

Attitudes and practices of use of e-learning among dental students during covid 19 pandemic – A cross sectional study

¹Aysha Sithara C, Junior Resident, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

²Vaishakh Nath P, Junior Resident, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

³T V Anupam Kumar, Professor & Head, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

⁴Jeeva PP, Associate Professor, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

⁵Rehna S, Junior Resident, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

⁶Krishna Priya P, Junior Resident, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India

Corresponding Author: Aysha Sithara C., Junior Resident, Department of Pediatric & Preventive Dentistry, Government dental college, Kottayam, Kerala, India.

Citation of this Article: Aysha Sithara C, Vaishakh Nath P, T V Anupam Kumar, Jeeva PP, Rehna S, Krishna Priya P, “Attitudes and practices of use of e-learning among dental students during covid 19 pandemic – A cross sectional study”, IJDSIR- February - 2022, Vol. – 5, Issue - 1, P. No. 378 – 384.

Copyright: © 2022, Aysha Sithara C., et al. This is an open access journal and article distributed under the terms of the creative commons attribution noncommercial License. Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: In the wake of COVID 19 outbreak, as a part of physical distancing measures the educational patterns shifted from face –face learning to online base learning in dental colleges.

Aim: The study aimed to evaluate attitude and practices of use of e-learning among dental students during the covid 19 pandemic.

Materials and methods: An online structured survey composed 7 questions on attitudes and 14 questions on practices of use of e learning during COVID 19 pandemic were sent to all undergraduates and post graduates of dental students in Kerala. The attitude and practice domains were assessed. Data were analyzed with independent sample t-test and Chi-square test (P < 0.05).

Results: Total 304 dental students, with 42.4% males and 57.6% females were participated in the study. 54.9 % were undergraduates and 37.2% were post graduate dental students. Postgraduates showed a higher level of attitude (23.72 ± 5.10) compared to undergraduate (20.89 ± 4.71), $p < 0.05$ regarding the use of e-learning in COVID 19 pandemic. A statistically significant was found in practices of e learning among dental students in terms of frequency, timings, usage of e-learning in their education.

Conclusion: Overall average attitude were reported by the dental students regarding the attitudes of use of e-learning and post graduates demonstrated a significantly higher attitude than undergraduates. The students viewed online learning helpful as a supplement to their learning rather than a replacement for traditional teaching methods.

Keywords: COVID 19, E-learning, Face-face learning, Pandemic, Postgraduates, Undergraduates

Introduction

The spread of the coronavirus disease 2019 (COVID-19) caused by SARS-CoV 2 across the globe has led to profound changes in all aspects of human life including healthcare facilities, business opportunities, transportation and traveling, and social structure.[1] The upsurge of this dangerous situation has forced educational institutions to shut down to control the spread of this virus. This happening made the teaching professionals think of alternative methods of teaching during this lockdown. And thus, it lead the way towards web-based learning or e-learning or online learning.

E-learning is the use of information technology to facilitate and improve students' learning ability [2]. It also provides the opportunity for lifelong learning, regardless of time or location constraints [3]. E-learning is flexible and convenient for students; they can

frequently access electronic materials wherever and whenever they want until they feel satisfied and got a feeling that they have understood the material [4, 5]. Moreover, it simplifies the studying and reviewing of materials that may improve a student's performance [6, 7]. E-learning tools are playing a pivotal role during this pandemic, it aims to help instructors, schools, and universities and facilitate student learning during periods of universities and schools' closure. Also, most of these systems are free which can help ensure continuous learning during this Coronavirus pandemic. [8] Studies on e-learning have suggested multiple benefits including interaction between the teacher and learner with increased flexibility and versatility. E-learning sessions can be arranged at any day, place and time, and can reach a large audience irrespective of their location. The success of any information system depends on the operation of the system by users.[9] So, in the context of e-learning during pandemic student's ubiquity and acceptance of the e-learning system should be considered. The students and teachers both face problems when studying and teaching at home. The teaching and learning process in dentistry is diverse, a major part of which involves learning of clinical and technical skills in the clinics and laboratories. It is critical in these times of the COVID 19 pandemic to assess how E-learning among dental students is used as a sole way of teaching and instruction which compares to clinic or laboratory-based learning.

In addition, it also determines how the trend of E-learning influences attitudes and practices among students for the development of future dental professionals. Students' appraisal of the tools and value of online learning and evaluation of their attitudes are important factors that are essential to judge the success of any online learning

system.[10] Therefore, this study was aimed to evaluate, attitude and practices of use of e- learning among dental students during COVID 19 pandemic.

