

## Attitude and Perception of Egyptian Undergraduate Dental Students to E-learning during COVID-19 at North-Sinai Egypt

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### Abstract

**Objective:** To identify the readiness, preference, and perception of undergraduate Egyptian dental students at north Sinai toward online learning.

**Background:** In the last academic year, the world faced the Covid-19 pandemic, which disrupts everyday life worldwide. Moreover, it affects and disturbs teaching in almost all the educational institutes and jeopardizes the academic calendar, suspending the traditional face-to-face classes to ensure students' safety, lecturers, and the patient to decrease the chance of the virus spreading. To minimize the impact of lockdown, dental schools had to find another method to teach their students. The advance of current technology enables

E-learning to be an alternative core teaching curriculum during this critical time. Most educational institutes have been forced to shift into online learning platforms to keep the academic activities going.

**Research Method:** A self-dependent online questionnaire includes nine statements administered to undergraduate dental students at Sinai University. A total of 594 give a complete response to this survey. The response of students to each statement was collected using the Likert scale.

**Results:** The results reveal a high agreement of students; 79.94% are familiar with online education. 54.51% and 28.67% replied that video-recorded classes and real-time video classes were helpful to their learning, respectively. Concerning students' learning preferences, 35.26% agree with e-learning, but they need to change a few things.

**Conclusion:** Overall, undergraduate dental students' attitudes were positive regarding online learning. The students looked at online learning helpful as blinded with face-to-face with more concern and enhanced the practical classes.

### **Keywords**

E-learning; Perception; Attitude; Dental students; Covid-19

## **Introduction**

During the last two year 2019/2020, the world faced one of the most dangerous global health crises due to the spread of the Covid-19 pandemic, which caused a lockdown all over the world. The world health organization "WHO" recommends certain precautions to minimize the spreading of the virus among the populations' quarantine; lockdown and social distancing are the only ways to slow down the Covid-19 spread by breaking the chain of transmission.

Educational institutes were suspended from their work at quarantine time to protect their students from viral exposure, which are likely to highly socialize student communities, thus giving rise to multiple challenges at all educational levels [1]. So, the educational institutes tend to face this massive challenge by using a learning management system for both teaching and assessment to provide a utilizable solution for educators and give policymakers a chance to implement information technology during the quarantine days covering the learning of student courses [2].

For continuing the educational process as well as minimizing the gaps that are going to result as a consequence of the circumstances; institutional administrators, doctors, and students making considerable efforts to optimally utilize the available technology in the learning process using distant technology [3,4]. The advances in World Wide Web have made information access and distribution of educational content available to a large population which helped to move into distant digital education (D.E) in many universities [5]. Despite the widespread use of online worldwide, it was limited use by various educational institutes in Egypt until the burst of Covid-19.

However, now most schools, colleges, and undergraduate medical and dental schools are moving towards E-learning due to the lockdown conditions. Appropriate measures to conduct effective E-learning via E-lectures, E-tutorials, E-case-based learning, various E-teaching software is to be explored by instructors to bring maximum benefits to their students, all of that to overcome and can continue education without getting affected during the quarantine period.

Distant learning seems to be based on various educators' perspectives. That may reflect each country's educational culture; it is known as learners and instructors are not being on an educational experience where instructors and learners are separated in time and space [6]. Online learning has different types, including synchronous activities where instructors and learners usually meet at online predetermined time sessions, including live streaming video and/ or audio. However, live video streaming where participants see each other is not considered face-to-face interaction because of the physical separation [7]. In asynchronous learning, the students have access to the course content through the internet whenever they want or need, while blended learning, effective integration between face-to-face classroom times with an online learning experience.

Massive online open course (MOOC), which offers distributed online courses that are available without cost to prominent participants and open schedule online courses, students work asynchronously with all the materials being supplied digitally. Although there are deadlines for the submission of assignments [8]. There are several advantages of e-learning over the traditional learning methods, such as self-paced study, regardless of gender, race, disability, or appearance. In addition to increasing the opportunities for life-long learning, time "learning anytime and anywhere," space flexibility, timesaving, reduction to cost, allow students to reflect on the learning course materials and their responses, convenience. Moreover, E-learning has epidemiological benefits of e-learning during the first and second waves of the Covid-19 pandemic.

