

Comparison of Online And Face-To-Face Education Success in Dentistry

Diş Hekimliğinde Çevrimiçi ve Yüz Yüze Eğitim Başarısının Karşılaştırılması

Sedef KOTANLI^a , Mehmet Emin DOĞAN^a , Mehmet Veyssel KOTANLI^b 

^aHarran University, Faculty of Dentistry, Department of Oral and Maxillofacial Radiology, Şanlıurfa, Türkiye

^aHarran Üniversitesi, Diş Hekimliği Fakültesi, Ağız, Diş ve Çene Radyolojisi AD, Şanlıurfa, Türkiye

^bHarran University, Faculty of Dentistry, Department of Pedodontics, Şanlıurfa, Türkiye

^bHarran Üniversitesi, Diş Hekimliği Fakültesi, Pedodonti AD, Şanlıurfa, Türkiye

ABSTRACT

Background: The Covid-19 pandemic has significantly impacted daily life, as well as education, and the face-to-face education in dentistry faculties has been transformed into distance education. This study aims to compare the effectiveness of online and face-to-face education by comparing the passing grades of first-year students of the faculty of dentistry in both theoretical and practical courses during the face-to-face and online learning process.

Methods: The grades of a total of 211 first-year students were included in the study. 96 of these students were students who received online education in Harran University Faculty of Dentistry in 2019-2020. The remaining 115 students were students who received face-to-face education in the 2023-2024 academic year. The grade passing scores of the students included in the study in theoretical "Knowledge of Materials" and practical "Tooth Morphology and Manipulation" courses were compared. Independent t test was used to compare paired groups with normal distribution.

Results: In our study, the practical and theoretical course passing grades of 96 online and 115 face-to-face students were compared. No statistically significant difference was found between the online education average exam scores ($68,35 \pm 13,17$) and face-to-face average exam scores ($68,00 \pm 8,26$) of the students in the practical course ($p=0,276$). In the theoretical course, the online average exam scores of the students were found to be higher than the face-to-face average exam scores ($p=0,03$).

Conclusion: While there is no difference between online and face-to-face education exam grades in practical courses, the grades of students who received online education in theoretical courses were found to be higher. We think that success is higher in online theoretical courses due to the advantages such as the ability to record lessons and watch them again after the lesson.

Keywords: Online education, Face-to-face education, Dentistry

ÖZ

Giriş: Covid-19 pandemisi, insan yaşamının her anını etkilediği gibi eğitim de önemli ölçüde etkilenmiş ve diş hekimliği fakültelerinde yüz yüze yapılan eğitim şekli, uzaktan eğitime dönüştürülmüştür.

Amaç: Bu çalışmada diş hekimliği fakültesi 1. sınıfta öğrenim gören öğrencilerin yüz yüze ve çevrimiçi öğrenme sürecinde hem teorik hem pratik derslerdeki sınıf geçme notlarının karşılaştırılması yapılarak çevrimiçi ve yüz yüze eğitimin verimliliğinin kıyaslanması amaçlanmıştır.

Gereç ve Yöntemler: Araştırmaya toplam 211 1. Sınıf öğrencisinin notları dahil edilmiştir. Bu öğrencilerden 96'sı Harran Üniversitesi diş hekimliği fakültesinde, 2019-2020 yıllarında çevrimiçi eğitim almış öğrencilerdir. Geri kalan 115 öğrenci ise 2023-2024 öğretim yılında yüz yüze eğitim almış öğrencilerden oluşmaktadır. Çalışmaya dahil edilen öğrencilerin teorik (Maddeler Bilgisi) ve pratik (Diş Morfolojisi ve Manipülasyon) derslerdeki sınıf geçme puanları karşılaştırılmıştır. Normal dağılım ikili grupların kıyaslanmasında independent t testi kullanılmıştır.

Bulgular: Çalışmamızda 96 çevrimiçi eğitim almış ve 115 yüz yüze eğitim almış öğrencinin pratik ve teorik derslerdeki sınıf geçme notları kıyaslanmıştır. Pratik derste öğrencilerin çevrimiçi eğitim sınav not ortalamaları ($68,35 \pm 13,17$) ile yüz yüze eğitim sınav notları ($68,00 \pm 8,26$) arasında istatistiksel olarak anlamlı bir fark bulunamamıştır ($p=0,276$). Teorik derste öğrencilerin çevrimiçi eğitim sınav not ortalamaları yüz yüze eğitim sınav not ortalamalarından daha yüksek hesaplanmıştır ($p=0,03$).