Materials and methods

The study population consisted of 304 dental students including undergraduates and postgraduate students of dental colleges in Kerala. The study was presented in the form of online questionnaire form, which included items designed to evaluate attitude and practice of use of e - learning among dental students during COVID 19 pandemic. The questions were grouped into two different categories as follows:

- a) Attitude of the dental students toward the use of e - learning consist of seven questions
- b) Fourteen questions measured the practices of use e - learning being followed by the dental students themselves

The questionnaire was uploaded on Google forms (docs.google.com.) and the link to the survey was sent to different dental students through emails and social media platforms (WhatsApp). Participation was voluntary with an online informed consent. Demographic information was obtained including age, gender, course and year of the study. The data were collected during a period of 3 months. The data obtained was tabulated using statistical program for social sciences (SPSS, IBM version 25) for statistical analysis. The chi square test and independent sample t test were applied to find statistical difference of attitude and practice domains of the study. The level of significance was set to $P < 0.05$

Results

A total of 304 dental students from various dental colleges in Kerala participated in the study. Out of which, 129(42.4%) were males and 175(58%) were females. Regarding the level of education, 63% were

under graduates and 37% were postgraduates [figure 1, Figure 2]

Attitude domain

Out of 304 study population, 31.9% of dental students have high attitude whereas 37.5% and 30.6% of dental students have average attitudes and low attitude towards the use of e-learning in COVID 19 pandemic respectively [Figure 3].

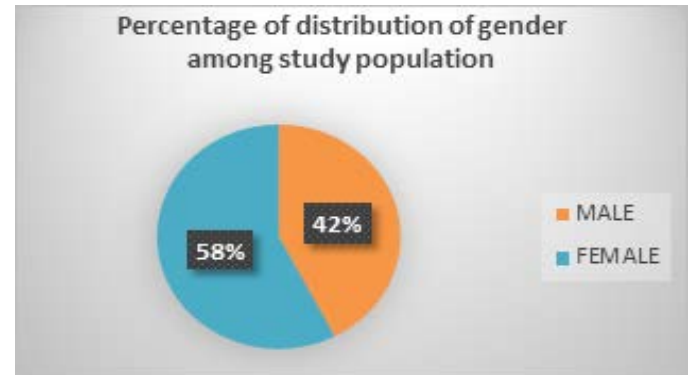


Figure 1: Gender wise distribution in study population.

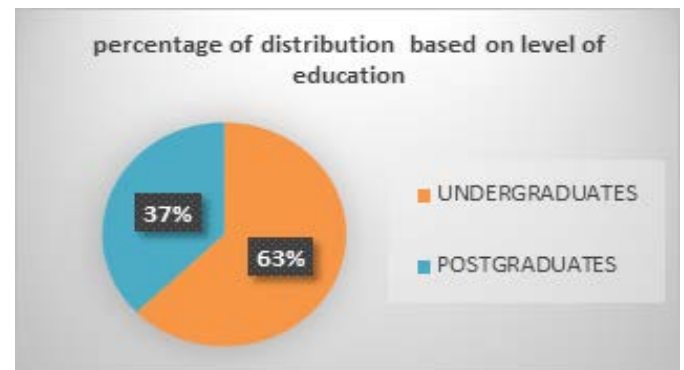


Figure 2: level of education wise distribution in study population.

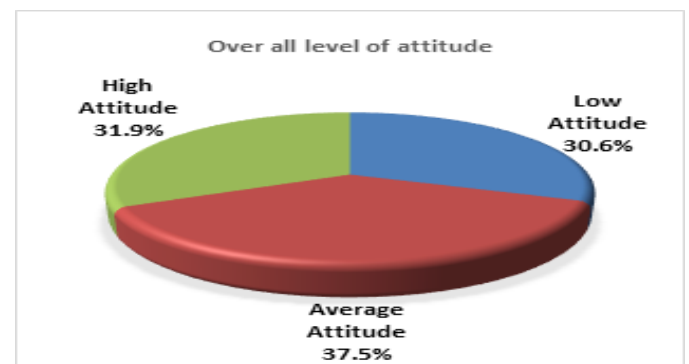


Figure 3: overall level of attitude of the study population.

