

Is e-learning a boon or a bane? A Cross Sectional Study among Undergraduate students in a Private Dental institution in Mangalore

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ABSTRACT

Background: The Black swan event of the “Corona virus 19” outbreak caused a dynamic shift in the mode of education in the medical and dental fraternity through the implementation of e-learning on a large scale. Though these processes keep student learning and welfare as their objective, are they acceptable to students? The study aims to assess the perceptions of undergraduate dental students regarding e-learning.

Methods: A Cross-sectional study design was employed involving all students pursuing Bachelor of Dental Surgery Program in the institution. The study was conducted using an online survey using a validated questionnaire consisting of 17 Closed ended questions. The data was analysed using ANOVA.

Results: 52.9-95.8% students found e-learning useful due to ease of access to missed classes and materials provided for revision. A minor percentage of students didn't find e-learning useful due to less faculty interaction and technical difficulties. Majority of students felt that traditional lectures were better than e-learning and hence wanted an amalgamation of the learning modalities.

Conclusion: Though e-learning was acceptable by the students, majority of the students were of the opinion that classroom learning was necessary for enhanced learning experiences. Integration of both the teaching methods can boost student learning tremendously.

Keywords

Dental Undergraduates, Education, E-learning, Virtual Learning

Introduction

The world has witnessed a drastic transition in the livelihood of people owing to the black swan event of the “corona virus 19” outbreak which was declared as a pandemic and as a global health emergency by the world health organization on January 30, 2020. This pandemic has affected people across nations, disrupting the health care systems and manifesting its ripple effects on all aspects of human life ranging from health, economy, education sector, social life, physical and mental wellbeing of an individual and community as a whole (Nicola et al., 2020).

In India, with an initial phase of lockdown measure implemented nationwide, in a pursuit of containing the disease spread and flattening the curve, the economic setback persuaded the government to initiate unlock down measures. However, the education sector stills remain closed. Indian system of education is majorly classroom based learning (Jena, 2020). Though technologically advanced, education systems vastly rely on imparting education through one to one learning, integrating e-learning only in a few aspects of teaching and learning. Medical education system is no different in this regard (Alsoufi et al., 2020).

In medical education, especially dental education the emphasis is primarily on imparting cognitive, affective and psychomotor skill sets to the students ensuring that their competency in the relative field is strong enough to face real life situations. This necessitates that the training imparted to the students is moderated at each and very micro aspect, as that defines their capabilities as a doctor in future. Hence medical and dental education has remained relatively

isolated from online or distance learning. However, the covid-19 pandemic has affected this fraternity too (Alsoufi et al., 2020). The students who were vastly exposed to classroom based learning are now being bombarded with a series of virtual classes or e-learning forums which are meant to increase their learning and hone their skill sets (Alzahrani et al., 2020).

The students are delivered online classes followed by assignments, viva and assessments which are all made a part of virtual learning process. This has caused a dynamic shift in the mode of education in the medical and dental fraternity (Alzahrani et al., 2020). The colleges and universities have implemented this virtual learning process to be at pace with the curriculum schedule and the timeline (Mishra et al., 2020). Though these processes keep student learning and welfare as their objective, are they acceptable to students? Do students actually perceive it to be effective in enhancing their skills and knowledge or is it just a matter of attendance? These diverse school of thoughts necessitates curriculum developers, academic universities, college administration, faculty and stakeholders to be aware of the student's perceptions regarding e-learning or virtual learning experiences in order to effectively implement this system during this demanding phase where education is being imparted virtually on a global basis due to the fear of the deadly pandemic.

Hence this study was conducted after implementing a complete online system of education for the students during the covid-19 phase. The study aims to assess the perceptions of undergraduate dental students regarding e-learning with an objective to assess if there was a difference in the perceptions of the students of all years regarding the e-learning process.

