Cumhuriyet Dental Journal, 26(1): 54-62, 2023
DOI: https://doi.org/10.7126/cumudj.1228802

Cumhuriyet Dental Journal

| cdj.cumhuriyet.edu.tr | Founded: 1998 | Available online, ISSN: 1302-5805 e-ISSN: 2146-2852 | Publisher: Sivas Cumhuriyet Üniversitesi

Perspectives of the Dental Educators with Regard to Online Education

Tugba Aydin[1-a], Ahmet Bedreddin Sahin[1-b*]

[1] *Department of Periodontology, Faculty of Dentistry, Atatürk University, Erzurum, Türkiye.*
**Corresponding author*

Research Article

History

Received: 03/01/2023
Accepted: 20/02/2023

ABSTRACT

Objectives: The purpose of this study is the evaluation of the perspectives of the educators in Faculties of Dentistry with regard to online education.

Materials and Methods: It was requested from the educators of the Faculties of Dentistry to fill in a questionnaire about their perspectives on online education including overall assessment statements. The questionnaire was delivered to the participants as a paper-based or online version. The data were evaluated using descriptive statistics and multiple logistical regression analysis.

Results: 350 valid responses were received by the educators over the course of 15 days. By means of our results, we determined that the educators accommodate themselves to the online education on easy terms. However, fewer educators found online education advantageous over face-to-face education. In addition, during online education, it was mostly given a negative opinion as to students' class attendance, class participation, and learning success can be controlled or not. According to the results of the multiple logistical regression analysis, it was shown that the positive opinions of the educators in terms of their perspectives about online education can be increased with the increase in weekly course hours and the current technological infrastructure situation, and can be decreased with the increase in tenure.

Conclusions: Our study shows that the perspectives of the educators with regard to online education were not positive. However, the results demonstrate that the perspectives of the educators for online education can change with various factors.

Keywords: Dental Education; Dental School; Online Education; Survey.

Süreç

Geliş: 03/01/2023
Kabul: 20/02/2023

ÖZ

Amaç: Bu çalışmanın amacı, diş hekimliği fakültelerindeki öğretim üyelerinin çevrimiçi eğitime bakış açılarının değerlendirilmesidir.

Gereç ve Yöntemler: Diş hekimliği fakültelerindeki öğretim üyelerinden, çevrimiçi eğitime bakış açıları ile ilgili genel değerlendirme ifadeleri içeren bir anket doldurmaları istendi. Anket, katılımcılara kağıt üzerinde veya çevrimiçi olarak ulaştırıldı. Veriler, tanımlayıcı istatistikler ve çoklu lojistik regresyon analizi ile değerlendirildi.

Bulgular: Öğretim üyelerinden on beş gün boyunca 350 geçerli yanıt alındı. Bulgularımız aracılığıyla öğretim üyelerinin çevrimiçi eğitime uyum sağlayabildiğini belirledik. Ancak çevrimiçi eğitimi, yüz-yüze eğitime göre avantajlı bulan öğretim üyesi daha azdı. Ayrıca çevrimiçi eğitim sırasında öğrencilerin, derse devamlarının, derse katılımlarının ve öğrenme başarılarının kontrol edilebildiği/edilebileceği konusunda çoğunlukla olumsuz görüş bildirildi. Çoklu lojistik regresyon analizi sonuçlarına göre öğretim üyelerinin, çevrimiçi eğitimle ilgili bakış açılarındaki olumlu görüşlerinin, haftalık verilen ders saati ve mevcut teknolojik altyapı durumunun iyileşmesiyle artabileceği, görev süresinin artmasıyla azalabileceği gösterildi.

Sonuçlar: Çalışmamız, öğretim üyelerinin, çevrimiçi eğitime bakış açılarının olumlu olmadığını göstermektedir. Ancak sonuçlar, öğretim üyelerinin online eğitime bakış açılarının çeşitli faktörlerle değişebileceğini göstermektedir.

Anahtar Kelimeler: Diş Hekimliği Eğitimi; Diş Hekimliği Fakültesi; Çevrimiçi Uzaktan Eğitim; Anket.

a dtkoseoglu@hotmail.com https://orcid.org/0000-0002-9675-5509 b temhabsahin@hotmail.com https://orcid.org/0000-0002-4742-9627

How to Cite: Aydın T, Şahin AB. 2023) Perspectives of the Dental Educators with Regard to Online Education, Cumhuriyet Dental Journal, 26(1):54-62.

