Perception for Online Learning among Undergraduate and Postgraduate Dental Students during COVID-19 Pandemic.

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Abstract

Objective: Digitalization has entered each and every field of our life. It has changed the way we deal with our surroundings. We have overcome various hurdles and difficulties which otherwise was a challenge for us to reach the desired goal easily. Dentistry and dental education is not exceptional for this. So the present study was conducted to know the perception for online learning among undergraduate and postgraduate dental students in Kingdom of Saudi Arabia during COVID-19 pandemic. **Methods:** A cross-sectional survey was conducted among a sample of 200 undergraduate and postgraduate dental students using a self-administered questionnaire in Saudi Arabia. The questionnaire was distributed to a sample of 200 undergraduate and postgraduate dental students. A validated structured and open questionnaire comprised of 15 items on perceptions. Data was analyzed using the SPSS IBM software version 21. **Results:** The majority reported that it was easy to access the site and to find their way around the course. Around half of the participants preferred combination (Traditional lectures & Web CT) type of teaching method. Most of the participants reported that online course is timesaving and online course like this will help with revision for exams. Majority reported they would email tutor if they need help and online classes have been helpful. **Conclusion:** Both undergraduate and postgraduate students' perception regarding the online learning is positive. With the improvement in the Internet access and existing computer skill of the students, online learning is definitely going to be the future mode of teaching-learning platform.

Keywords: COVID-19; Dental student; Perception; Online learning

Introduction

Medical education is evolved from what it was purely traditional lecture-based learning to present web-based learning, virtual classrooms, blended learning, and flipped classrooms. Traditional faculty classes to students focusing on delivery of contents have given a chance for the students to understand the topic easily without much speculation. Change is inevitable, along with the changes there are several challenges we need to face for smooth delivering of the subject. Online learning over a decade has changed the face of teaching and learning with several advantages and disadvantages. In dentistry, online learning or e-learning has been adapted as it was done in any other healthcare specialties. [1]

Online learning has become important in the year 2020 with sudden outburst of pandemic situation of COVID-19. Social distancing and avoiding large gathering has become the daily rule, where in which traditional classroom teaching is considered to be a room for the spread of infection. With curfew orders and other measures to curb the pandemic spread, online teaching has taken a driver seat in delivering the content directly to students' home or residence. Many and all of the university has adapted to this already existing but barely used learning strategy. At this wake hour of contagious disease, there was hardly any space or time to learn in detail about this mode of delivery, where

students and faculty required adapting quickly to this new mode and the process of learning is expected to go on.

Thus, recently this new online learning mode has been gaining popularity as a successful teaching style. This has been and will remain as a recognized method for delivering educational material. What matters for the students are about the online learning mode of teaching? It has advantage of allowing students to select the time, place, and pace of study. It enables students to find solutions to problems or generate new knowledge in the process of problem solving. [2] Moreover, it saves time and costs, enables students to learn from anywhere at any time, overcomes faculty shortage, etc. Hence, most of the higher educational institutions have recognized online learning as an essential part of their educational plan. [3]

Any newer method of teaching and learning do come with its own challenges and opportunities. One has to bear in mind that, the success of using online learning depends on the ease of access for students and teachers, student's satisfaction,

availability of different online tools, teacher's expertise in online teaching, student's readiness to learn online, and quality of online contents and design. [4]

With the present scenario of learning, it appears that online teaching will longer remain optional. However, challenges will always surface as we implement and adapt to this new mode. [5] In dental education, there is a significant increase in the use of computers. [6] Education has shifted away from the hard medium to online because of increased internet speed, accessibility, and connectivity. [7] The main disadvantages of online learning are technical issues and student isolation. Although self-directed learners are successful in online learning, few students miss the interaction in a regular classroom. [8]

Compared to any other graduate or postgraduate teaching strategies, health professional students differ in their way of learning their subjects. Health profession students need to integrate theoretical and clinical knowledge to be a competent health professional. [9] One-to-one supervision and hands-on training are challenges for online curricula. In this context, health profession education including dental education demands high-quality educational methods. Though many of the Universities all over the world are slowly adapting to implement this, a complete makeover and implementing every preclinical and clinical aspect still remains a great challenge and opportunity to improve.

