

E-learning in COVID 19 pandemic among dental undergraduate students

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Abstract

Introduction

E -learning has become a mandate during the COVID 19 pandemic in almost every school, colleges and universities around the world to prevent the spread of this disease and to return the world to a state of normalcy. While the advantages and disadvantages of this newly adopted system of learning has been well documented, its efficiency in imparting knowledge in fields

which require a more hands on approach to education (case in point, medicine, dentistry, etc) is yet to be explored. The aim of this study is to evaluate the dependence of E-learning in COVID 19 pandemic by dental students.

Materials and Methods

This survey was conducted among dental undergraduate students of a private dental college. A questionnaire was prepared which consisted of questions regarding knowledge of E-learning and it's dependency by students to substitute hands-on approach. The data gathered was then tabulated in Microsoft Excel and then imported to IBM SPSS Version 23 for statistical analysis.

Results

132 responses were included in the study. 40.2% were IIIrd years, 25% were Ist years, 18.9% were IInd years and 15.9% were IVth years. 42.4% said that their institute introduced E-learning within a week of announcement of lockdown. 71.2% used mobile phones and tablets to participate in E-learning. 65.2% said that they felt more comfortable studying in the comfort of their own houses and it enhanced their learning experiences. Back pain(52.3%), muscle soreness(38.6%), dizziness(27.3%) and watery eyes(22%) were the most common symptoms the students faced after their class work was done. 53.8% thought that E-learning shouldn't be adopted as a permanent method of imparting education in the near future.

Conclusion

The undergraduate dental students seem to be aware of E-learning and are greatly dependent on it to study during the pandemic.

Key words: pandemic, COVID 19, learning, education, innovative analysis

Introduction

Education helps in inculcating social responsibilities as well. The main core of education is to learn. Learning is a process of acquiring knowledge or skills through study, experience, or being taught. Any freak accident that happens in the world will always leave its impact on education.(1) This is very evident when the situation of education is seen during the outbreak of the Coronavirus where education centres have been shut down to prevent the congregation of people to prevent the spread of the virus. To cope up with the new restrictions, numerous methods have been adopted ,most of which come under the umbrella term which is E-learning or Online learning. Prior to the COVID-19 pandemic, E-learning was growing approximately 15.4% yearly in educational institutions around the world without uncertainties or pressure on those institutions or on students.(2,3). The pandemic has spiked that number up as all major universities rely heavily on online imparting of education as their primary source. Many countries have taken precautionary measures, including lockdowns of schools and universities, and switching to full E-learning mode during the spread of the Coronavirus, to avoid future expected waves(4). The advent of technology has made imparting education easier than ever

before and learning has entered the digital world. Besides, most of these systems are free which can help ensure continuous learning during this Coronavirus pandemic.(5)

There are a lot of medical ill effects of using virtual mediums for the purpose of studying. Social distancing and stay-at-home orders issued by the government, reduce the opportunities for physical activity among children, particularly for children in urban areas living in small apartments. Screen time is associated with weight gain in childhood, because of the dual issues of sedentary time and the association between screen time and snacking. (6) Mental health is also a variable to be looked at as during a pandemic, the course of action implemented by universities significantly affects the students mental health and wellbeing(7).

Although there are remarkable successes especially for higher learning institutions who already had well established online teaching and learning systems, it has been recognised that the shift from class-based to online learning has not been smooth for most universities and colleges(8). This brings in certain problems, especially in areas which are not economically developed enough to house gadgets and connections required to be a part of this online hub. A lot of criticism has been raised at the failure of E-learning in areas with an unstable internet connection or among the population which cannot afford the various devices used to access said connections. In the existing education system before the pandemic, online teaching was not a major form of education in schools and universities, therefore most of the teachers have no or minimal experience in online teaching.(9) Our team has extensive knowledge and research experience that has translate into high quality publications(10–18),(19),(20),(21,22),(23),(24),(25–29) Hence, the aim of the study is to observe the dependence of students on E learning during the COVID 19 pandemic.

Materials and methods

Study design:

The study design was a descriptive study

Study population:

The present study focussed on the dental undergraduate students of a private dental college. The sample size of the study was 132 participants.