Introduction

Distance education is characterised by the teaching-learning process in which the relationship between the educator and the student does not occur physically.[1,2] The use of distance education can be considered as one of the indicators of the adaptability of countries, institutions, and even individuals to the era they are in and to the accessed technology.[3] However, online education is defined as a newer version of distance education that enhances access to education through the use of certain technologies.[4,5]

Online education provides the student to learn at his/her own pace with fast and easy access to the Materials. In addition, it enables him/her to receive education without dealing with certain expenses such as transportation and accommodation.[2] Another advantage of online education is claimed to be providing students with easier and more effective access to more diverse and more numerous information.[6] With the developing technology, it is only reasonable to take advantage of online education. The health professionals in the USA argue that online education should be adopted in schools of dentistry of the country in order to take advantage of the opportunities online education offers.[7,8] However, digital transformation is considered a slow process in schools of dentistry.[9,10] In addition, practical training and clinical training are essential in the pre-clinical curriculum in the education of dentistry. This makes people think that online education feasible in the future will include only the theoretical educational content of the education of dentistry.[10]

In March 2020, the Covid-19 pandemic caused an unprecedented change in the education of dentistry by necessitating the need for online education.[11] In December 2019, Coronavirus Disease 2019 (Covid-19), characterised by pneumonia-like symptoms, was firstly reported in Wuhan City, Hubei Province, China. The virus spread rapidly and caused a worldwide epidemic. On March 11, 2020, the first Covid-19 case was seen in Turkey, and on the same date, World Health Organisation (WHO) explained that this newly emerged virus is a pandemic.[12,13] The Covid-19 pandemic has caused a great impact on the health system and the education of dentistry.[14,15] In Turkey on March 16, 2020, primary and secondary schools and higher education institutions were closed off. On March 23, 2020, Turkey's Council of Higher Education announced that the online education process would begin in all the universities with the available infrastructure because of the pandemic. Many educators and students had to adapt to online education suddenly. This rapid shift to online education brought up various concerns and questions. In addition to creating the need, this pandemic can also provide the chance to accelerate digital transformation in the education of Dentistry.[16] Therefore, the perspectives of both the educators and the students with regard to online education should be taken into consideration so that online education is developed efficiently and the raised concerns are addressed.

In the literature, many studies have focused on the perspectives of the students with regard to online education[17-19] For all we know, there is a limited number of studies that evaluate the perspectives of educators with regard to online education.[10,20] For this reason, the aim of this study is the evaluation of the perspectives of the dental educators in Turkey with regard to online education by means of the questionnaire. The null hypothesis of this study was that the perspectives of the dental educators with regard to online education would be positive.

Materials and Methods

The study protocol for this study is approved by the Ethics Committee of the Ataturk University, Faculty of Dentisry (decision date being June 22, 2022; issue no. 67). The study was conducted in accordance with the Declaration of Helsinki. This survey was carried out between June-July 2022. The questionnaire that was used was the altered version of the questionnaires which were developed by Schlenz *et al.*[10], and Alsoufi *et al.*[21] and were studied in terms of their reliability. Before being finalised, a preliminary test was subjected to a small group of educators in order to ensure the clarity of the questionnaire. The questionnaire was developed in Turkish and its internal consistency was tested in a pilot study including 25 faculty of members. The sample taken from the pilot study has not been incorporated into the final analysis. To know the size of the target population, the data was taken from' ÖSYM's (Measuring, Selection and Placement Center) lastly published Higher Education Programs and Quotas Guide.[22] Accordingly, there are 2247 dental educators registered in the Faculties of Dentistry in Turkey. According to the target population, 329 answers was required to provide a 95% confidence range and 5% margin of error. The questionnaire was delivered to the dental educators in Turkey as a paper-based or online version. The paper version was distributed among the educators. The online version was sent via e-mail. The e-mail included an anonymous link to the questionnaire. For the questionnaire to be sent online, Google Forms was used. The educators who do not respond in the beginning were reinvited with a second e-mail. There was not any incentive to participate in the questionnaire. Personal information was not gathered in order to ensure safety and anonymity. This issue was emphasised to all the participants and clearly indicated at the beginning of the questionnaire. The paper-based questionnaires that are completed were gathered in a predetermined place by one of the researchers in order to ensure safety and avoid any response bias. In addition, only the fully-filled questionnaires were included in the study as for the online version. The participants were not aware of the goal or the results of the study in order to decrease any possible risk of bias.

Before the questionnaire, the participants were presented with the informed consent form and were asked to confirm that they read and understand the document.

The 27-item questionnaire was including general questions about the current technological infrastructure situation such as the perspective with regard to online education, proficiency in the use of electronic devices, and quality of the internet that was used along with basic demographic data such as gender and age. Section 1 was involving evaluative statements concerning online education infrastructure, and Section 2 concerning perspective with regard to online education. The participants were asked to agree/disagree the statements using a five-point Likert scale. Lastly, in Section 3, demographic questions were asked. Cronbach's Alpha has shown a high degree of reliability in terms of the questionnaires on technological infrastructure for online education (0.883) and perspective with regard to online education (0.935).