Methodology

The study was conducted employing a cross sectional design for a duration of 2 months during the period May-June 2020. Employing the total enumeration sampling technique all the students pursuing bachelor of dental surgery (BDS) program in the institution were included in the study. The ethical clearance for the study was obtained from the institutional ethical committee (ABSM/EC/4/2020). The study was conducted through an online survey using a validated questionnaire. The questionnaire was developed and tested for face and content validity by a team of 4 public health dentists and 2 undergraduate students. It consisted of 17 closed ended questions in English language. No names of the participants were recorded to ensure anonymity among participants and obtain unambiguous responses. Online consent was obtained from the participants. The students not providing consent or who failed to fill out the questionnaire even after repeated reminders were exempted from the study.

Data Analysis

The collected data was entered in Microsoft excel and analyzed using SPSS version 22 for descriptive and inferential statistics. The year wise difference in perceptions of students was analyzed using Anova followed by Tukey's post hoc analysis.

Results

Among the study participants 70 (23%) were 1st BDS students, 77 were (25.3%) 2nd BDS students, 86 (28.3%) were 3rd BDS students and 71 (23.4%) were 4th BDS students. Majority of the 1st, 3rd and 4th BDS students accessed the e-learning resources every day, whereas the 2nd

BDS students accessed it for 2-3 days/week. Mobile phone was the most used gadget for accessing the classes and resources. 90-95% of the 2nd 3rd and 4th BDS students found e-learning useful, whereas only 52.9% of the 1st BDS students found it useful and this difference of opinion among the students was statistically significant. Access to revision materials and missed classes at ease were thereasons quoted by most students for finding e-learning useful (Figure 1). However, less meaningful faculty interaction and technical issues were the reasons quoted for not finding e-learning useful. Students (51-65%) across all years, faced technical issues during online classes (Figure 2). 71.8%-75.3% of the 2nd, 3rd and 4th BDS students felt that e-learning enhanced student learning, whereas 48.6% of the 1st BDS students didn't feel that it enhanced learning, but this difference in opinion was not statistically significant (Table 1).

Table 1: Responses of students regarding e-learning process

Questions	Responses	1 st BDS	2 nd BDS	3 rd BDS	4 th BDS	P value
How often did you access e-resources	Once a week	0	9 (11.7)	0	1 (1.4)	0.062
	2-3 days/week	0	66 (85.7)	1 (1.2)	19 (26.8)	
	4-5 days/week	36 (51.4)	2 (2.6)	1 (1.2)	1 (1.4)	
	Every day	34 (48.6)	0	84 (97.7)	50 (70.4)	
How do you access the online class and resources	Mobile Phone	41 (58.6)	66 (85.7)	54 (62.8)	59 (83.1)	0.184
	Laptop	28 (40)	10 (13)	19 (22.1)	12 (16.9)	
	Tablet	1 (1.4)	1 (1.3)	0	0	
	PC	0	0	13 (15.1)	0	
Did you find e-learning useful?	Yes	37 (52.9)	70 (90.9)	80 (93)	68 (95.8)	0.000*
	No	33 (47.1)	7 (9.1)	6 (7.0)	3 (4.2)	
Face technical issues during online classes?	Yes	45 (64.3)	40 (51.9)	44 (51.2)	46 (64.8)	0.325
	No	16 (22.9)	25 (32.5)	20 (23.3)	5 (7.0)	
	Maybe	8 (11.4)	12 (15.6)	22 (25.6)	20 (28.2)	
	Don't Know	1 (1.4)	0	0	0	
Online evaluation useful in enhancing Student Learning?	Yes	31 (44.3)	58 (75.3)	62 (72.1)	51 (71.8)	0.476
	No	34 (48.6)	4 (5.2)	7 (8.1)	1 (1.4)	
	May be	4 (5.7)	14 (18.2)	17 (19.8)	18 (25.4)	
	Don't Know	1 (1.4)	1 (1.3)	0	1 (1.4)	
Online evaluation is unbiased and transparent?	Yes	30 (42.9)	61 (79.2)	60 (69.8)	49 (69.0)	0.000*
	No	17 (24.3)	3 (3.9)	7 (8.1)	1 (1.4)	
	May be	1 (1.4)	7 (9.1)	16 (18.6)	19 (26.8)	
	Don't Know	22 (31.4)	6 (7.8)	3 (3.5)	2 (2.8)	