However, online classes have certain limitations, such as internet access, low connection quality, and lack of digital user skills. Some difficulties may face the participant, like the student's sense of isolation, the struggle with staying motivated, lack of face-to-face interaction, difficulty getting immediate feedback, the demands to have reliable consent access to technology, and occasionally some difficulty to accreditation among the significant disadvantages of distant education [9].

The success of E-learning depends on several factors which include, accessibility, usage of appropriate methods, course content, evaluation, and assessment criteria. Most universities have shifted to online mode during the quarantine time using Blackboard, Microsoft Teams, Zoom, Moodle, Canvas, or other online platforms [10]. All the educational institutes must be prepared to shift the majority of their courses to e-learning platforms as online learning is here to stay. Modify the course structure, content, and curriculum suitability. No one knows about the length of this pandemic disease will stay and chances of reinfections; furthermore, social distancing becomes a new normal lifestyle.

The dentistry faculty's learning environment at Sinai University has not yet adopted a well-organized online learning structure and tools. Therefore, this study was conducted after implementing the first

online learning attempt within the undergraduate dental students to identify the readiness, knowledge, attitude, perception, and satisfaction of undergraduate dental students to move to online learning courses.

## Research Methods and Data Collection

The time scale of the present study was created from April 2020 to November 2021. Due to the quarantine resulting from the Covid-19 pandemic, the faculty decided to switch all traditional courses syllabus and implement online courses for the undergraduate students at the faculty of dentistry- Sinai university- Egypt. All the studied course lectures were uploaded on Moodle platform as videos (asynchronous), and synchronous predetermined sessions have been applied over the semester study period.

No personally identifiable information is captured; therefore, responses cannot be traced back to the respondents, and the data will be anonymous. There is no need for ethical approval to start the present research, as the survey was conducted only to ask students of the faculty of dentistry Sinai University non- sensitive questions strictly within their professional competence using surveys. Moreover, the collected data is not identifiable and used solely for this study.

The informed consent to participate was stated at the beginning of the survey, and the involved participants would give their consent to be part of the study. A cross-sectional descriptive study was conducted on the undergraduate students of the faculty of dentistry- Sinai University. The student population of approximately was five thousand and five hundred students, the undergraduate dental students about one thousand six hundred and fifty; estimate and calculate the sample size by using Suitable software, 743 participants completed the survey questionnaire.

A self-administered questionnaire will be developed through the literature search. It consists of nine statements to measure students' response toward the level of computer and internet use, advantages, disadvantages of e-learning, student interaction, and future learning preferences. How much E-teaching is better than traditional learning, the quality of e-learning is satisfactory, the impact of E-learning, their attitude, in addition to perceptions of virtual campus learning.

At the end of the academic semester, the statement survey was administered to undergraduate dental students in their faculty email to assess; students' attitudes, perceptions, the usefulness of online learning, the quality of online tools, and students; learning preferences. In response to each question, the following scoring of the Likert scale had been used: The questionnaire link will be sent to all undergraduate dental students through their university email, and the results will be collected anonymously on Survey Monkey ([www.surveymonkey.com](http://www.surveymonkey.com)).

## Questionnaire

- Are you familiar with online education?
- How do you feel about online education in general?

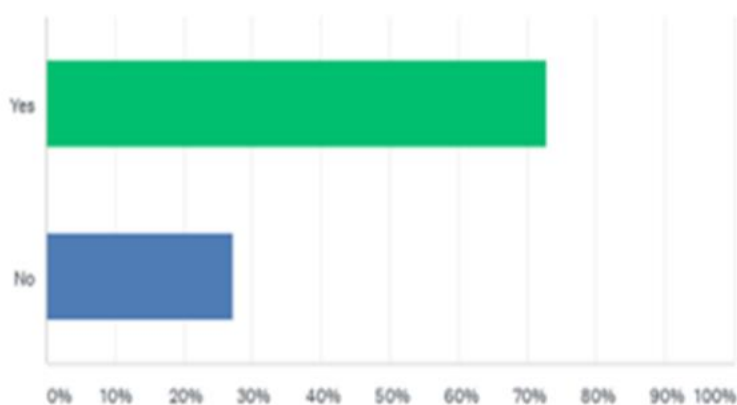
- On average, how much time do you spend on online education each day?
- How effective has online learning been for you?
- What is the most effective online class method for you?
- How well could you manage your time if you were learning from home?
- Do you believe you're learning as much now as you were before you switched to online learning?
- If your answer to the previous question was not yes, absolutely, please clarify why?
- How often do you have a one-to-one discussion with your tutor?