Sampling methodology:

Convenience sampling methodology was used.

Data collection:

The primary quantitative data was obtained by self-administered questionnaire through an online survey method. The dental undergraduate students who filled the survey were included in the study. Ethical clearance was taken from the Scientific Review Board of the college. The questionnaire was made and distributed through Google Forms. The questionnaire was reviewed by an administrator. Incomplete forms were excluded from the study.

Statistical Analysis

The responses of the individuals were tabulated in Microsoft Excel and were later transported to IBM SPSS Version 23 for statistical analysis. Descriptive statistics were expressed by means of frequency and percentage. Chi- Square test was used to find the association between variables. The level of statistical significance is at $p < 0.05$.

RESULTS

132 responses were included in the study. 40.2% were IIIrd years, 25% were Ist years, 18.9% were IInd years and 15.9% were IVth years (Table 1). 42.4% said that their institute introduced E-learning within a week of announcement of lockdown. 71.2% felt that it was easy for them to access the facilities required for E-learning. 71.2% used mobile phones and tablets to participate in E-learning. 69.7% were hesitant to the idea of interacting with their professors through a virtual medium. 61.4% could find open and isolated spaces to engage in E-learning without getting disturbed. 35.6% spent between 8-10 hours and 24.6% spent pre than 10 hours in front of the screen everyday for academic purposes. Group assignments (34.8%) and viva voce (29.5%) were the most common types of activities which students partook in. 65.2% said that they felt more comfortable studying in the comfort of their own houses and it enhanced their learning experiences. 77.3% felt that the new system of learning had a negative impact on their physical health. 73.5% felt that the new system of learning had a negative impact on their negative health. 75.8% felt that the new system of learning had a negative impact on their social health. Back pain (52.3%), muscle soreness (38.6%), dizziness (27.3%) and watery eyes (22%) were the most common symptoms the students faced after their class work was done (Figure 4). 75.8% noticed these symptoms only after they started taking part in E-learning. 73.5% felt like E-learning was advantageous to study during a global pandemic. Finally, 53.8% thought that E-learning shouldn't be adopted as a permanent method of imparting education in the near future.

Age		
Ages	Frequency	Percentage
17	2	1.5%
18	11	8.3%
19	27	20.5%

20	27	20.5%
21	33	25%
22	18	13.6%
23	7	5.3%
24	7	5.3%
Year of study		
Year of study	Frequency	Percentage
Ist Year	23	25%
IInd Year	25	18.9%
IIIrd Year	53	40.2%
IVth Year	21	15.9%

Table 1: Table depicting the ages and the academic year of study the population of the study belonged to.

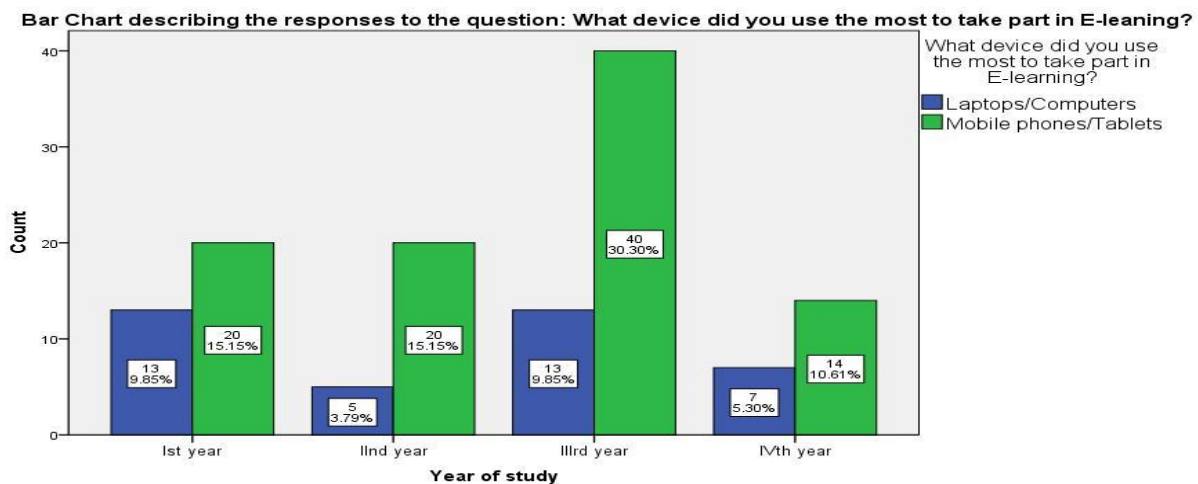


Figure 1: Bar graph depicting the responses to the question “What device did you use the most to partake in E-learning”. Y axis represents the number of responses and the X axis represents the academic year the students belonged to. Blue represents the respondents who chose the option