When the undergraduate dental students were considered, 21.5% had high attitude, 40.8% were having average attitude and 37.7% had low attitude and when postgraduate dental students were considered, 49.6% had high attitude, 31.9% were having average attitude and 18.6% had low attitude regarding the use of e-learning process during the pandemic outbreak. [Table 1] [Figure 4]

Qualification		LEVEL OF ATTITUDE			Total	p value
		Low Attitude	Average Attitude	High Attitude		
Undergraduates	Count	72	78	41	191	.000
	%	37.7%	40.8%	21.5%	100.0%	
Postgraduates	Count	21	36	56	113	
	%	18.6%	31.9%	49.6%	100.0%	
Total	Count	93	114	97	304	
	%	30.6%	37.5%	31.9%	100.0%	

Table 1: level of attitude based on qualification.

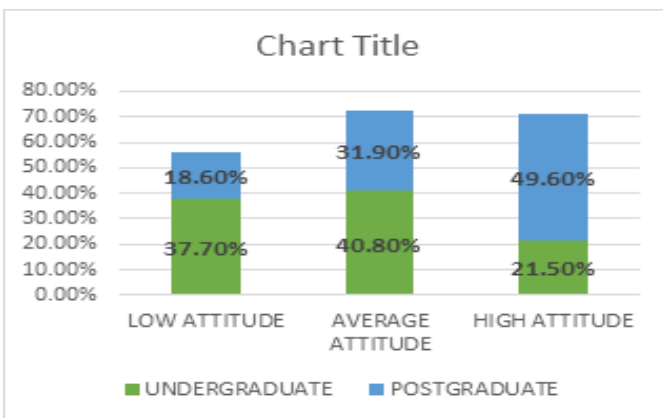


Figure 4: level of attitude based on qualification.

Among the study participants of dental students, postgraduates showed a higher level of attitude compared to undergraduate regarding in the use of e-learning during in COVID 19 pandemic time. (20.89±4.71), (p<0.05) (Table 3).

	Qualification	N	Mean	Std. Deviation	t	P Value*
Attitude	Undergraduates	191	20.8953	4.71945	4.90	.000*
	Postgraduates	113	23.7257	5.10470		

Table 2: Attitude difference between undergraduates and post graduates

Practice domain

The result in [Table 3] shows a significant difference (p<0.05) in the following practice aspects: About 44.0% of undergraduate and 54.9% of postgraduate dental students had rarely used e-learning before the outbreak of COVID19 pandemic.

26.7% of undergraduates and 41.6% of postgraduates are using E-learning media to educate patient about protocols to follow before arrival at a dental clinic during COVID 19 time. 49.2% of undergraduate spend more than 2 hours for e-learning process where as 40.7% of postgraduate dental students spend only 1 hour in a day for e-learning process. 63.9% of undergraduates and 50.4% of postgraduates are attending twice a week of e learning classes from their colleges. 69.1% of undergraduates and 64.6% of postgraduates preferred 1 hour appropriately for their each e-learning session.

Some of the practice parameters accessed were not found to be statistically significant such as e learning media, devices, internet access, operating skills, purpose, frequency of use in profession, personnel websites, session time and internet connection problems.

		Academic purpose	Patient communication	Total	p value			
What do you use E- learning for ?	Undergraduates	Count 173	18	191	.187			
		% 90.6%	9.4%	100.0%				
	Postgraduates	Count 104	9	113				
		% 92.0%	8.0%	100.0%				
How often do you use E- learning in your profession?	Undergraduates	Count 104	20	67	191	.381		
		% 54.5%	10.5%	35.1%	100.0%			
	Postgraduates	Count 68	14	31	113			
		% 60.2%	12.4%	27.4%	100.0%			
			Frequently	Never	Seldom		Total	p value *
	Do you have your own established online personnel practice forum or website?	Undergraduates	Count 166	25	191		.025*	
		% 86.9%	13.1%	100.0%				
Postgraduates		Count 87	26	113				
		% 77.0%	23.0%	100.0%				
		Not at all	Rarely	Regularly	Total	p value		
Did you practice E- learning for study purposes before covid 19 pandemic ?	Undergraduates	Count 0	79	84	28	191	.002*	
		% 0.0%	41.4%	44.0%	14.7%	100.0%		
	Postgraduates	Count 1	24	62	26	113		
		% 0.9%	21.2%	54.9%	23.0%	100.0%		