Statistical Analysis

SPSS 20.0 for Windows (SPSS Inc., IL, ABD) program was used for the recording of the data and statistical evaluation. Descriptive statistics were used in order to analyse the answers that the participants gave to the questionnaires of demographic data, perspective with regard to online education, and current technological infrastructure situation for online education, using frequency and percentage. The categorical variables were defined as frequencies and percentages, and as mean (standard deviation) having appropriate continuous variables. Multiple logistical regression analysis was used to identify the simultaneous effects of age, tenure in educatorship, weekly course hours, academic title, and current technological infrastructure situation for online education, for each question in the questionnaire on perspective with regard to online education. For multiple logistical regression analysis, the participants who chose the options agree and strongly agree were gathered into a group and identified as “positive” and the participants who chose the options neutral, disagree, and strongly disagree were gathered into a group and identified as “neutral/negative”. The results were displayed as odds ratio and 95% confidence intervals. The results were considered statistically significant at $p < 0.05$.

Results

Basic Demographic Characteristics

350 fully-filled questionnaires were gathered in total from the dental educators in 28 different provinces of Turkey. 179 of the participants (51.1%) were female, and 171 of the participants (48.9%) were male. The mean age was 40.83 (±9.02). Most of the participants were assistant professor (137, 39.14%). 300 of the educators had not experienced online education before the Covid-19 pandemic. After the pandemic, the number of educators who did not experience online education was down to 28 people. The online education method that was experienced was mostly indicated as the combination of synchronous and asynchronous online learning (blended) (47.51%). The results with regard to the demographic data of the participants who responded are shown in Table 1.

Table 1 Demographic characteristics of the respondents.

Variable	n (%)	Variable	n (%)
Gender		Weekly Course Hours	
Female	179 (51.14)	1-4	130 (37.15)
Male	171 (48.86)	5-8	98 (28)
		9-12	69 (19.71)
Age (in years)		13-16	34 (9.71)
21-30	23 (6,57)	16+	19 (5.43)
31-40	180 (51.43)		
41-50	94 (26.86)	Experience in Online Education	
51-60	39 (11.14)	Yes	322 (92.00)
61-70	14 (4)	No	28 (8.00)
Areas of Expertise		Experience in Online Education	
Oral and Maxillofacial Surgery	37 (10.57)	before Covid-19	
Maxillofacial Radiology	46 (13.14)	Yes	50 (14.29)
Endodontics	35 (10)	No	300 (85.71)
Ortodontics	41 (11.71)		
Pedodontics	40 (11.43)	Experienced Education Method	
Periodontology	54 (15.43)	Synchronous	142 (44.10)
Prosthetic Dentistry	54 (15.43)	Asynchronous	27 (8.39)
Restorative Dentistry	43 (12.29)	Blended	153 (47.51)
Academic Title		Tenure	
Lecturer	24 (6.86)	1-5	149 (42,57)
Assistant Professor	137 (39.14)	6-10	80 (22.86)
Associate Professor	91 (26)	11-15	51 (14,57)
Professor	98 (28)	16-20	27 (7.71)
Mean values of the answers given to the questionnaire on current technological infrastructure for online education			
≤3	88 (25.14)		
>3	262 (74.86)		

Table 2 Distribution of responses to the current technological infrastructure situation survey for online education.

Item description	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
E1. I find myself sufficient in using electronic devices.	3 (0.86)	9 (2.57)	75 (21.43)	210 (60.00)	53 (15.14)
E2. I find the technology of the electronic devices I use/will use for online education sufficient.	3 (0.86)	39 (11.14)	87 (24.86)	175 (50.00)	46 (13.14)
E3. I find the quality and speed of my internet connection that I used/will use for online education as sufficient.	15 (4.29)	60 (17.14)	117 (33.43)	146 (41.71)	12 (3.43)
E4. I find the infrastructure set up by my university for online education as sufficient.	15 (4.29)	66 (18.86)	87 (24.86)	156 (44.57)	26 (7.42)

Values are presented as n (%).

The Evaluation of the Current Technological Infrastructure Situation for Online Education among the Participants

Four questions were used for the evaluation of the current technological infrastructure situations of the educators for online education. The vast majority of the participants (263, 75.14%) stated being sufficient in using the electronic devices, and similarly, the vast majority of the participants (221, 63.14%) stated that they found the technology of the electronic devices that they used as sufficient. Participants who found the quality and speed of the internet connection that they used as sufficient were less (158, 45.14%). The educators mostly stated that the infrastructure that their university set up for online education was sufficient (182, 51.99%). Table 2 summarises the findings with regard to the evaluation of the current technological infrastructure of the educators for online education. The mean value of the answers to the four questions given by one participant was calculated and results with regard to these values were presented in Table 1.

The Perspectives of the Educators with regard to Online Education

Thirteen questions were used to evaluate the perspective with regard to online education. According to the answers taken from the questionnaire, the perspective of the dental educators was generally neutral/negative. As 156 of the educators (44.57%) stated that online education is a good method to teach the theoretical part of dental education, 171 of them (48.86%) stated that some parts of dental education should continue online education in the future. However, there were only 65 educators (18.57%) who found online education more advantageous than face-to-face education. 166 of the educators (47.43%) reported that online education would be easily implemented in the future. But negative opinion was given on the matter of whether class attendance (87, 24.86%), class participation (88, 25.14%), and learning success (100, 28.57%) can be controlled or not during online education. The majority of the educators gave a positive opinion in terms of feeling comfortable during online education (199, 56.86%) and not having a hard time adapting to online education (208, 59.43%). Table 3 summarises the findings concerning the questionnaire on the perspectives of educators with regard to online education.

