also warn that excess consumption of technology can adversely affect the cognitive skills which can lead to restlessness, impatience, anxiety, irritation, and self-image issues among the students. Increased use of screen time is also an important issue as it is leading to many health

problems, such as increasing eye strain causing headaches resulting in anxiety and depression.^[14,16]

CONCLUSION

Based on this study, it can be concluded that online learning is a befitting alternative in the present situation and it can be challenging to both teachers and students in these tough times but can be unitedly overcome by a dedicated effort. However, as the dental students are missing out on precious clinical training required for becoming good professionals whenever possible, a combination of traditional classroom and online learning can be an effective option for enhanced learning. For students who do not have proper access to technology, the government must advantageously use its extensive telecommunication network to provide common access platform to everyone who cannot afford communication gadgets and internet services.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

There are no conflicts of interest.

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