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Advantages and Disadvantages of Online Education in a Joint Medical Program from the Students' Perspective

Ortak Tıp Programında Öğrenci Gözüyle Çevirimiçi Eğitimin Avantajları ve Dezavantajları

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Abstract

Aim: In the 21st century, despite advanced technology, pandemics and natural disasters have forced universities to evacuate their classrooms. As a result, there has been a shift from conventional to online education. This study aimed to examine the advantages and disadvantages of online education for preclinical medical students.

Methods: This cross-sectional study was conducted between November 2020 and May 2021. The study population comprised preclinical medical students of the Marmara University–Eastern Mediterranean University (EMU) Joint Medical Program. The survey form used in the study was prepared using Google Forms, and a special link was sent to all students via the Microsoft Teams platform used for distance education. The survey included four sections, namely, demographic characteristics, advantages of online education, disadvantages of online education, and references of students.

Results: The survey was sent to all students (n = 155) enrolled in the preclinical program, and 112 students (72%) participated in the study. Of the participants, 63.4% were women; moreover, 38.4% were Turkish, 31.3% were Turkish Cypriot, and 30.3% were international students. The number of students in the first, second, and third years were 35, 51, and 26, respectively. The most common advantages of online education were a chance to review missed parts of the lesson (97.3%), an opportunity to plan the study time (59.8%), and increased comfort (54.5%). The majority of the students indicated that they faced numerous challenges during online education. The most common issues were the difficulty in learning practical lessons, lack of socializing, ineffective communication, technical issues during online classes, less interactive lectures that resulted in concentration loss, and difficulty in obtaining answers from lecturers. Of the surveyed students, 48.2% preferred conventional education, only 9.8% favored online education, and 42% preferred hybrid education.

Conclusions: Preclinical students at Marmara University–EMU Joint Medical Program prefer conventional education over online education. Although rewatching a lecture is a key advantage of online education, it is associated with several disadvantages for medical students. However, distance education seems to have become inevitable owing to factors such as diseases, natural disasters, and wars in the region as well as advancements in information technology. Therefore, it is necessary to conduct further research to overcome the limitations.

Keywords:
Online Education, Joint Medical Program, Traditional Education, College Students

Anahtar Sözcükler:
Çevrimiçi Eğitim, Ortak Tıp Programı, Geleneksel Eğitim, Üniversite Öğrencileri

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Özet

Amaç*: 21. yüzyılda gelişen teknolojiye rağmen pandemiler ve doğal afetler üniversitelerin fiziksel olarak boşaltılmasına neden olabilmektedir. Bu olumsuz gelişmeler geleneksel eğitimden çevrimiçi eğitime geçişi kaçınılmaz kılmaktadır. Bu çalışma, klinik öncesi tıp öğrencileri açısından çevrimiçi eğitimin avantaj ve dezavantajlarını incelemeyi amaçlamaktadır.*

Yöntem: *Bu kesitsel çalışma Kasım 2020 ile Mayıs 2021 tarihleri arasında gerçekleştirildi. Araştırmanın evrenini, Marmara Üniversitesi -Doğu Akdeniz Üniversitesi (DAÜ) Ortak Tıp Programında öğrenim gören klinik öncesi tıp öğrencileri oluşturmuştur. Çalışmada kullanılan anket formu Google-formlarında hazırlandı ve tüm öğrencilere uzaktan eğitim amaçlı kullanılan Microsaft Teams programı ile ulaşılarak özel olarak bir bağlantı gönderildi. Anket demografik özellikler, çevrimiçi eğitimin avantajları, çevrimiçi eğitimin dezavantajları ve öğrencilerin tercihleri olmak üzere dört bölümden oluşmakta idi.*