The logistic regression model was implemented to investigate the impact of age, tenure in educatorship, weekly course hours, academic title, and current technological infrastructure situation for online education on the perspective with regard to online education (Table 4). It was found that the number of the educators who believe that online education is a good method for teaching the theoretical part of the dental education increases with the increase in weekly course hours (OR=1.05, CI: (1.01, 1.09); p = 0.026) and current technological infrastructure situation (OR =1.54, CI: (1.11, 2.12); p=0.009), and decreases with the increase in tenure (OR=0.92, CI: (0.85, 0.99); p=0.034). In addition to this, lecturer gave 4.38 times more positive opinions than professors about online education being a good method for teaching the theoretical part of dental education (OR = 4.38, CI: (1.08, 17.81); p = 0.039). It was demonstrated that the mean course hours per week of the educators who think positively about the continuation of some parts of dental education with online education are higher than people who selected neutral/ negative (Table 3). However, according to the multivariate logistic analysis that was done, there was not a meaningful relationship between weekly course hours and this situation. The number of educators that think online education is more advantageous than face-to-face education (OR=1.07, CI: (1.02, 1.12); p=0.004) and parts of dental education should continue in online education in the future (OR = 1.05, CI: (1.01, 1.10); p=0.019) increased with the increase in weekly course hours. The number of the educators who think parts of dental education should continue in online education in the future and online education can easily be implemented in the future increased with the increase in the current technological infrastructure situation ((OR=1.43, CI: (1.05, 1.96); p=0.024), (OR=1.43, CI: (1.05, 1.95); p=0.009)) and decreased with the increase in tenure ((OR=0.91, CI: (0.85, 0.99); p=0.020), (OR=0.90, CI: (0.84, 0.97); p=0.007)). In addition, it was found that the number of the educators who think that students could/will control their class attendance (OR=1.07, CI: (1.02, 1.12); p=0.004) and class participation (OR=1.07, CI: (1.02, 1.12); p=0.004) during online education, felt/will be feeling comfortable during online education (OR= 1.56, CI: (1.14, 2.14); p=0.006) and did not/will not have a hard time in adapting in online education (OR = 1.07, CI: (1.02, 1.12); p = 0.004) increased with the increase in the current technological infrastructure situation. It was found that the mean age and tenure of the educators who think students could/will control their learning success during online education were higher than educators who think otherwise (Table 3). However, in the multivariate analysis, there was not a meaningful relationship between this situation and the age and tenure of the educators. In

addition, it was seen that the number of educators who think students could/will be feeling comfortable during online education just as in face-to-face education increased with the increase in weekly course hours (OR = 1.06, CI: (1.01, 1.11); *p*=0.010) and age (OR=1.09, CI: (1.01, 1.19); *p*=0.032).

Discussion

Face-to-face dental training that has been applied worldwide over the years requires close contact (23, 24). With the Covid-19 pandemic, dental training has been revised almost all over the world in a way that fits the need for epidemic prevention in terms of social distance.[25] It is thought that this pandemic not only creates the need but also provides the chance to accelerate digital transformation in dental training.[16] Consistent with the literature, our results show that 272 educators experienced online education after the Covid-19 pandemic. In addition, the convenience and flexibility that online education offers seem to be contributing to the proliferation and popularity of this method.[26] Therefore, the efficient examination and development of online education will be beneficial. During our research, there was limited up-to-date information about the perspective of the dental educators with regard to online education.[10,20] This study is designed to investigate the perspectives of the educators with regard to online education. The results of this study brought out the neutral/negative perspectives of the educators with regard to online education. That said, the current study emphasises that age, tenure in educatorship, weekly course hours, academic title, and current technological infrastructure situation of the educators affects their perspectives with regard to online education. According to the results of our study, our null hypothesis is rejected.

For questionnaires in the healthcare field, the use of the Likert scale is acknowledged as standard procedure.[27-29] Therefore, the Likert scale was used in the current study for the investigation of the perspectives of educators with regard to online education. All the participants were informed that data collection was completely anonymous and the monitorability of the respondent was not allowed. Thus biasness while responding was attempted to be avoided.

According to the data taken from YÖK (Higher Education Program), 123 of the 207 universities in Turkey have the Distance Education Application and Research Center. There is no one distance education method for the universities at present. Universities use different online education methods such as synchronous and asynchronous according to the current infrastructure and the number of students.[30] Although every university has its online education methods, 182 (52%) of the educators who participated in the study stated that the infrastructure of the university in which they work is sufficient. The number of educators who stated otherwise is only 81 (23.14%). In addition, the vast majority of the educators who participated in the study stated that they found themselves sufficient in using the electronic devices (263, 70.1%), and the technology of the electronic devices that they used (221, 63.1%) was sufficient as well. Rota *et al.*[20], stated in their study that some educators have difficulties in synchronous and asynchronous online education methods because of slow internet connections and network problems. Consistent with this study, in our study, it was demonstrated that the current technological infrastructure situations of the educators may have an effect on their perspectives with regard to online education.