Sonuçlar: Pratik derslerde çevrimiçi ve yüz yüze eğitim sınav notları arasında bir fark izlenmezken, teorik derslerde çevrimiçi eğitim alan öğrencilerin notları daha yüksek hesaplanmıştır. Derslerin kaydedilebilmesi ve ders sonrasında tekrar izlenebilmesi gibi avantajları dolayısıyla çevrimiçi teorik derslerde başarının daha yüksek olduğunu düşünmekteyiz.

Anahtar Kelimeler: Çevrimiçi eğitim, Diş hekimliği, Yüz yüze eğitim

INTRODUCTION

Coronavirus disease (COVID-19) has affected many countries around the world, including Türkiye, in a short period of time.¹ With the spread of the pandemic, it has been seen that similar practices such as maintaining social distance, banning international flights, restricting intercity travel, enforcing quarantine, and implementing curfews have been put into effect in every country.² During this process, universities have also undergone a transformation in line with the global trend. In many countries, face-to-face education has been suspended and distance education has been adopted.^{1,3} While online education has just started to become part of daily life with developing technological opportunities, it has become normalized during the COVID-19 pandemic.⁴ And thus, the opportunity and necessity to experience dental education through distance education has emerged.

Dental education is an education model in which theoretical knowledge is supported by intensive practice in both preclinical and clinical stages in Türkiye, as is the case worldwide. Depending on the number of students, the provision of theoretical education on site and the implementation of preclinical laboratory training in crowded environment has undoubtedly made conditions difficult during the COVID-19 pandemic. During this period, practical dental education has been suspended at different levels all over the world. First of all, online

courses, case studies and problem-based learning techniques have been tried to be implemented, especially during pandemic periods, in order to prevent individuals from gathering together as much as possible and to minimize infection risk by avoiding close contact.⁵ It has been reported in the literature by many studies that there is a need for much improvement and development in this area.^{6,7} While the ability to provide theoretical training online over the internet is seen as a reasonable solution in this area, especially clinical practice training should be reprogrammed in the most effective way suitable for the skills to be acquired and the opportunities of technology should be utilized to the maximum extent.⁸

MATERIAL AND METHODS

Before starting the study, the necessary permissions were obtained from the Dean of Harran University Faculty of Dentistry to retrospectively examine student grades. The study included the grades of 211 first-year students in total. Of these, 96 students received online education at Harran University Faculty of Dentistry during the 2019-2020 academic year. The remaining 115 students received face-to-face education during the 2023-2024 academic year.

Online education was delivered via computer or phone using the Zoom platform. In face-to-face education, the direct explanation method

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Sorumlu yazar/Corresponding Author: Sedef KOTANLI

E-mail: sedefakol@harran.edu.tr

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and the demonstration-based hands-on method were used. Each lesson lasted approximately 45 minutes, and around 100 students attended each session.

The students included in the study were compared in terms of passing grades in theoretical (Materials Knowledge) and practical (Tooth Morphology and Manipulation) courses. When selecting practical and theoretical courses whose grades would be compared, it was taken into account that both online and face-to-face education were given by the same instructor.

The data were tested for normal distribution using the Kolmogorov Smirnov test, and the Student t test was used to compare normally distributed features in two independent groups. Categorical variables were analysed using the Pearson chi-square test. SPSS Windows version 23.0 software package program was used for statistical analyses and $p < 0,05$ was considered statistically significant.

RESULTS

In our study, the practical and theoretical passing grades in lessons of 96 online and 115 face-to-face students were compared.

Table 1 shows the practical passing grades in lessons of the students. No statistically significant difference was found between the online education exam grade point averages ($68,35 \pm 13,17$) and face-to-face education exam grades ($68,00 \pm 8,26$) of the students in the practical lesson ($p=0,276$). The students' passing grades in the theoretical lesson are shown in **Table 2**. In the theoretical lesson, the students' online education exam grade point averages were found to be higher than their face-to-face education exam grade point averages ($p=0,03$).

The effect size for practical lessons was calculated as 0.03 (Cohen's $d=0,35/10,77$). This is a very small effect size. When the effect size was calculated for theoretical lessons; it was found as Cohen's $d=0,59$ (medium effect size).