## Questionnaire Results

A total 594 of 743 students completed the questionnaire, which represents a response rate of 79.94%. Most students agreed that they are familiar with online education 72.81% (Table 1, Figure 1).

Answer Choices	Responses	No. of Students
Yes	72.81%	541
No	27.19%	202
<b>Total</b>	-	743

**Table 1:** 594 of 743 students completed the questionnaire, which represents a response rate of 79.94%. Most students agreed that they are familiar with online education 72.81%.

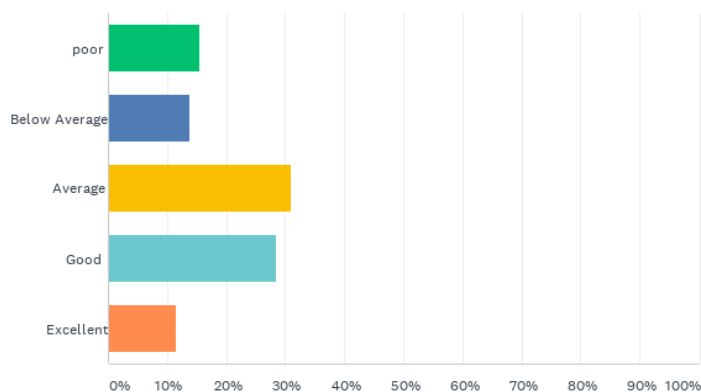


**Figure 1:** The readiness of students towards online education.

The response to a question. How do you feel overall about online education? 11.44% of students gives an excellent feeling, 28.40% had good feelings, while 30.95% feels average, 13.73% their feelings were below average, and 15.48% of students had poor feelings about online learning (Table 2, Figure 2).

Answer Choices	Responses	No. of Students
Poor	15.48%	115
Below Average	13.73%	102
Average	30.96	230
Good	28.40%	211
Excellent	11.44%	85
<b>Total</b>	-	743

**Table 2:** The response to second question. 11.44% of students give an excellent feeling, 28.40% had good feelings, while 30.95% feels average, 13.73% their feelings were below average, and 15.48% of students had poor feelings about online learning.

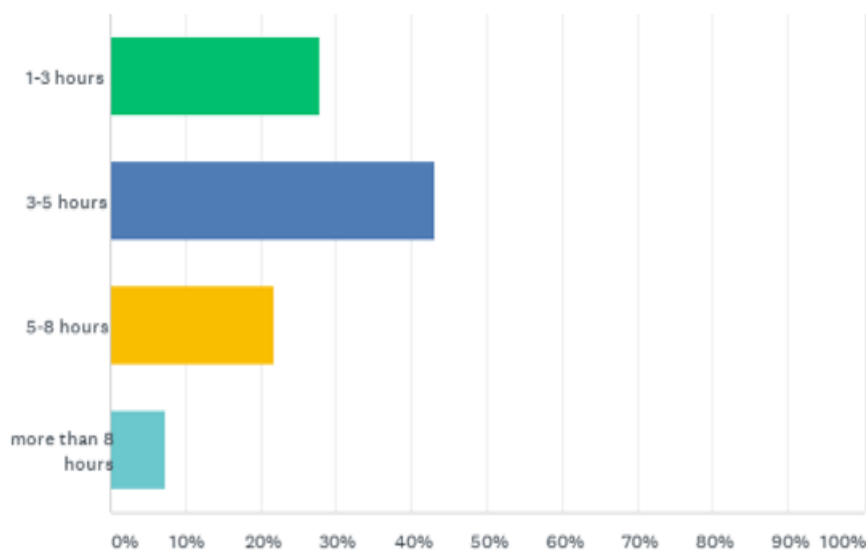


**Figure 2:** The overall feel of students about online education.

Concerning the average time spent by students for each day on distance education, 27.86% spend about 1-3 hours, 43.07% of the students spend from 3-5 hours, 21.8% spend from 5 to 8 hours, while only 7.27% are spending more than 8 hours each day on distance education (Table 3, Figure 3).