Educators who participated in the study of Schlenz *et al.*[10] mostly stated that online education is a good method to teach the theoretical part of dental education. However, in the current study, 156 (44.6%) educators agree with this opinion. This difference may be related to the considerable difference in the number of the participants and difference in the preparation and implementation of online education in different countries. In addition, it was shown that their ideas about online education being a good method to teach the theoretical part of dental education are affected by their tenure in educatorship, weekly course hours, and current technological infrastructure situations (Table 4).

There is no doubt that online education has many disadvantages along with many advantages in comparison with face-to-face education. Most of the educators who participated in the study of Idris *et al.*[31] defined online education as a way of learning new education techniques and being more productive and innovative. Meanwhile, the educators unfortunately felt that the students can not control their class attendance and learning success. Only 65 (18.6%) of the educators who participated in the current study stated that online education is more advantageous in many ways to teach the theoretical part of dental education in comparison with face-to-face education. This finding is reasonable since there are fewer educators who think students were/will be disciplined and careful during online education (78, 22.3%), students could/will be able to control their class attendance (87, 24.9%), students could/will be able to control their class participation (88, 25.1%) and students could/will be able to control their learning success (100, 28.6%). Having said that, although it was reported that students are kept from getting feedback with regard to their learning success because there is a weaker relationship that exists between the educator and the student in online education[32], it was indicated that proper designation and preparation of the online education are the strongest factors affecting the outcomes of a successful online education.[33] In addition, Wise *et al.*[34] showed that the efficacy of educators with regard to online education is not related to general tenure in educatorship, but related to the number of online course hours that were experienced. Educators having higher self-efficacy levels have more flexibility in the working environment and higher chances of making improvements in challenging situations.[35,36] They may be more willing to try new education methods.[37] The findings of our study are consistent with the study of Wise *et al.* in that the number of educators who think online education is more advantageous in many ways in comparison with face-to-face education only meaningfully increases with the increase in weekly course hours (Table 4). In addition, the findings of our study are consistent with the study of Wise *et al.* in that the number of

educators who think parts of dental education should continue in online education increases with the increase in weekly course hours and the current technological infrastructure situation (Table 4). However, the findings of our current study are not consistent with the finding which includes decreasing in the number of educators, who think parts of dental education should continue in online education and that online education can easily be implemented in the future, with the increase in tenure in educatorship. This difference might be considered to be related to the fact that the perspectives of educators from different countries with regard to online education and educator efficacies regarding online education can change in relation to different circumstances. Along with that, Rota *et al.*[20] stated that educators who participated in their study recommended continuing online education. Consistent with this study, in the current study, the number of educators who think parts of dental education should continue in online education (171, 48.9%) is higher than those who think otherwise (76, 21.7%).

Table 3 Combined ratings descriptive statistics for the questionnaire on perspectives of educators with regard to online education