“laptops/computers” and green represents the respondents who chose the option “mobile phones/tablets”. Mobile phones/ tablets were most commonly used in e learning. P value was found to be 0.330 ($p > 0.05$), which is not statistically significant.

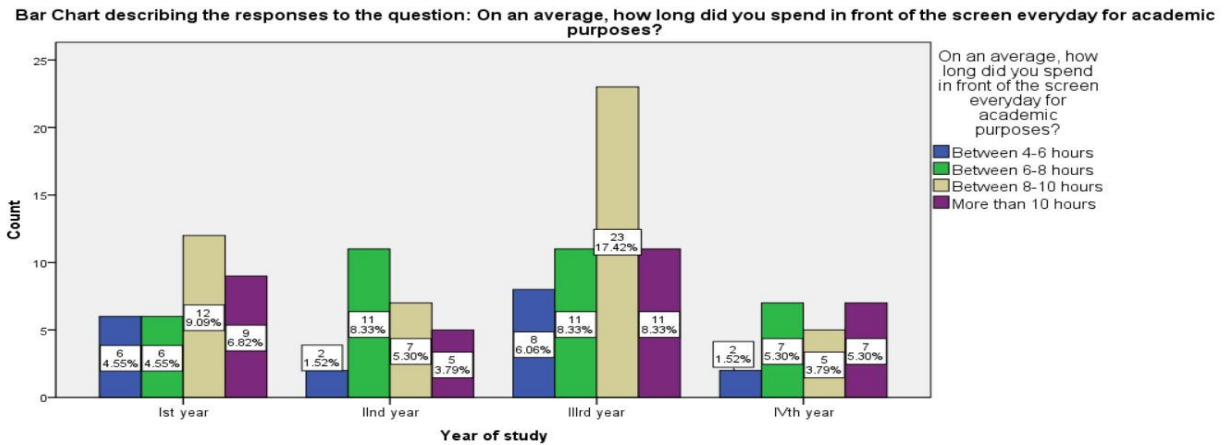


Figure 2: Bar graph depicting the responses to the question “On an average, how long did you spend in front of the screen everyday for academic purposes”. Y axis represents the number of responses and the X axis represents the academic year the students belonged to. Blue represents the respondents who chose the option “between 4-6 hours”, green represents the respondents who chose the option “between 4-6 hours”, beige represents the respondents who chose the option “between 8-10 hours” and violet represents the respondents who chose the option “more than 10 hours”. III yr students spend more time in front of the screen for academic purposes than students of other years. P value was found to be 0.381 ($p > 0.05$), which is not statistically significant.