The Kingdom of Saudi Arabia (KSA) too is not remaining behind in this strategy and improving its educational goals with bigger steps to encounter the challenges. Further, present scenario has made all the schools, colleges, and Universities to implement the same with the highest order of importance to escalate the new mode of learning. During this challenging hour, each faculty and student involvement in upgrading and updating the knowledge about this new method is essential by giving feedback and simulating and learning from the other available sources.

Thus, the present study is an attempt to find out the perceptions for online learning among undergraduate and postgraduate dental students in Saudi Arabia during COVID-19 pandemic. This will help to develop and incorporate a more sustainable, long–term teaching method which will benefit the students to gain better experience and satisfaction towards the process of gaining knowledge through this method of online learning.

Materials and Methods

Study design and setting

A cross-sectional survey using a self-administered questionnaire was conducted in Riyadh Elm University and King Saud University in Riyadh; Imam Abulrahman Bin Faisal University in Dammam; and King Abdul-Aziz University in Jeddah, KSA. The questionnaire was distributed to a sample of 200 undergraduate and postgraduate dental students. The questionnaire was completed by the respondents in an electronic format or through an online link.

Instrument, measures, and data collection

A validated structured and open questionnaire comprised of

15 items on perceptions. Fifteen of the structured questions allowed only one answer and one open question. The questionnaires consist of two parts: Part I: demographic details of the participants (Age, Gender, University, and Academic level); Part II: questions relating to their perceived ICT skills, the course, and their perceptions of online learning. In response to each statement, the following scoring for Likert scale was used: strongly agree (5), agree (4), uncertain (3), disagree (2), and strongly disagree (1). The study obtained the approval by the ethics committee at the College of Dentistry, Riyadh Elm University. Participation was anonymous. Confidentiality and anonymity were assured.

Statistical analysis

Data was analyzed using SPSS IBM version 21 (IBM SPSS Statistics for Windows, Version 21.0, IBM Corp: Armonk, NY). Descriptive statistics were performed, frequencies and proportions was reported. Pearson Chi Square test was used to determine the association between perceptions and education level and Mann Whitney U test was used for comparison of perception scores with education level. A p value of ≤ 0.05 was considered statistically significant.

Results

Of the 200 respondents, 52% were females and 53.5% were undergraduate students. The distribution of the participants by University is shown in Table 1. Overall mean ± standard deviation age of the participants was 26.9 ± 5.7 years, mean ± standard deviation age of the undergraduate and postgraduate were 23.5 ± 1.8 and 31.0 ± 6.0 years respectively. As only six participants added open comments to the questionnaire, themes could not be generated for qualitative analysis. All the participants reported having internet access at home. Approximately half the participants reported intermediate level of computer expertise (51.5%) and ADSL modem/access speed at home (48.0%). The majority reported that it was easy to access the site (89.5%) and also easy to find their way around the course (74.5%). Around half of the participants preferred combination (Traditional lectures & Web CT) type of teaching method (49.5%). Most of the participants reported that online course is timesaving (80.0%) and online course like this will help with revision for exams (69.5%). Majority reported they would email tutor (63.3%) if they need help and 70.5% reported that online classes have been helpful [Table 2].