Item description	Age	Academic Title n (%)		Tenure	Course Hours	Technological Infrastructure
	mean±SD	1	2	mean±SD	mean±SD	mean±SD
P1. Online education is a good method to teach parts of dental education.						
Positive response	39.8±9.0	76 (40.2)	80 (49.7)	8.6±8.5	8.5±5.0	3.7±0.8
Neutral/negative response	41.6±8.9	113 (59.8)	81 (51.3)	10.9±9.1	6.7±5.8	3.4±0.7
P2. Teaching the theoretical part of dental education without loss of content is possible with online education as well, as it is in face-to-face education.						
Positive response	40.8±10.3	49 (25.9)	51 (31.7)	10.3±10.6	8.6±6.2	3.7±0.9
Neutral/negative response	40.8±8.5	140 (74.1)	110 (68.3)	9.8±8.1	7.0±5.2	3.4±0.7
P3. Online education is more advantageous for many ways in comparison with face-to-face education to teach the theoretical part of dental education.						
Positive response	40.8±8.9	34 (18)	31 (19.3)	9.8±8.3	9.6±4.9	3.7±0.8
Neutral/negative response	40.9±9.1	155 (82)	130 (80.7)	9.9±9.0	7.0±5.6	3.5±0.8
P4. I think that online education is beneficial in teaching the theoretical part of dental education and that parts of dental education should continue in online education in the future.						
Positive response	39.9±8.8	84 (44.4)	87 (54)	8.7±8.4	8.4±5.1	3.6±0.8
Neutral/negative response	41.8±9.2	105 (55.6)	74 (46)	11.1±9.2	6.6±5.8	3.4±0.7
P5. I think that online education will be easily implemented in the future to teach the theoretical part of dental education.						
Positive response	40.6±9.1	85 (45)	80 (49.7)	9.2±8.7	8.1±5.7	3.6±0.8
Neutral/negative response	41.1±9.0	104 (55)	81 (51.3)	10.5±9.0	6.9±5.3	3.4±0.7
P6. I found/I think I will find students disciplined and careful during online education.						
Positive response	42.5±9.7	47 (24.9)	31 (19.3)	11.0±9.9	8.2±5.0	3.7±0.8
Neutral/negative response	40.4±8.8	142 (75.1)	130 (80.7)	9.6±8.6	7.3±5.7	3.5±0.7
P7. I think I could control/I will be able to control the class attendance of the students during online education.						
Positive response	42.2±9.4	51 (27)	36 (22.4)	10.8±9.6	8.6±5.7	3.7±0.8
Neutral/negative response	40.3±8.8	138 (73)	125 (77.6)	9.6±8.6	7.1±5.4	3.4±0.7
P8. I think I could control/I will be able to control the class participation of the students during online education.						
Positive response	43.2±10.0	54 (28.6)	34 (21.1)	12.1±10.0	8.0±4.4	3.7±0.7
Neutral/negative response	40.1±8.6	135 (71.4)	127 (78.9)	9.1±8.4	7.3±5.9	3.4±0.8
P9. I think I could control/I will be able to control the learning success of the students during online education.						
Positive response	44.5±8.5	75 (39.7)	25 (15.5)	12.9±8.7	7.8±5.2	3.7±0.7
Neutral/negative response	39.4±0.8	114 (60.3)	136 (84.5)	8.7±8.8	7.3±5.7	3.5±0.8
P10. I feel comfortable/I think I will feel comfortable during online education just as in face-to-face education.						
Positive response	41.1±9.5	102 (54)	97 (60.2)	10.0±9.5	8.4±5.7	3.6±0.8
Neutral/negative response	40.4±8.3	87 (46)	64 (39.8)	9.8±8.1	6.3±5.1	3.3±0.7
P11. Online education was as satisfactory as face-to-face education/I believe it will be as satisfactory.						
Positive response	43.1±9.6	34 (18)	22 (13.7)	11.8±10.1	6.9±5.2	3.6±0.9
Neutral/negative response	40.4±8.8	155 (82)	139 (86.3)	9.6±8.6	7.6±5.6	3.5±0.7
P12. Use of new digital teaching methods (e.g: online education) motivates me/I believe it will motivate me.						
Positive response	41.2±9.4	41 (21.7)	33 (20.5)	10.2±9.4	7.5±5.7	3.6±0.9
Neutral/negative response	40.7±8.9	148 (78.3)	128 (79.5)	9.8±8.7	7.5±5.5	3.5±0.7
P13. I did not have a difficulty in online education/I believe I will not.						
Positive response	39.8±8.4	105 (55.6)	103 (64)	8.8±7.6	7.7±5.4	3.6±0.7
Neutral/negative response	42.4±9.6	84 (44.4)	58 (36)	11.6±10.3	7.2±5.8	3.4±0.8

- Values are presented as mean ± standard deviation (SD) or n (%).
- Academic Title (1: Professor and Associate Professor, 2: Assistant Professor and Lecturer)
- Positive response (Agree, Strongly agree)
- Neutral/negative response (Neutral, Disagree, Strongly Disagree)

Table 4 Multiple logistic regression results for the questions of educators perspectives on online education.

Dependent Variable	Independent Variable	Odds Ratio	95% of CI	p-value
P1. Online education is a good method to teach parts of dental education.	Tenure (years)	0.92	0.85-0.99	0.034*
	Course Hours (hours)	1.05	1.01-1.09	0.026*
	Academic Title			
	Professor (Reference)			
	Associate Professor	1.28	0.60-2.74	0.524
	Assistant Professor	1.46	0.60-3.58	0.401
	Lecturer	4.38	1.08-17.81	0.039*
	Technological Infrastructure	1.54	1.11-2.12	0.009*
P3. Online education is more advantageous for many ways in comparison with face-to-face educationto teach the theoretical part of dental education.	Course Hours (hours)	1.07	1.02-1.12	0.004*
P4. I think that online education is beneficial in teaching the theoretical part of dental education and that parts of dental education should continue in online education in the future.	Tenure (years)	0.91	0.85-0.99	0.020*
	Course Hours (hours)	1.05	1.01-1.10	0.019*
	Technological Infrastructure	1.43	1.05-1.96	0.024*
P5. I think that online education will be easily implemented in the future to teach the theoretical part of dental education.	Tenure (years)	0.90	0.84-0.97	0.007*
	Technological Infrastructure	1.43	1.05-1.95	0.024*
P7. I think I could control/I will be able to control the class attendance of the students during online education.	Technological Infrastructure	1.49	1.02-2.16	0.037*
P8. I think I could control/I will be able to control the class participation of the students during online education.	Technological Infrastructure	1.52	1.05-2.20	0.025*
P10. I feel comfortable/I think I will feel comfortable during online education just as in face-to-face education.	Age (years)	1.09	1.01-1.19	0.032*
	Course Hours (hours)	1.06	1.01-1.11	0.010*
	Technological Infrastructure	1.56	1.14-2.14	0.006*
P13. I did not have a difficulty in online education/I believe I will not.	Technological Infrastructure	1.56	1.14-2.13	0.006*