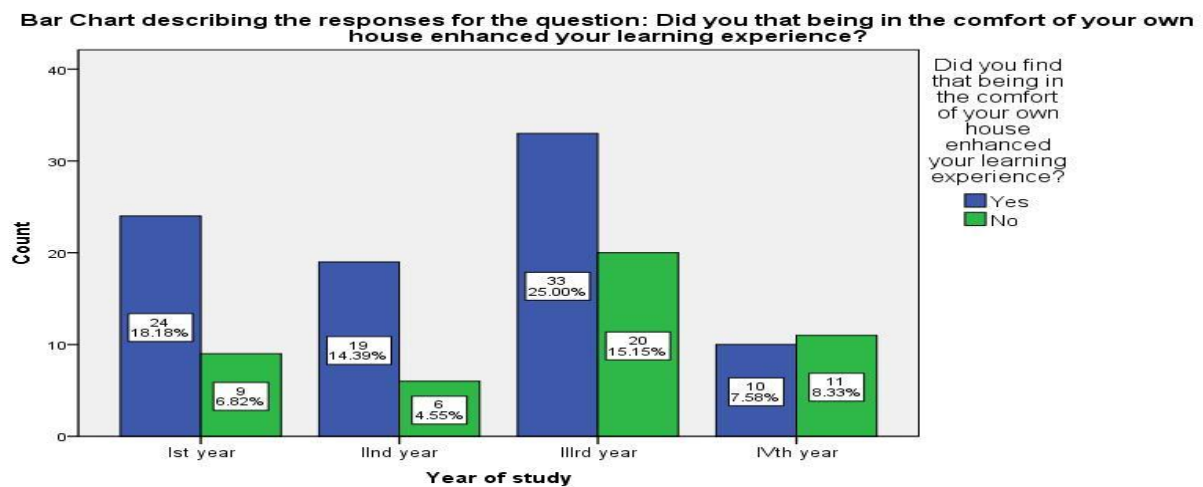


Figure 3: Bar graph depicting the responses to the question “Did you find that being in the comfort of your own house enhanced your learning experience”. Y axis represents the number of responses and the X axis represents the academic year the students belonged to. Blue represents

the respondents who chose the option “yes” and green represents the respondents who chose the option “no”. More number of I, II and III yr students reported that they had better learning in their home environment when compared with IV yr students. P value was found to be 0.160 ($p > 0.05$), which is not statistically significant.

Did you experience any of the symptoms listed below after you were done for the day?
132 responses

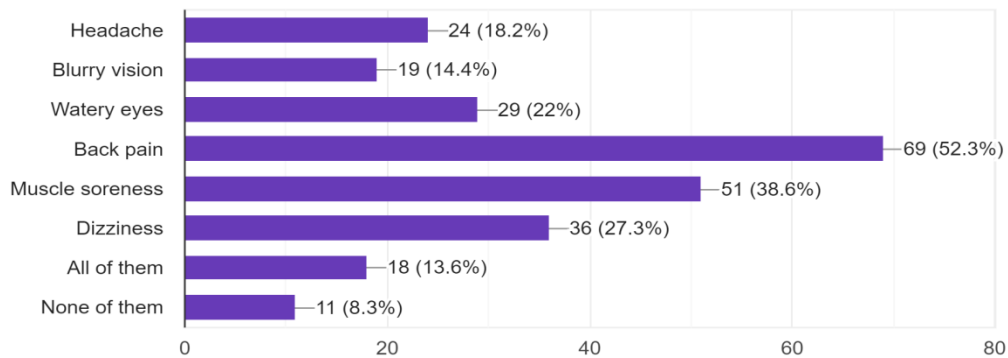


Figure 4: Bar graph which shows the collective response for the question “Did you experience any of the symptoms listed below after you were done for the day?”. X axis represents the number of responses and Y axis represents the different choices for the question. More than half of the study participants reported they experienced back pain.

Bar Chart describing the responses for the question: Do you think that E-learning should be adopted as a permanent method of imparting education in the near future?