Answer Choices	Responses	No. of Students
1-3 hours	26.86%	207
3-5 hours	43.07%	320
5-8 hours	21.80%	162
More than 8 hours	7.27%	54
<b>Total</b>	-	743

**Table 3:** Concerning the average time spent by students for each day on distance education, 27.86% spend about 1-3 hours, 43.07% of the students spend from 3-5 hours, and 21.8% spend from 5 to 8 hours, while only 7.27% are spending more than 8 hours each day on distance education.

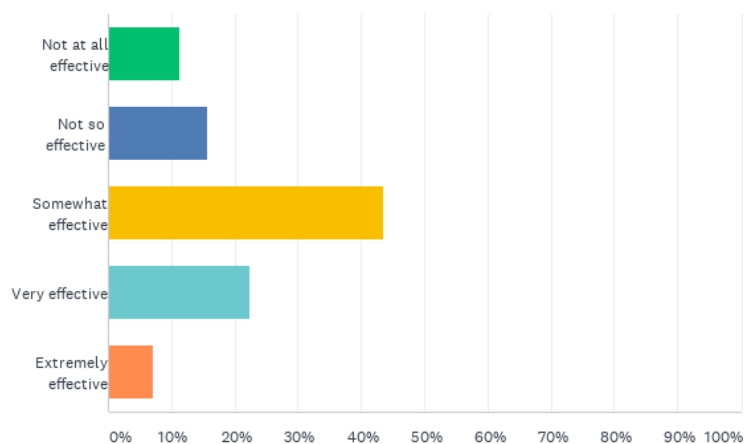


**Figure 3:** The average time spent by students for each day on distance education.

The result of answering the effectiveness of E-learning 11.31% assume that online learning is not at all practical, 15.75 reports that it is not so effective while, 323 students (43.47%) find online learning is somewhat effective, on the other hand, 22.34% find online learning very effective, and 7.13 reported 7.13% it is incredibly effective (Table 4, Figure 4).

Answer Choices	Responses	No. of Students
Not at all effective	11.31%	84
Not so effective	15.75%	117
Somewhat effective	43.47%	323
Very effective	22.34%	166
Extremely effective	7.13%	53
<b>Total</b>	-	743

**Table 4:** The result of answering the effectiveness of E-learning 11.31% assume that online learning is not at all practical, 15.75 reports that it is not so effective while, 323 students (43.47%) find online learning is somewhat effective, on the other hand, 22.34% find online learning very effective, and 7.13 reported 7.13% it is incredibly effective.

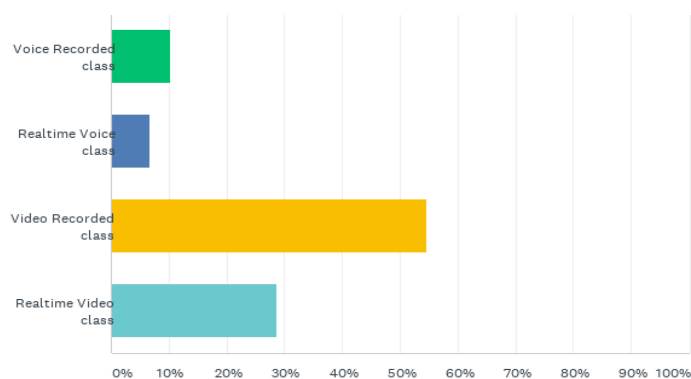


**Figure 4:** The effectiveness of E-Learning.

Regarding the response to which is the most effective online class method? 10.23% found that voice recorded class, 28.67% preferred real-time video class, 54.51% of students felt comfortable and preferred online video-recorded class, while only 6.59% found real-time voice is good (Table 5, Figure 5).

Answer Choices	Responses	No. of Students
Voice Recorded Class	10.23%	76
Real Time Voice Class	6.59%	49
Video Recorded Class	54.51%	405
Real Time Video Class	28.67%	213
<b>Total</b>	-	743

**Table 5:** Regarding the response to which is the most effective online class method? 10.23% found that voice recorded class, 28.67% preferred real-time video class, 54.51% of students felt comfortable and preferred online video-recorded class, while only 6.59% found real-time voice is good.