*Statistically significant at 0.05 significance level

Selvaraj *et al.*[38], in their study regarding online education carried out with students, stated that 63% of the students were not comfortable during online education. In addition, Schlenz *et al.*[10] stated that educators felt more comfortable during face-to-face education in comparison with online education. In contrast to these studies, the vast majority of the educators who participated in the current study (199, 56.9%) stated that they felt/will feel comfortable during online education just as in face-to-face education. That said, it is shown in our study that feeling comfortably increases with the increase in ages, weekly course hours, and current technological infrastructure situations of the educators. The reason for the findings being different than other studies may be related to the differences in ages and weekly course hours of the study population or different preparation and implementation of online education in different countries.

It has been shown in various studies that educators and students who participate in the study regarding online education can easily be adapted to online education.[10,39] In addition, in the study of Chang *et al.*[40], it was indicated that students adapt more quickly in comparison with senior educators since they are more familiar with technological devices. Consistent with this finding, in the current study, it was shown that the number of educators who think educators do not/will not have difficulty in adapting to online education increases with the increase in their current technological infrastructure situations.

Our study has provided a general analysis about the perspectives of educators with regard to online education. Due to a broad-based survey design including a random sample of the educators across Turkey, current results could be generalised without too much inherent bias. The possible limitation of this study was that it was carried out in one country. Thus, the results can not be generalised to other countries and there is the need for further studies being carried out in different countries and centers in order to achieve a general result with regard to online education.

Conclusions

This study revealed that educators adapt to online education. In addition, although the current study had determined that educators carry neutral/negative perspectives with regard to online education, it has been shown that perspectives of the educators with regard to online education can change with factors such as age, tenure in educatorship, weekly course hours, academic title, and current technological infrastructure situation. Today, we can say that the results will change in time as faculties of dentistry gain more experience in online education.

Conflicts of Interest Statement

The authors have no conflict of interests that may have influenced the design, execution, or presentation of the scholarly work.