		Disagree		Agree		Strongly Agree		Total		p value		
I have a daily internet access.	Undergraduates	Count	8	123		59	190			.541		
		%	4.2%	64.7%		31.1%	100.0%					
	Postgraduates	Count	6	66		41	113					
		%	5.3%	58.4%		36.3%	100.0%					
I know how to open, modify and upload online documents	Undergraduates	Count	20	124		46	190			.322		
		%	10.5%	65.3%		24.2%	100.0%					
	Postgraduates	Count	10	66		36	112					
		%	8.9%	58.9%		32.1%	100.0%					
Which E-learning media do you use for communication?	Undergraduates	Count	4	77		13	44	53		.090		
		%	2.1%	40.3%		6.8%	23.0%	27.7%				
	Postgraduates	Count	9	47		11	21	25				
		%	8.0%	41.6%		9.7%	18.6%	22.1%				
			Desktop	Laptop	Mobile phone	Tablet	Total				p value	
	Which type of device do you mostly use for E-learning?	Undergraduates	Count	7	37		135	12	191			.080
			%	3.7%	19.4%		70.7%	6.3%	100.0%			
		Postgraduates	Count	3	23		70	17	113			
%			2.7%	20.4%		61.9%	15.0%	100.0%				
How much time do you spend on E-learning per day?	Graduation	Count	6	44		47	94	191		.013*		
		%	3.1%	23.0%		24.6%	49.2%	100.0%				
	Post Graduation	Count	2	46		22	43	113				
		%	1.8%	40.7%		19.5%	38.1%	100.0%				
			1 day in a week	2 days in a week	more than 2 days in a week	More than 2 days in a week			p value*			
	What is the frequency of E-learning classes you are attending per week in your college	Graduation	Count	1	29		39	122	0		.016*	
%			0.5%	15.2%		20.4%	63.9%	0.0%				
Post Graduation		Count	0	34		21	57	1				
		%	0.0%	30.1%		18.6%	50.4%	0.9%				
Which time in a day you would prefer most appropriate for E-learning	Graduation	Count	0	30		119	42	191		.210		
		%	0.0%	15.7%		62.3%	22.0%	100.0%				
	Post Graduation	Count	1	15		80	17	113				
		%	0.9%	13.3%		70.8%	15.0%	100.0%				
			Even session	Morning session	Noon session				p value			
	How much screen time do you think will be appropriate for each E-learning session	Graduation	Count	1	132		47	11	191			.007*
%			0.5%	69.1%		24.6%	5.8%	100.0%				
Post Graduation		Count	0	73		20	20	113				
		%	0.0%	64.6%		17.7%	17.7%	100.0%				
Internet connection hinder your E-learning process	Graduation	Count	Agree	Disagree					.155			
		%	146	45		191						
	Post Graduation	Count	76.4%	23.6%		100.0%						
		%	90	23		113						
			79.6%	20.4%		100%						
			No	Yes						p value		
Are you using E-learning media to educate patient about protocols to follow before arrival at a dental clinic during COVID 19	Graduation	Count	140	51		191			.007*			
		%	73.3%	26.7%		100.0%						
	Post Graduation	Count	66	47		113						
		%	58.4%	41.6%		100.0%						

Table 3: Responses for the practice questions

Discussion

The COVID-19 outbreak is the main challenge facing the field of education today. It caused an interference in the primary method of face-to-face teaching. On the other hand, in the present situation, distance learning using electronic platforms proves to be the best way to deliver educational instruction and practical demonstrations which also avoids gathering of students. Therefore, lessening the chances of the disease spreading. Several dental colleges have now implemented and activated e-learning to continue teaching the basic, pre-clinical and clinical courses in order to overcome the ill effects of COVID-19 on

education system. This substantial change in dental teaching also requires evaluation to ensure successful implementation, effective use, and positive influences on learners. [11] The present study was aimed to determine attitudes and practices of dental students with regard to e-learning during the COVID-19 pandemic.

The result of current study result showed that, among the study participants of dental students, postgraduates showed a higher level of attitude compared to undergraduate students regarding the use of e-learning in COVID 19 pandemic which was in agreement with the study by Au drone et al [12]. The present study showed that most of students had the necessary computer skills and internet access. Majority of students also reported that exploring, finding, and uploading online documents were easy and comfortable which was in accordance with a study by Asiry et al [13]. About half of undergraduate and postgraduate dental students had rarely used e-learning before the outbreak of COVID 19 pandemic. In contrast to place-based learning in person, E-learning is dependent on accessibility and functionality of technological gadgets like Personal Computers, Laptops, Tablets and Smart phones. In our study also majority of the students had at least one smart device, mostly mobile phones (66.3%), that were used for their e-learning purposes. Usage and accessibility of mobile phones is easy in any situations. An interesting finding in the present study is that nearly half of the under graduates and post graduates students used Google meet plat form as their e learning media. This could be due to versatility, user friendly interface and security of such media, on the contrary in another study by Abbasia et al [14], zoom platform was preferred as their e-learning media over others. In the current study, a big fraction of undergraduates (90.6%) and post graduates (92.0%) used e learning only for their academic