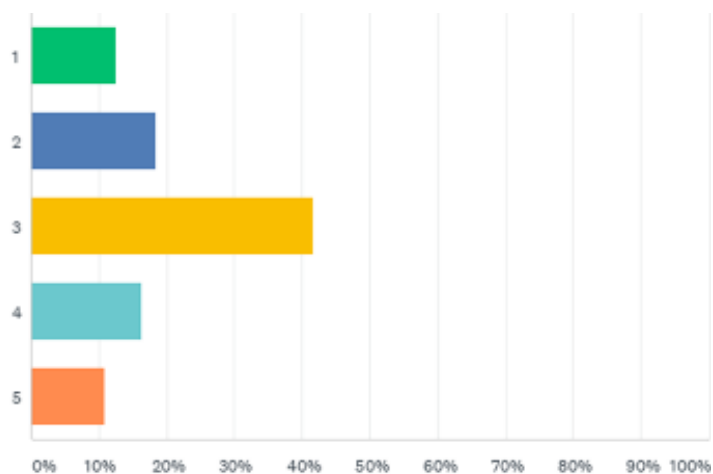
**Figure 5:** The most effective online class method.



Regarding student time management during online learning, 41.72% of students feel an average controlling and managing their time during E-learning, 12.65% cannot manage their time while learning remotely, 18.44% can manage but not so effectively, 16.29% can manage their time very well. However, only 10.9% are highly excellent at managing their time (Table 6, Figure 6).

Answer Choices	Responses	No. of Students
1	12.65%	94
2	18.44%	137
3	41.72%	310
4	16.29%	121
5	10.90%	81
<b>Total</b>	-	743

**Table 6:** Regarding student time management during online learning, 41.72% of students feel an average controlling and managing their time during E-learning, 12.65% cannot manage their time while learning remotely, 18.44% can manage but not so effectively, 16.29% can manage their time very well. However, only 10.9% are highly excellent at managing their time.

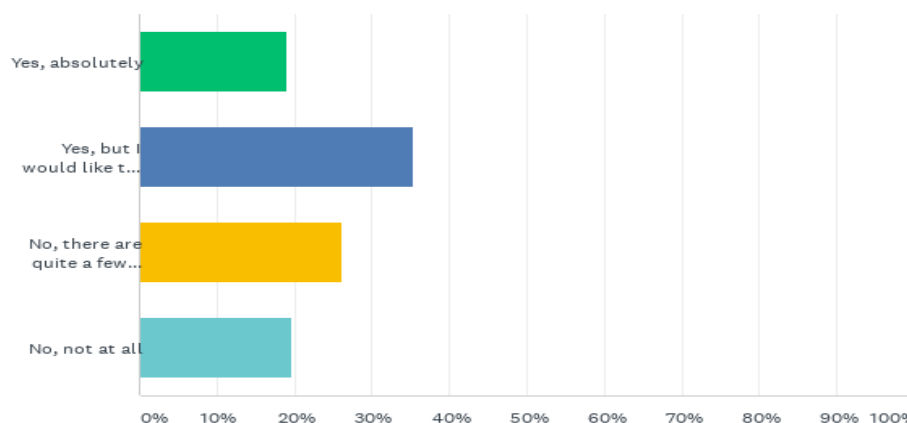


**Figure 6:** Student time management effectiveness during E-learning.

The perception of participants to how they are ready to switch to remote learning; 19.65% are not at all ready to switch on, 26.11% find it is quite a few challenges, while 18.98% of students is prefer E-learning over traditional learning, despite 35.26% preferred online learning but they like to change a few things (Table 7, Figure 7).

Answer Choices	Responses	No. of Students
Yes, absolutely	18.98%	141
Yes, but I would like to change a few things	35.26%	262
No, there are quite a few challenges	26.11%	194
No, not at all	19.65%	146
<b>Total</b>	-	743

**Table 7:** The perception of participants to how they are ready to switch to remote learning; 19.65% are not at all ready to switch on, 26.11% find it is quite a few challenges, while % 18.98% of students is prefer E-learning over traditional learning, despite 35.26% preferred online learning but they like to change a few things.