References

1. Freire LM, Paula MA, Duarte ED, Bueno M. Distance education in neonatal nursing scenarios: a systematic review. Rev Esc Enferm USP. 2015;49(3):515-521.
2. McCutcheon LRM, Alzghari SK, Lee YR, Long WG, Marquez R. Interprofessional education and distance education: A review and appraisal of the current literature. Curr Pharm Teach Learn. 2017;9(4):729-736.
3. Telli SG, Altun D. Coronavirüs ve çevrimiçi (online) eğitimin önlenemeyen yükselişi. Üniversite Araştırmaları Dergisi. 2020;3(1):25-34.
4. Benson AD. Using online learning to meet workforce demand: A case study of stakeholder influence. Quarterly review of distance education. 2002;3(4):443-452.
5. Conrad D. Deep in the hearts of learners: Insights into the nature of online community. Journal of Distance Education. 2002;17(1):1-19.
6. Mooney GA, Bligh JG. Information technology in medical education: current and future applications. Postgrad Med J. 1997;73(865):701-704.
7. Andrews KG, Demps EL. Distance education in the US and Canadian undergraduate dental curriculum. Journal of Dental Education. 2003;67(4):427-438.
8. Haden NK, Hendricson WD, Kassebaum DK, Ranney RR, Weinstein G, Anderson EL, et al. Curriculum change in dental education, 2003-09. J Dent Educ. 2010;74(5):539-557.
9. Hillenburg KL, Cederberg RA, Gray SA, Hurst CL, Johnson GK, Potter BJ. E-learning and the future of dental education: opinions of administrators and information technology specialists. Eur J Dent Educ. 2006;10(3):169-177.
10. Schlenz MA, Schmidt A, Wöstmann B, Krämer N, Schulz-Weidner N. Students' and lecturers' perspective on the implementation of online learning in dental education due to SARS-CoV-2 (COVID-19): A cross-sectional study. BMC medical education. 2020;20(1):1-7.
11. Zheng M, Bender D, Lyon C. Online learning during COVID-19 produced equivalent or better student course performance as compared with pre-pandemic: empirical evidence from a school-wide comparative study. BMC medical education. 2021;21(1):1-11.
12. Bakanlığı TC Saglık. COVID-19 Bilgilendirme Platformu 2020 [Available from: https://covid19.saglik.gov.tr.
13. WHO. WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020 [Available from: https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020.
14. Wu DT, Wu KY, Nguyen TT, Tran SD. The impact of COVID-19 on dental education in North America—Where do we go next? European Journal of Dental Education. 2020;24(4):825-827.
15. Gungor AS, Uslu YŞ, Dönmez N. Perceptions of dental students towards online education during the COVID-19 pandemic. European Oral Research. 2021;55(3):124-132.
16. Ebner M, Schön S, Braun C, Ebner M, Grigoriadis Y, Haas M, et al. COVID-19 epidemic as E-learning boost? Chronological development and effects at an Austrian university against the background of the concept of "E-Learning Readiness". Future Internet. 2020;12(6):94.
17. Varthis S, Anderson OR. Students' perceptions of a blended learning experience in dental education. Eur J Dent Educ. 2018;22(1):e35-e41.
18. Al-Taweel FB, Abdulkareem AA, Gul SS, Alshami ML. Evaluation of technology-based learning by dental students during the pandemic outbreak of coronavirus disease 2019. Eur J Dent Educ. 2021;25(1):183-190.
19. Coughlan J, Timus D, Crnic T, Srdoc D, Halton C, Dragan IF. Impact of COVID-19 on dental education in Europe: The students' perspective. Eur J Dent Educ. 2022;26(3):599-607.
20. Rota M, Peveri G, Fanelli M, Torelli L, Rocchi MB, Specchia C. Satisfaction with online teaching of medical statistics during the COVID-19 pandemic: A survey by the Education Committee of the Italian Society of Medical Statistics and Clinical Epidemiology. Teach Stat. 2021;43(3):129-139.
21. Alsoufi A, Alsuyihili A, Msherghi A, Elhadi A, Atiyah H, Ashini A, et al. Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. PloS one. 2020;15 (11): e0242905.
22. YÖK. Yükseköğretim Programları ve Kontenjanları Kılavuzu 2021 [Available from: https://yokatlas.yok.gov.tr.
23. Ather A, Patel B, Ruparel NB, Diogenes A, Hargreaves KM. Coronavirus disease 19 (COVID-19): implications for clinical dental care. Journal of endodontics. 2020;46(5):584-595.
24. Peng X, Xu X, Li Y, Cheng L, Zhou X, Ren B. Transmission routes of 2019-nCoV and controls in dental practice. Int J Oral Sci. 2020;12(1):9.
25. Quinn B, Field J, Gorter R, Akota I, Manzanares MC, Paganelli C, et al. COVID-19: The immediate response of european academic dental institutions and future implications for dental education. Eur J Dent Educ. 2020;24(4):811-814.
26. Harasim L. Shift happens: Online education as a new paradigm in learning. The Internet and higher education. 2000;3(1-2):41-61.
27. Andersen BR, Hinrich JL, Rasmussen MB, Lehmann S, Ringsted C, Løkkegaard E, et al. Social ties between team members affect patient satisfaction: a data-driven approach to handling complex network analyses. Advances in Health Sciences Education. 2020;25(3):581-606.
28. Norman G. Likert scales, levels of measurement and the "laws" of statistics. Adv Health Sci Educ Theory Pract. 2010;15(5):625-632.
29. Schlenz MA, Michel K, Wegner K, Schmidt A, Rehmann P, Wostmann B. Undergraduate dental students' perspective on the implementation of digital dentistry in the preclinical curriculum: a questionnaire survey. BMC Oral Health. 2020;20(1):78.
30. Di Carvalho Melo L, Bastos Silveira B, Amorim Dos Santos J, Cena JA, Dame-Teixeira N, Martins MD, et al. Dental education profile in COVID-19 pandemic: A scoping review. Eur J Dent Educ. 2022.
31. Idris F, Zulkipli IN, Abdul-Mumin KH, Ahmad SR, Mitha S, Rahman HA, et al. Academic experiences, physical and mental health impact of COVID-19 pandemic on students and lecturers in health care education. BMC Med Educ. 2021;21(1):542.
32. Baum S, McPherson M. Improving teaching: Strengthening the college learning experience. Daedalus. 2019;148(4):5-13.
33. Yang D. Instructional strategies and course design for teaching statistics online: perspectives from online students. Int J STEM Educ. 2017;4(1):34.
34. Wise SR. A Quantitative Correlational Study of Faculty Sense of Efficacy in Online Introductory Courses: Grand Canyon University; 2019.

35. Horvitz BS, Beach AL, Anderson ML, Xia J. Examination of faculty self-efficacy related to online teaching. Innovative Higher Education. 2015;40(4):305-316.
36. Tschannen-Moran M, Hoy AW. Teacher efficacy: Capturing an elusive construct. Teaching and teacher education. 2001;17(7):783-805.
37. Hampton D, Culp-Roche A, Hensley A, Wilson J, Otts JA, Thaxton-Wiggins A, et al. Self-efficacy and Satisfaction With Teaching in Online Courses. Nurse Educ. 2020;45(6):302-306.
38. Selvaraj A, Radhin V, Ka N, Benson N, Mathew AJ. Effect of pandemic based online education on teaching and learning system. Int J Educ Dev. 2021;85:102444.
39. Idris F, Zulkipli IN, Abdul-Mumin KH, Ahmad SR, Mitha S, Rahman HA, et al. Academic experiences, physical and mental health impact of COVID-19 pandemic on students and lecturers in health care education. BMC Medical Education. 2021;21(1):1-13.
40. Chang TY, Hsu ML, Kwon JS, Kusdhany MLS, Hong G. Effect of online learning for dental education in asia during the pandemic of COVID-19. J Dent Sci. 2021;16(4):1095-1101.