The majority of the participants agree that online lectures were helpful to their learning (83.0%), they feel comfortable exploring online tutorials (76.5%), and they access the internet daily or weekly to check course announcements and online tutorials

Table 1: Demographics.			
		n	%
Gender	Male	96	48.0
	Female	104	52.0
Education level	Undergraduate	107	53.5
	Postgraduate	93	46.5
University	Riyadh Elm	55	28.2
	King Saud	52	26.7
	King Abdulaziz	43	22.1
	Imam Abdulrahman Bin Faisal	45	23.1

Table 2: Perceptions.		n	%
	Basic	48	24.0
What is your level of computer expertise?	Intermediate	103	51.5
	Advanced	49	24.5
Do you have internet access at home?	Yes	200	100.0
	No	0	0.0
	28 Kbps	8	4.0
	33 Kbps	6	3.0
If you have internet access at home, what is your modem/access	56 Kbps	11	5.5
speed?	ISDN	9	4.5
	ADSL	96	48.0
	Other	70	35.0
	Very easy	87	43.5
	Easy	92	46.0
How easy was it to access the site?	Satisfactory	21	10.5
	Difficult	0	0.0
	Very difficult	0	0.0
	Very easy	67	33.5
	Easy	82	41.0
How easy was it to find your way around this course?	Satisfactory	51	25.5
	Difficult	0	0.0
	Very difficult	0	0.0
	Traditional lectures	47	23.5
Which type of teaching method do you prefer?	WebCT	54	27.0
	Combination	99	49.5
	Yes	160	80.0
Is this online course timesaving for you?	No	13	6.5
	Don't know	27	13.5
	Yes	139	69.5
Would an online course like this help with revision for exams?	No	19	9.5
	Don't know	42	21.0
	Email tutor	126	63.6
What do you do if you need help?	General question to Bulletin Board	43	21.7
	Go and see tutor	10	5.1
	Do nothing	19	9.6
	Very helpful	61	30.5
	Helpful	80	40.0
Overall how helpful has this online classroom been to you?	Satisfactory	50	25.0
	Unhelpful	2	1.0
	Very unhelpful	7	3.5
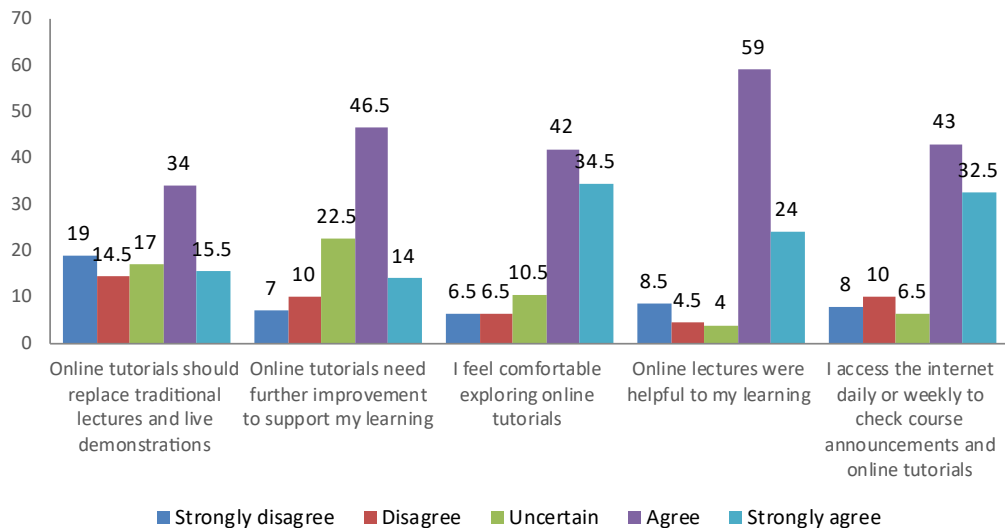
Figure 1: Perceptions.

(75.5%). However, 60.5% agree that online tutorials need further improvement to support their learning. Approximately half the participants agree that online tutorials should replace traditional lectures and live demonstrations (49.5%) [Figure 1].