Bulgular*: Araştırma anketi klinik öncesi programda eğitim gören öğrencilerin tamamına (n=155) gönderildi, 112 öğrenci (%72) çalışmaya katıldı. Katılımcıların %63,4'ü kadındı. Öğrencilerin %38,4'ü Türk, % 31,3'ü Kıbrıslı Türk ve % 30,3'ü uluslararası öğrencilerden oluşmakta idi. Her üç sınıftanda öğrenci katılımı gerçekleşti; birinci, ikinci ve üçüncü sınıftaki öğrenci sayıları sırasıyla 35, 51 ve 26 idi. Çevrimiçi eğitimin katılımcılar açısından en sık görülen avantajları; kaçırdıkları kısımlara geri dönüp tekrar dinleme şansı (%97,3), çalışma süresini planlama fırsatı (%59,8) ve daha konforlu olması (%54,5) oldu. Öğrencilerin çoğu çevrimiçi eğitim sırasında birçok zorlukla karşılaştığını belirtti. En sık karşılaşılan dezavantajlar ise uygulamalı derslerin öğrenilmesinde zorluk, sosyalleşme eksikliği, etkili iletişim eksikliği, çevrimiçi derslerde yaşanan teknik sorunlar, daha az interaktif ders anlatımıyla birlikte yoğun konsantrasyon kaybı ve öğretim üyelerinden sorulara cevap almada zorluk olarak sıralandı. Katılımcıların %48,2' si geleneksel eğitimi tercih ederken, %42'si hibrit eğitimi, sadece %9,8'i ise çevrimiçi eğitimi tercih ettiğini belirtti.*

Sonuç: *Marmara Üniversitesi- DAÜ Ortak Tıp Programı'ndaki klinik öncesi öğrencileri, geleneksel eğitimi çevrimiçi eğitime tercih etmektedirler. Bir dersi tekrar izlemek çevirimiçi eğitimin temel avantajı olsa da, çevirim içi tıp eğitimi pek çok dezavantaj ile ilişkilidir. Ancak klasik eğitimi kısıtlayacıları; salgın hastalıklar, doğal afetler ve savaşlar ve yanı sıra bilişim teknolojilerinde ki gelişmeler nedeni ile uzaktan eğitim daha da önem kazanacak gibi görünüyor. Bu nedenle dezavantajların iyileştirilmesine yönelik daha fazla araştırma yapılması gerekmektedir.*

INTRODUCTION

For 2 years, the whole world experienced a pandemic of an infectious disease transmitted between people via respiratory droplet and direct contact routes (1). After the pandemic, the education of several students was severely impacted by a devastating earthquake in our region. In the initial days of the COVID-19 pandemic, we were introduced to social distancing, which increased the physical space between people. Subsequently, many institutions forced colleges and universities to clear their classrooms and hold students away from institutions. Therefore, many educational institutions encountered a crisis owing to the interruption of education during the pandemic. The best available option was to use technology and online education (OE) to solve the crisis. Hence, a general shift from conventional learning to OE has taken place (2). Similarly, after the earthquake, universities decided to switch to OE.

Traditionally, education has involved in-person learning in a physical classroom where direct interaction is possible between instructors and learners. The schedules are fixed, with predetermined start and end times. Instructors deliver the content via oral presentations using projectors and whiteboards. Face-to-face communication allows group discussions, team projects, social interactions, and immediate clarification of doubts (3). On the contrary, OE relies on technology and makes use of various

electronic devices instead of conventional classroom teaching. Courses are delivered entirely over the internet via various online platforms, which might be synchronous or asynchronous. Online synchronous learning is offered in virtual classrooms in which all participants are present, and it allows real-time interaction between instructors and students. Asynchronous learning is flexible; the students access materials and participate in the learning process at different times, and the instructors receive feedback with a delay and interact with the students at a later time point. The content of OE may include videos, interactive simulations, quizzes, and discussion forums. Access to resources such as recorded lectures, e-books, and online assessments is also possible. Communication occurs via emails and online meetings. On most platforms, students and instructors can share their screen or an electronic "whiteboard" to work together and share knowledge. Interaction may occur via virtual meetings, telephonic calls, or e-mails (4, 5). This learning strategy is not new, and some renowned universities had started online certification programs as early as in 1990 (6). Nonetheless, it is improving every day as new technologies are introduced and telecommunication is witnessing advancements. Furthermore, cost-effectiveness, frequent updates, time and place flexibility for both students and instructors, and easy accessibility are the advantages of this method (7). A growing number of schools and universities are switching from conventional teaching methods to OE or a mix of online and conventional education (8). The hybrid education also known as blended education integrates elements of both conventional and online education (9). It offers students an alternation between face-to-face and online teaching in a rotational model or a mix of face-to-face sessions and online components with scheduled flexibility in a flex model (10).