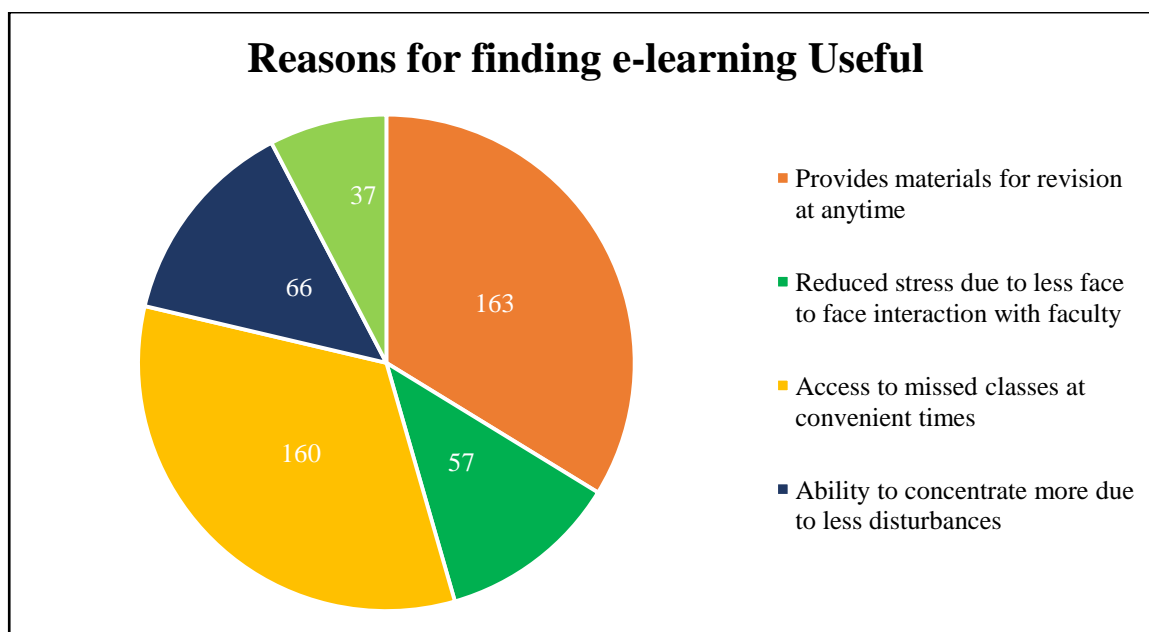


Figure 1:Reasons for finding e-learning Useful

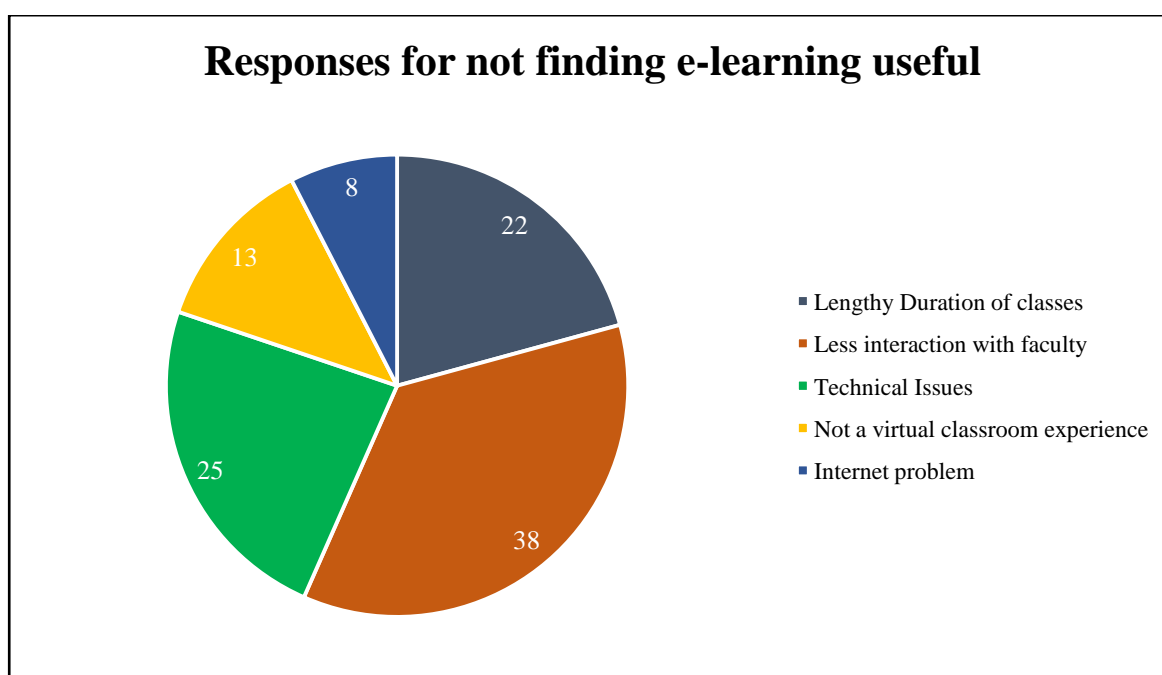


Figure 2:Reasons for not finding e-learning Useful

Table 2: Opinion of students regarding e-learning and Traditional lectures

Questions	Responses	1 st BDS	2 nd BDS	3 rd BDS	4 th BDS	P value
Traditional lectures are better than virtual class room learning?	Yes	61 (87.1)	33 (42.9)	24 (27.9)	30 (42.3)	0.000*
	No	4 (5.7)	7 (9.1)	23 (26.7)	9 (12.7)	
	May be	3 (4.3)	28 (36.4)	24 (27.9)	29 (40.8)	
	Don't Know	2 (2.9)	9 (11.7)	15 (7.4)	3 (4.2)	
e-learning be imposed on students who are not technologically competent?	Yes	21 (30)	27 (35.1)	28 (32.6)	54 (76.1)	0.000*
	No	18 (25.7)	13 (16.9)	21 (24.4)	6 (8.5)	
	May be	6 (8.6)	20 (26)	26 (30.2)	5 (7.0)	
	Don't Know	25 (35.7)	17 (22.1)	11 (12.8)	6 (8.5)	
Duration of class/ subject that you would like to attend?	60 min	47 (67.1)	50 (64.9)	36 (41.9)	28 (39.4)	0.054
	45 min	2 (2.9)	19 (24.7)	34 (39.5)	40 (56.3)	
	30 min	21 (30)	7 (9.1)	13 (15.1)	3 (4.2)	
	<30 min	0	1 (1.3)	3 (3.5)	0	
Opinion about e-learning	Replace traditional education	2 (2.9)	17 (22.1)	18 (20.9)	30 (28.2)	0.000*
	Should be optional	18 (25.7)	13 (16.9)	12 (14)	23 (32.4)	
	Integrated with the traditional forms	50 (71.4)	47 (61)	56 (65.1)	28 (39.4)	

Discussions

The study intended to assess the perceptions of students regarding e-learning process that was implemented on a large scale in academics owing to the policy of Suspending classes without interrupting the learning process. The study was conducted among students of a dental college who had access to e-learning resources which was majorly for additional learning. During the lockdown period of the COVID-19 pandemic phase, the same forum was expanded and utilized for regular teaching and learning processes.

Dental education has from time immemorial followed the traditional system of education owing to the necessity of ingraining psychomotor skills which is necessary in imparting quality dental care to patients. Though online learning imparts knowledge base to the students, its limitation in enhancing the practical skill sets cannot be overlooked. Thus, even though the students were familiar with the process of e-learning mechanisms, a dynamic shift from classroom-based learning to e-learning was implemented, without assessing the perceptions of students regarding the same. Since the pandemic caused a phase wherein continuing online learning was a necessity till indefinable times, assessing the perceptions of students and knowing the drawbacks of e-learning was necessary to implement a better learning environment for the students. Thus, the present study was conducted to assess the student's perceptions regarding e-learning.