purposes. This finding may be because of majority of study participants were undergraduates and their prime focus could have been attending theory classes than for patient communication. Regarding the e-learning session timings, 62.3% of undergraduates and 70.8% of postgraduates preferred morning sessions to attend the e-learning sessions, this can be related to students following their routine morning time theory classes when they were at their colleges before the pandemic. A greater part of participants in our study were attending e learning classes for twice in an week for around 1-2 hours in a day and most of the study participants preferred 1 hour as screen time appropriate for their each e-learning session. The best part of population in our study felt that internet connection hinders their e-learning sessions. This unexpected scenario, may be due to students domicile in various parts of Kerala under different geographical region, also when all the educational institutions were using the e learning medias frequently, a disturbance in internet connection would have hindered their e learning process.

Conclusion

The main advantages of the e-learning system were its usefulness as a tool for distance learning, efficiency in time management, reduction of education costs, and effective protection against COVID-19 transmission, flexibility and time saving, and making dental education less stressful. The study looks in to by overall average attitude among, the attitudes while using learning and demonstrates of significantly more positive attitude among postgraduates than undergraduate's dental students. Therefore, teachers should adopt strategies to improve their low attitudes by introducing more e-learning courses in lower classes and should encourage students to use the Internet in their education and communication with teachers and colleagues. The

students viewed e-learning very helpful and can be used as a supplement to their learning rather than a replacement for traditional teaching methods. Further studies are recommended to evaluate both subjective and objective outcome measures of online learning with consideration of other factors with more sample size that should be recognized in order to implement a successful online learning model for dental students.

References

1. Montemurro N. The emotional impact of COVID-19: From medical staff to common people. *Brain Behav Immun.* 2020 Jul; 87:23-24.
2. Tan PL, Hay DB, Whites E. Implementing e-learning in a radiological science course in dental education: a short-term longitudinal study. *J Dent Educ* 2009; 73(10): 1202-12.
3. Cobb SC. Internet continuing education for health care professionals: an integrative review. *J Contin Educ Health Prof* 2004; 24(3): 171-80
4. Walmsley AD, Lambe CS, Perryer DG, Hill KB. Podcasts--an adjunct to the teaching of dentistry. *Br Dent J* 2009; 206(3): 157-60.
5. Phillips JA, Schumacher C, Arif S. Time spent, workload, and student and faculty perceptions in blended learning environment. *Am J Pharm Educ* 2016; 80(6): 102.
6. Turkyilmaz I, Hariri NH, Jahangiri L. Student's perception of the impact of e-learning on dental education. *J Contemp Dent Pract* 2019; 20(5): 616-21.
7. Miller CJ, Metz MJ. Can clinical scenario videos improve dental students' perceptions of the basic sciences and ability to apply content knowledge? *J Dent Educ* 2015; 79(12): 1452-60.
8. Subedi S, Nayaju S, Sweta S. Impact of E-learning during COVID-19 Pandemic among Nursing Students

and Teachers of Nepal. IJSHR;2020;5(3); 2455-7587

9. Almaiah MA. Acceptance and usage of a mobile information system services in University of Jordan. Educ Inf Technol. 2018; 23:1873–95

10. Kimon Pahinis, Christopher W. Stokes, Trevor F. Walsh, Giuseppe Cannavina Evaluating a blended-learning course taught to different groups of learners in a dental school J. Dent. Educ., 71 (2007), pp. 269-278

11. Ehab Azab Attitudes, Barriers, and Experiences Regarding E-Learning and Dental Education during COVID-19 Pandemic Ehab Azab, * and Khalid Aboalshamat

12. Dumčienė, Audronė, Tomas Saulius, and Audrius Čapskas. "University students' attitudes towards e-learning." Baltic journal of sport and health sciences 1.100 (2016).

13. Dental students' perceptions of an online learning Moshabab A. Asiry Division of Orthodontics, Department of Pediatric Dentistry and Orthodontics, College of Dentistry, King Saud University, Building No 3500, Riyadh 12372-7051, Saudi Arabia

14. E-Learning perception and satisfaction among health sciences students amid the COVID-19 pandemic 1 2 3 Maria S. Abbasia, Naseer Ahmeda, Batool Sajjadb, Abdullah Alshahraniid, Sumera Saeedd, Shaur Sarfaraze, Rana S. Alhamdanf, Fahim Vohrac, * and Tariq Ab.