Although OE might be a useful option for some faculties, medical faculty students need practical sessions during the course of their education. OE is primarily used in the teaching of basic sciences in the USA (12). However, for clinical sciences, education still depends heavily on clinical training, which allows history taking and examination experiences between students and patients. While some studies have shown that OE is equivalent to conventional learning in terms of information exchange and skill development, other studies have reported that hybrid learning can be successful and is well-received by students and teachers, predicting a change in medical education in the future (13,14).

The faculty of Eastern Mediterranean University (EMU) has been offering a joint medical education program with a faculty in Turkey since 2012. Education has been face-to-face from the beginning, and students and teachers had not experienced OE until the pandemic. Students are taught preclinical education, which includes basic science courses, in North Cyprus in the first 3 years and then continue their education in Turkey. During the first 3 years of the program, many lecturers from Turkey travel to Cyprus to deliver lectures and leave after the course.

As a result of the lockdown imposed during the COVID-19 pandemic, EMU decided that the education be conducted online. The university supplied integrated Teams and Moodle to offer effective educational opportunities. In addition, some courses were delivered via an online learning platform established at Marmara University. Both synchronous and asynchronous OE are possible with this system. Furthermore, our university provided computers for students who were in dormitories as they could not go home.

This study aimed to shed light on the advantages and disadvantages of OE for preclinical medical students at EMU during the COVID-19 pandemic. Our hypothesis was that students prefer OE owing to its advantages and the structure of the joint program.

METHODS

This cross-sectional, online survey study was conducted between November 2020 and July 2021. The study population comprised medical students who were in the first 3 years of the Joint Medical Program at EMU. As the medium of instruction was English in the program, the survey questionnaire was prepared in English.

After the questionnaire was prepared in Google Forms, a link was sent via their e-learning accounts (Microsoft Teams) privately to all students. In case of not being able to reach all students, a decision was made to set a minimum sample size. With a confidence interval of 95%, the sample size was calculated to be 111 using the OpenEpi sample size calculator (15). The students who responded to the survey were compared with the entire student population, and there was no difference in terms of sex, nationality, or year distribution.

The survey was designed using a modified version of a questionnaire employed in similar studies after obtaining permission (16, 17). The survey included four sections, namely, demographic characteristics, advantages of OE, disadvantages of OE, and education preference of students during the pandemic restrictions. The survey had 22 questions; a requirement for sending and recording the answers was to respond to all 21 multiple choice questions and 1 essay-type question. The responses to items in the section "advantages and disadvantages of online learning" ranged from 1 to 3 [Disagree (1), Not sure (2), and Agree (3)].

The study complied with the tenants of the Declaration of Helsinki, and the responses were gathered only from individuals who provided informed consent, which was based on the EMU informed consent template.

Statistical Package Version 26.0 of IBM® SPSS was used for statistical analyses. Descriptive statistics were utilized for sociodemographic characteristics and to summarize the preferences of variables. The relationship between the variables and the participants' view of advantages and disadvantages was analyzed using the chi-square test.

RESULTS

The survey was sent to all preclinical students (n=155), and a total of 112 students participated in it. Of the participants, 63.4% were women; moreover, 38.4% of the students were Turkish, 31.3% were Turkish Cypriot, and 30.3% were international students. In addition, 31.3% of the participants were first-year students, 45.5% were second-year students, and 23.2% were third-year students.