Two-way cross-tabulation showed that undergraduates are more likely to have advanced level of computer expertise and to find their way around the course easily than postgraduates. On the other hand, postgraduates were more likely to agree that online

Table 3: Association between perceptions and education level.		UG %	PG %	p value
What is your level of computer expertise?	Basic	17.8	31.2	
	Intermediate	42.1	62.4	0.000*
	Advanced	40.2	6.5	
Do you have internet access at home?	Yes	100.0	0.0	-
	No	100.0	0.0	
If you have internet access at home, what is your modem/access speed?	28 Kbps	0.0	8.6	
	33 Kbps	2.8	3.2	
	56 Kbps	2.8	8.6	0.237
	ISDN	8.4	0.0	
	ADSL	53.3	41.9	
	Other	32.7	37.6	
How easy was it to access the site?	Very easy	43.9	43.0	
	Easy	41.1	51.6	
	Satisfactory	15.0	5.4	0.062
	Difficult	0.0	0.0	
	Very difficult	0.0	0.0	
How easy was it to find your way around this course?	Very easy	39.3	26.9	
	Easy	42.1	39.8	
	Satisfactory	18.7	33.3	0.038*
	Difficult	0.0	0.0	
	Very difficult	0.0	0.0	
Which type of teaching method do you prefer?	Traditional lectures	27.1	19.4	
	WebCT	23.4	31.2	0.302
	Combination	49.5	49.5	
Is this online course timesaving for you?	Yes	75.7	84.9	
	No	7.5	5.4	0.253
	Don't know	16.8	9.7	
Would an online course like this help with revision for exams?	Yes	61.7	78.5	
	No	8.4	10.8	0.004*
	Don't know	29.9	10.8	
What do you do if you need help?	Email tutor	57.1	71.0	
	General question to Bulletin Board	23.8	19.4	0.146
	Go and see tutor	5.7	4.3	
	Do nothing	13.3	5.4	
Overall how helpful has this online classroom been to you?	Very helpful	27.1	34.4	
	Helpful	40.2	39.8	
	Satisfactory	24.3	25.8	na
	Unhelpful	1.9	0.0	
	Very unhelpful	6.5	0.0	
* Statistically significant at p≤0.05; - Variable is constant; naCondition for Pearson Chi-Square test was not met				

Table 4: Comparison of perception score between education levels.			
Statement	UG Mean	PG Mean	p value
I access the internet daily or weekly to check course announcements and online tutorials	4.03	3.58	0.002*
Online lectures were helpful to my learning	3.90	3.81	0.134
I feel comfortable exploring online tutorials	4.07	3.74	0.001*
Online tutorials need further improvement to support my learning	3.41	3.61	0.255
Online tutorials should replace traditional lectures and live demonstrations	3.17	3.08	0.678
* Statistically significant at p≤0.05			

course like this will help with revision for exams. Furthermore, Pearson Chi-Square test showed these associations to be statistically significant (p<0.05) [Table 3].

Mann Whitney U test showed that the mean score of agreement of undergraduates are statistically significantly higher than postgraduate for the statements 'I access the internet daily or weekly to check course announcements and online tutorials' (p<0.05) and 'I feel comfortable exploring online tutorials' (p<0.05). This suggests that undergraduates agree more than postgraduates [Table 4].

Discussion

Online learning or e-learning platform has taken tremendous role of late, due to the present pandemic situation all over the world. Though the practice of online learning in different form was present for more than a decade, its full utilization is seen recently.

COVID-19 has changed the way of learning; where digital education is considered to be primary and most sought of and probably the only method available to communicate and render the knowledge. However, the requirement of online learning has come like a wave, with urgent need to learn to impart the same. There was hardly any space or room available to accommodate and implement it in a manner which is close to the traditional learning methods. In such a situation, it is necessary to access and take the feedback from the students to improve upon the delivery style which is optimum and suitable to the level of student satisfaction and faculties' self-satisfaction.