Table 1. Success scores of students in practical lessons

	N	Mean \pm SD	p
Online	9600%	68,35 \pm 13,165	0,276
Face-to-face	11500%	68,00 \pm 8,263	
Total	21100%	68,16 \pm 10,747	

Table 2. Success scores of students in theoretical lessons

	N	Mean \pm SD	p
Online	9600%	78,29 \pm 12,381	0,003*
Face-to-face	11500%	71,60 \pm 10,354	
Total	21100%	74,30 \pm 11,659	

DISCUSSION

Analysing the success of the courses named "Materials" and "Morphology of Tooth and Manipulation" in dental education in our country provides important insights to measure the students' understanding of basic concepts. Examining the differences in grade distributions in face-to-face and online education periods is important for shaping dental education in the future. There are many survey studies in the literature evaluating the opinions of students about face-to-face and distance education.^{1,9-12} However, studies comparing students' course success grades are limited⁴. To the best of our knowledge, our study is the first study to compare face-to-face and online education in dentistry quantitatively.

Serçemeli et al.¹² conducted a study evaluating students' views on online education and concluded that most students had a negative view of distance education. The participants' positive views on online education were as follows: "It makes the subjects more memorable when we feel the need." The participants' negative views on online education were as follows: "It is difficult to reach the teacher when we want to ask questions."

Kurnaz and Ağgöl¹³ obtained positive results from using the flipped classroom model in accounting education in their study.

Alaca et al.¹⁴ compared online and face-to-face education in terms of

satisfaction and perceived learning outcomes among second-year students of the physiotherapy and rehabilitation department, and concluded that most of the courses practical courses met the perceived learning outcomes regardless of whether they were delivered face-to-face or via synchronous online education. It was also found that in online courses, satisfaction with instructors and course materials was high, while satisfaction with the infrastructure, exams and assignments was low. This may show us that the applied education system of the department is a system that can be applied when necessary.

In a study examining distance education methods applied in accounting courses¹⁵, it was concluded that since accounting courses are practice-oriented and require interaction with students, face-to-face lectures and exams are more suitable in terms of learning efficiency.

Kahramanoglu et al.¹⁶; in their study, which aimed to compare the self-confidence of 5th grade students while performing prosthetic treatment before and after Covid-19, they found that their self-confidence scores significantly decreased after the pandemic compared to before the pandemic.

Bellini et al.¹⁷ reported that Covid-19 had a negative effect on clinical studies and face-to-face theoretical education among dentistry students in their study.

In a study conducted on anatomy with medical and dental students by Singal et al.¹⁸ the majority of students (68%) admitted that they had difficulty in time management and that their attention was distracted due to home comforts or discomfort.

Eroğlu and Kalaycı¹ concluded, as a result of their interviews with 50 students who received face-to-face and online education, that distance education applications that are rearranged in a way that is blended with face-to-face education for some courses and/or programs are the most important investment that universities can make for the future. They made the following recommendations:

*Teaching staff should acquire new technological knowledge and skills related to this educational application and should be able to transfer this technological knowledge and skills they have learned to the education-training process.

*Certain standards should be established by the Council of Higher Education for distance education applications and evaluation studies should be carried out at regular intervals.

In our study comparing student grades in face-to-face and online education, no difference was observed between exam grades in practical courses, while students who received online education in theoretical courses had higher grades. This may be due to the advantages of online education, such as the ability to record lessons and watch them again after the lesson. Since this method cannot be applied effectively in online lessons, a significant increase in the success of the practical lessons may not have been observed even though the courses can be recorded and watched again. The fact that students have lower anxiety levels in their home environment may be one of the reasons why success in theoretical lessons increases in online education. In addition, another reason for the results of our study may be that in this process, students have the opportunity to reinforce practical training with theoretical training and can devote more time to theoretical training.

The main limitations of the study are that it was a single centre study, only one course was selected for theory and practice, and only first-year students were included in the study. Another limitation of the study is that the number of students receiving online education and the student population in the face-to-face class are not the same in terms of demographic characteristics and knowledge level. Future studies can be planned as multi centre studies by increasing the sample size.

CONCLUSION

While there is no difference between online and face-to-face education exam grades in practical courses, the grades of students who received online education in theoretical courses were calculated higher. We believe that success is higher in online theoretical courses due to the advantages such as the ability to record lessons and watch them again after the lesson.

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It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited are stated in the bibliography.

Benzerlik Taraması / Similarity scan

Yapıldı - ithenticate

Etik Bildirim / Ethical statement

dishekimligidergisi@selcuk.edu.tr

Çıkar Çatışması / Conflict of interest

Çıkar çatışması beyan edilmemiştir.

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