The most common advantages of OE for the participants were the opportunity to review missed parts of the lesson (97.3%), the chance to plan the study time (59.8%), and being more comfortable (54.5%) (Table 1). There was no significant difference in terms of the responses to the questions on the advantages of OE according to the academic year. However, when the data were compared according to the nationality, Cypriots (65.1%) and Turkish (60%) agreed significantly higher than international students (29.4%) about "saves money."

Table 1. Students' Opinion about the Advantages of Online Education

QUESTIONS	Agree	Not Sure	Disagree
*More convenient and flexible than ordinary classes	57 (50.9%)	32 (28.6%)	23 (20.5%)
*Students have more time to learn and do other activities	58 (51.8%)	18 (16.1%)	36 (32.1%)

QUESTIONS	Agree	Not Sure	Disagree
*Easy to reach learning objects.	44 (39.3%)	39 (34.8%)	29 (25.9%)
*Chance to go back and listen again wherever you missed from the lecture	109 (97.3%)	3 (2.7%)	0 (0%)
*Give students the opportunity to plan their study time	67 (59.8%)	26 (23.2%)	19 (17.0%)
*More comfortable	61 (54.5%)	28 (25.0%)	23 (20.5%)
*Saves money	59 (52.7%)	26 (23.2%)	27 (24.1%)

**p-value based on Chi-square test of independence*

Many students indicated that they faced challenges during OE. The most common disadvantages included difficulty in learning practical lessons (92.9%), lack of socializing opportunities (83.9%), ineffective communication (80.4%), technical problems (83%), less interactive lectures resulting in concentration loss (78.6%), and difficulty in getting the desired answers from lecturers (59.8%) (Table 2). For the question "could be prone to plagiarism," third-year students (57.7%) responded "agree" much more than first-year (29.4%) and second-year (25.5%) students ($p = 0.02$). For the rest of the questions, there was no significant difference according to the academic year.

Table 2. Students Opinion About Disadvantages of Online Education

QUESTIONS	Agree	Not Sure	Disagree
*Loss of interest	77 (68.8%)	20 (17.9%)	15 (13.4%)
*Lack of effective communication	90 (80,4%)	17 (15,2%)	5 (4,5%)
*The shortness of the available time to solve the online tests, which causes panic	88 (78.6%)	11 (9.8%)	13 (11.6%)
*It is hard to teach the practical lessons of clinical subjects in online basis	104 (92.9%)	3 (2.7%)	5 (4.5%)
*Less interactive due to no contact between students and professors which makes it very boring and easily lose concentration	88 (78.6%)	12 (10.7%)	12 (10.7%)
*Facing technical difficulities during online classes	93 (83.8%)	10 (9.0%)	8 (7.2%)
*Lecturers just read from PowerPoint slides.	45 (40.2%)	51 (45.5%)	16 (14.3%)

QUESTIONS	Agree	Not Sure	Disagree
*Lack of socializing which badly affects mood.	94 (83.9%)	11 (9.8%)	7 (6.3%)
*Could be prone to plagiarism	39 (34.8%)	60 (53.6%)	13 (11.6%)
* Hard to get all the answers you need	67 (59.8%)	28 (25.0%)	17 (15.2%)

**p-value based on Chi-square test of independence*

While nearly half of the participants (48.2%) preferred conventional education, only 9.8% favored OE and 42% preferred hybrid education. The preference for conventional education increased as the academic year progressed, although no significant statistical difference was found. The number of medical students who preferred OE was very low in all years (Table 3).