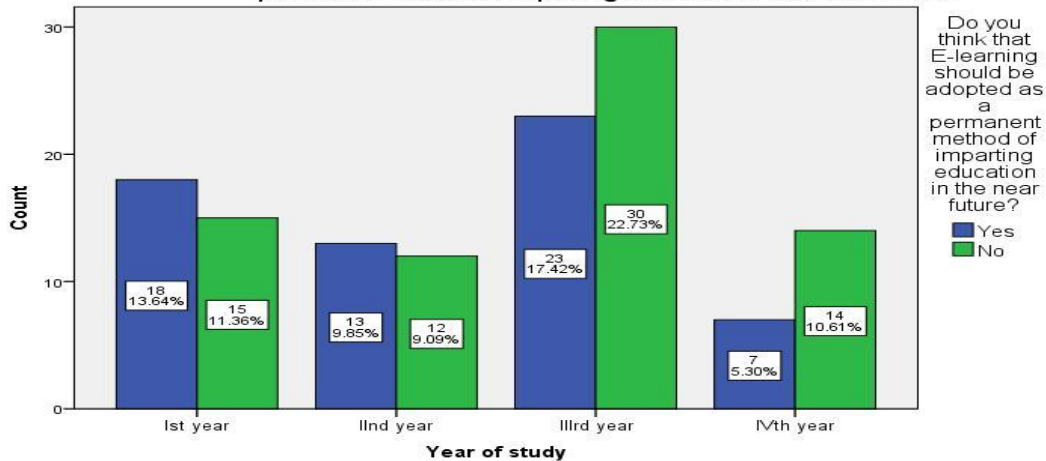


Figure 5: Bar graph depicting the responses to the question “Do you think that E-learning should be adopted as a permanent method of imparting education in the near future?”. Y axis represents the number of responses and the X axis represents the academic year the students belonged to. Blue represents the respondents who chose the option “yes” and green represents the respondents

who chose the option “no”. P value was found to be 0.419 ($p > 0.05$), which is not statistically significant.

Discussion

A study based in Nepal showed that access to facilities was one of the biggest drawbacks to E-learning. (30,31), where this study showed the opposite. Other studies like one done by Mobisha at al showed more than 60% had access to the facilities required for E-learning(32).

Another study done by Osuwu et al showed only 18.7% were able to focus on their studying when they were in their houses.(33). Another study listed the home environment as a disadvantage for students when it comes to concentrating in studies(34). In this study, students were rather more comfortable in their homes and felt that their learning experiences were enhanced. A study by Ramachandran et al showed the most common type of E learning used was Powerpoint with audio which was similar to what this study showed(35).

In this study, the students felt a significant dip in their physical, mental and social health, which was also the case in a study done by Surekha et al which showed an increase in obesity among students from long hours of studying in a sedentary lifestyle during the pandemic(36). Another study done by Kartika et al showed a negative effect of E-learning with self isolation on students where yoga was tested as a method of coping(37). Another study by Deepa et al also showed a direct correlation between mental health and E-learning(38).

In this study, students were not very excited with the idea of E-learning being a permanent form of importing education. This did not seem to be the case in the population of the study done by Ramachandran et al(35), Contrastingly, a study by Evangelin et al(39) agree with the findings of this study.

There is a lack of studies focussing on the opinions of students from different academic years on E-learning. When asked when did E-learning commence for the students, the majority of the responses among all the students of different academic years was that E-learning started within a week of the announcement of lockdown. Mobile phones or tablets were the most preferred device to use for E-learning. The only group where mobile phones or tablets were not vastly preferred over laptops or computers was the Ist year students where 39% preferred using laptops or computers for E-learning(Figure 1). When asked how long, on average, did the students spend in front of the screen everyday for academic purposes, there was a split between the number of hours in all the groups except the IIIrd years where 8-10 hours towered all the other options by being chosen by 43.3% of the IIIrd year students who responded to the questionnaire(Figure 2). Only the IVth years were split when they were asked if being in the comfort of their own homes enhanced their learning experience, where 52% said that they did not feel as though their learning experience was enhanced due to being in the comfort of their own homes(Figure 3). The most common symptoms faced by the students after a day of E-learning was over were back pain, muscle soreness and dizziness among the Ist year students, back pain among the IInd year

students, headache, blurry vision, watery eyes, back pain, muscle soreness and dizziness among the IIIrd year students and back pain and dizziness among the IVth year students. Finally, there was a split among the Ist year and IInd year students when asked whether they thought that E-learning should be adopted as a permanent method of imparting education in the near future where 54.5% of Ist years and 25% of IInd years were okay with the idea of E-learning being a permanent method of learning whereas the IIIrd years and the IVth years were not okay with E learning being a permanent method of imparting education(Figure 5). This could be because as seen in Figure 6, IIIrd years and IVth years had more physical symptoms after a day of E-learning was over.

Conclusion

It can be concluded that dental undergraduate students were knowledgeable on the concept of E-learning and they felt that this system of imparting education worked well in the time of a pandemic. While E-learning as a model seems like the future of education, it would only be true in a utopian society as there are a lot of issue which come with E-learning (like connectivity issues, knowledge of the softwares used and accessibility to the required facilities) which first need to be overcome in order to make E-learning available for everyone around the globe.

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