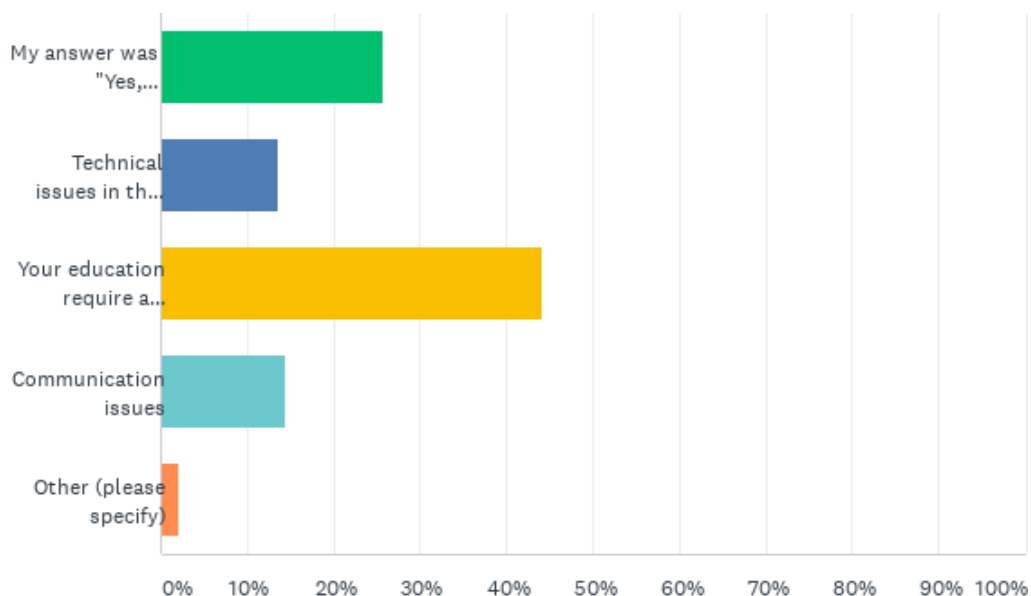
**Figure 7:** Students preference for online learning over traditional learning.

Among the participants who say yes and prefer E-learning over traditional learning, 25.67% answered yes absolutely. 13.67% find some technical issues in the platform used, 14.33% has some communication issues, 2.17% however; 44.1% of students find that their need for more practical application due to the nature of their studies which need to enhance specific skills in diagnosis, examination, treatment and dealing with patients (Table 8, Figure 8).

Answer Choices	Responses	No. of Students
My answer was "Yes, absolutely"	25.67%	154
Technical issues in the platform used	13.67%	82
Your education require a practical part that can't be applied online	44.17%	265
Communication issues	14.33%	86
Other (please specify)	2.17%	13
<b>Total</b>	-	600

**Table 8:** Among the participants who say yes and prefer E-learning over traditional learning, 25.67% answered yes absolutely, 13.67% find some technical issues in the platform used, 14.33% has some communication issues, 2.17% however; 44.1% of students find that their need for more practical application due to the nature of their studies

which need to enhance specific skills in diagnosis, examination, treatment and dealing with patients.