The present study conducted to compare among undergraduates and postgraduates to assess the perceptions and feedback regarding online learning. As per our knowledge this is the first study during COVID-19 to be conducted in KSA, which is done to assess about the online learning. This study is very appropriate at this hour of pandemic, because most and all of us are depending upon the online learning and it is an opportunity to improve. Thus, the present study challenge has taken in KSA. Study included both undergraduate and postgraduates which is unique. Till-date, most of the studies was reported only to a group of students who were undergoing a particular subject or particular group or particular year of study. [2,3,10]

There are no studies till now available which compared the perceptions and feedback of both undergraduates and postgraduates. The advantages of outcome of this study is that, results are useful for the faculty to plan the online learning in a different or individualized way as it required for the undergraduates and postgraduates. One of the other demographic characteristics of the present study is that equal participation of males and females and similarly undergraduates and postgraduates in the study. This is important in terms of how the gender factor shows the impact on the study and how the perception of undergraduates differs from the postgraduates can be studied with the least variables, since there is equal participation of these subjects.

Access to the Internet is improved widely. Most of the students are aware of the computers and handling online content. One of the requirements for good online learning mode is the need for

the ease of access and use of online tools. [11] Addition to these Song et al. also pointed out that, students need to have necessary computer skill and good quality of Internet to assess the online learning content. [12] Present study has shown that the students had good access to the Internet but moderate expertise towards the Internet skills. This result of the study is similar to the one reported earlier. Reynolds et al. found similar results with the improvement in the utilization for four years. Asiry et al. also found that online learning is useful and supplemental to the traditional learning. They also reported in their study that, most of the students were well versed with the computer skills and Internet access. Advantages seen using online learning was also positively reported in our study. It is considered as time-saving and useful during the revision of exams.

Online learning is a recognized method for delivering educational material and has the benefit of enabling students to choose the time, place, and pace of study. Learners access and interact with organized knowledge resources in demand-specific, virtual communities. [2] Most of the studies regarding the online learning reported that, online leaning along with traditional learning is preferred by the students. [3,13] Results of the present study are similar to the previous studies. The reasons for the demand of both traditional and online learning could be that, the students are still in the stage of transition and many of the dental procedures and other procedures may require a close contact and close supervision by the tutor or instructor. In our study, one of the interesting points is that, about half of the student felt that traditional approach to be completely replaced by the digital or online learning. Ren et al. reported that about 70% participant in their study leaned towards the use of digital technology. [10] Difference in the result with the present study may be due to purpose of the study.

Learning process may be influenced by many factors like, gender, learning environment, interest in the subject, content delivery, faculty interest, and how ease the faculty is making understand the subject. [14,15] Thus, if the students' feedback is negative regarding the online learning despite of the good Internet access, computer skill, and other factors, one has to look for the opportunity to improve by exploring the factors individually.

One of the unique characteristics of our study is that, we have compared undergraduate with postgraduate students. This is probably the first study which reported the comparison between these two academic groups. The results of our present study have shown that, undergraduates were very well expertise with the advance level of computer skill. It may be because the current generation of the students is more comfortably using digital gadgets than the previous generations. However, postgraduates felt that online learning is useful for revision during examination.

Despite an increase in the popularity and need to depend on the online learning portals in dental education, [1,16] a systematic review found that the evidence of whether replacing traditional approaches with technology-enhanced teaching can improve dental and medical students' clinical competence was still rudimentary. [17] However, one has to note that, the study design used by various studies under this systematic review and year

of publication is important to consider, since there is drastic difference between the Internet access and usage now and even five years ago. However, the result of this systematic review is an eye opener. It shows that there is a clear need for both improvements of implementation methods and data evaluations. A good exercise, content delivery, and steps to check before online delivery are a must to satisfy the need of the student. It is also important to share successful experiences such as in our study to influence the faculty and students to go adapt more and more online learning.

Conclusion

Within the limitation of the study the following conclusion can be drawn:

- Both undergraduate and postgraduate students' perception regarding the online learning is positive.

- With the improvement in the Internet access and existing computer skill of the students, online learning is definitely going to be the future mode of teaching-learning platform.

- Online tutorial has gained the popularity among students. However, to retain the same and improve it further to gain more acceptances are depends on the improvement incorporated by the faculty and technical team.

Competing Interests

The authors report no competing (commercial/academic) interests.

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