In the present study, majority of the students accessed e-learning resources every day. The study results are in consensus with the study by Asiry et al where 38.9% students accessed e- learning

resources every day (Asiry, 2017). In the present study, 58.3-83.1% students used mobile phones to access e-resources. In studies by Schlenz et al and Karimafshar et al, 69.8% and 70.4% students used laptops/ computers to access online resources (Karimafshar et al., 2019; Schlenz et al., 2020). This may be attributed to the fact that in the present era majority of the individuals possess smart phones. Thus it provides them the opportunity to access the classes at a go from any destination and at any point of time. In addition, with phone being a daily use gadget, the students would be familiar with its usage. However, use of mobile phones for a long time may strain the eyes and students may not be comfortable working on assignments through the mobile phones. Hence, the difference in preference of the gadgets could be seen in studies.

The current study showed that 52-98% students felt that e-learning was useful and that it enhanced student learning. However, 27.9-87.1% students preferred traditional teaching methods over e-learning. Similar results were found in a study by Schlenz et al where 36.8% of students preferred “face-to-face” courses instead of online teaching alone, but only 5.6% students stated that online learning was not useful to them (Schlenz et al., 2020). This may be attributed to the fact that the competencies acquired through traditional teaching may be compromised to a large extent in e-learning. Dentistry in specific requires the acquisition of practical skill sets. Thus, even though e-learning contributes significantly in knowledge acquaintance and learning, students preferred a traditional mode of teaching and learning.

In the present study 51.2-64.8% students faced internet issues while accessing e-learning resources. A similar study by Abbasi et al found that 40% of the students had interruptions in Internet connections which they felt was a drawback in E-learning (Abbasi et al., 2020). A study by Oki et al found that 24.1% students faced internet issues during online learning (Oki et al., 2020). A study by Kaczmarek et al outlined a few drawbacks of Online learning according to students like technical concepts, less engaging classes, difficulty in learning technical concepts and increased fatigue. In the present study, the major drawback suggested by the students was less interaction with faculty in online learning.

In our study, around 39.4-71.4% students felt that e-learning should be integrated with the traditional forms. The results are in par with a study by Asiry et al where 53.8% students disagreed to the fact that Online tutorials should replace traditional teaching (Asiry, 2017). Studies by Asiry et al and Abbasi et al have also shown that 70.4% and 46.1% students agreed that they preferred a combination of traditional and online tutorials (Abbasi et al., 2020; Schlenz et al., 2020). Sharka et al in a study have outlined the need for re-establishment and continuing the clinical dental training during this COVID-19 pandemic phase through an integrated undergraduate education curriculum (Sharka et al., 2020). Though, the students though have an affinity to online learning, its shortcomings in terms of learning technical and practical aspects could be a driving factor for students to prefer an amalgamation of traditional and online teaching forms.

Conclusion

With a paradigm shift in the current education system, owing to the COVID-19 pandemic, the dental fraternity which was relatively isolated from adopting e-learning techniques has instigated the process of e-learning in full bloom. Adapting to this change can be challenging to both students and faculty. Majority of the students felt that e-learning enhanced their learning and kept them engaged in this demanding situation. However, the students sought an integration of traditional teaching methods and online learning for a more competency driven learning environment. Thus there is a strong evidence base that a curriculum redesigning process is

necessary with an appropriate amalgamation between online and traditional teaching. The study may be a compelling evidence to stakeholders, curriculum developers and academicians in initiating changes in the dental curriculum, creating a blended learning curriculum by effectively combining traditional and e-learning modalities with a fundamental training session for the faculty to train them in implementing the modified curriculum and thus effectively enhancing the teaching learning process for the betterment of student learning in this competitive education realm.

Limitations and Future Studies

The study has certain limitations. The study was limited to a single institution and hence the sample size was small. Since it was an online questionnaire based study, the responses by the students may have been influenced by Social Desirability bias. Hence, prospective studies can be conducted including students from other universities which follow different modes of teaching and learning modalities to get an enhanced perspective of the perceptions of students.

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