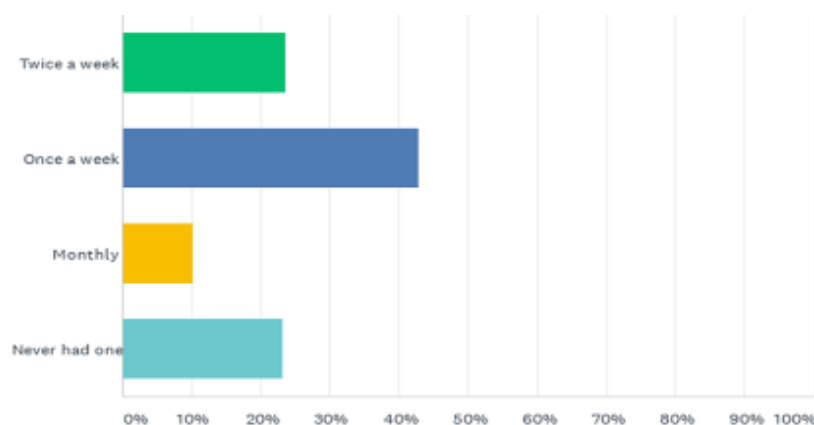


**Figure 8:** Students clarifications why they are learning now as before switching to remote learning.

As a response to if they have to 1-1 discussion with their tutor, 42.83% of students respond very effectively that they have once a week discussion, 23.67% have twice per week discussion meeting, 10.33% have a monthly meeting, and 23.17% never had one, which known to be one of the major drawbacks of e-learning is lack of student- lecturer interaction and connectivity issues (Table 9, Figure 9).

Answer Choices	Responses	No. of Students
Twice a week	23.67%	142
Once a week	42.83%	257
Monthly	10.33%	62
Never had one	23.17%	139
<b>Total</b>	-	600

**Table 9:** As a response to if they have to 1-1 discussion with their tutor, 42.83% of students respond very effectively that they have once a week discussion, 23.67% have twice per week discussion meeting, 10.33% have a monthly meeting, and 23.17% never had one, which known to be one of the major drawbacks of e-learning is lack of student- lecturer interaction and connectivity issues.



**Figure 9:** Students response to one-one discussion with their tutor.

## Discussion

Evaluating a student's appraisal of the value of e-learning attitudes is a critical factor that is mandatory to judge the success or failure of an online learning system [11]. The implementation of digital technologies in the dental syllabus has started globally and reached several penetration levels depending on local resources and demands and needs [12]. One of the significant challenges nowadays, digital education is continuously adapting, adjusting to catch technology developments, and applying these to the dental field, both education and practical field [13]. Mobile has one of the commonly used devices for e-learning compared to laptops and tablets among university students [14].

García-Martínez et al. (2019) [15], conducted research in Spain that revealed students prefer to use mobile for their learning because of more comfortable student-teacher interaction through mobile devices than other devices [15]. Another typical reason for this is that, as Angela Murphy and her co-authors note in their article, learning can occur any time and in any place [16]. Several studies have been performed in several countries to assess students' perception and acceptance to shift from traditional learning methods to distance learning technology.

Post COVID-19 outbreak, In Pakistan, students was required to move from traditional learning to e-learning. However, the limitations regarding the practical aspect of learning in the lab and clinical environments affect the students' satisfaction with online learning, especially in medical and dental facilities where the practical part of learning is essential to gain cognitive skills; this is in accordance with the student's perception in many different countries like China, Malaysia, Singapore, etc [17-19]. Other investigations on the outcome and students' perceptions of e-learning under normal circumstances before COVI-19 revealed mixed outcomes. Some prefer positively towards e-learning, while others give negative feedback for this shift. Mamattah et al (2016) [20], found that when comparing face-to-face learning, students were satisfied with E-learning, which was in accordance with the present study results [20]. Furthermore, most students accepted digital learning in the study formed by Singh and Min 2017 to measure the efficacy of conducting digital lectures on gross anatomy [21]. However, there several studies that report face-to-face teaching preferable by students over online learning [22-24].

It appears an essential factor for educational success and affective cognitive students' development is maintaining contact and access in online learning. This contact should be through; keeping the students involved in online projects, building up a kind of online community. Blinded learning courses seem to be the preferable kind of distant learning method for dental students.

In Egypt, the process of changing from traditional education into modern online learning; unfortunately face several difficulties like defective of computer hardware and software computer implementation, weak IT education, faint IT infrastructure, shortage in budget and equipment supplies, lack of complete knowledge about different ways of online education among both lecturers and students in addition to lack of information literacy.

## Conclusions

Overall, undergraduate dental students' attitudes were positive regarding online accessibility and usability. In addition, the students looked on online learning was helpful, but they were looking for the blinded face-to-face with more concern and enhanced the practical classes.

## Study Limitation

The major limitation is that the selected student sample population has been drawn from a single private dental school. Moreover, it investigates only the subjective outcome measures, which are limited to reflect students' perception and satisfaction with online learning.

## Conflict of Interest

The authors declare that they have no conflict of interest concerning this article.

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