Table 3. Preferences about the Academic Year

What type of learning method would you prefer after Covid-19?	Blended (hybrid)	Online Learning	Traditional	p-Value
First Year	15 (42.9%)	4 (11.4%)	16 (45.7%)	
Second Year	22 (43.1%)	6 (11.8%)	23 (45.1%)	0.742
Third Year	10 (38.5%)	1 (3.8%)	15 (57.7%)	

**p-value based on Chi-square test of independence*

DISCUSSION

This study attempted to understand the views of preclinical medical students regarding OE during the pandemic. The findings revealed that most students preferred conventional education owing to the numerous disadvantages of OE. The key limitations were less interactive lectures that frequently resulted in loss of concentration, lack of socializing, the difficulty in getting the desired answers from lecturers, and the difficulty in understanding practical lessons via online lectures.

In another survey involving medical school faculty members, the disadvantages of OE were reported to be lack of interaction, feedback, and socializing and decreased institutional commitment (18). Lecturers were not included in our study; however, upon comparing both studies, it is evident that the lecturers' views with regard to the limitations of OE are similar to those of the students.

Rose reported that educators can create an experience to students using the available virtual cases and involve them in telehealth during medical OE (11). Jiang et al. also highlighted the strategies to optimize OE for medical students, such as using online small-group learning techniques and incorporating clinical simulation training into OE (19). Improving OE environments with safe open education resources is another major aspect (20). As this was a novel way of education for both students and lecturers in our program, all of us started unprepared. We had deficiencies in these areas, and the dissatisfaction of the students is understandable.

Most students agreed that rewatching the missed lectures is a major advantage. This is a critical finding of our study as although students preferred conventional education over hybrid and/or OE, a considerable amount of students agreed that rewatching lectures is an advantage, which makes it an outstanding benefit. Moreover, a significant proportion of third-year preclinical students preferred conventional

education in contrast to first- and second-year students. We hypothesize that this could be due to the increase in practical-related lectures in the third year. Moreover, as first-year students had never experienced conventional learning in our faculty, there was no dramatic difference between those who preferred conventional and online modes.

A study from Turkey with 490 medical students from various universities examined the attitudes of students toward OE. More than half of the students favored conventional education for their academic success. Comparing our findings regarding the advantages and disadvantages of OE with the study results, there were some similarities. The most significant benefit of OE was flexibility of time and place and low economic cost. Difficulty in focusing and practicing self-control, low interaction, and poor technological setup were the major drawbacks (21).

Another study involving 156 medical students evaluated anatomy education during the pandemic. The results demonstrated that for the practical anatomy courses, students preferred face-to-face education. However, the majority of students were satisfied with OE theoretical anatomy courses owing to saving time and rewatching records (22). In yet another investigation, Bandhu et al. (8) examined the students' opinions about OE after the topics were converted to a web-friendly format for the seventh-semester students in the ophthalmology subject. They reported that OE was well accepted in medical education and that all students agreed on its usefulness.

In a review by Róbalo, pedagogical theories such as cyberculture and connectivism are analyzed in the context of distance education. Connectivism is being suggested in medical education. This approach involves utilizing various online tools such as blogs, social media, gamification, and online communities to support distance learning. Furthermore, the importance of clouds for online storage and collaboration is emphasized (23).

CONCLUSIONS

The findings from this study indicated that preclinical students preferred conventional education over OE, with the disadvantages of the latter outweighing its advantages.

Additionally, a significantly higher proportion of third-year students preferred conventional education compared with first- and second-year students. Less interactive lectures that resulted in frequent loss of concentration, lack of socializing, difficulty in getting the desired answers from lecturers, and difficulty in understanding practical lessons via online lectures were the major drawbacks of OE. However, OE appears to be inevitable owing to the surge in diseases, natural disasters, and wars in the present era. Therefore, improving OE should be given high priority. Medical Faculties should enhance their technology infrastructure, and educators should embrace online pedagogy for improved student-centric learning and active learning activities.

Limitations

The first limitation was the difficulty in sending online forms for the survey. We were unable to reach all students for our study. The second limitation is that the sample size was too small, which might have deteriorated the generalizability of our study in a controversial manner. In addition, clinical phase students, who required more practice in hospitals, were not included in this study.

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Appendix: Questionnaire

Section A: Demographic characteristic

1-)What is your gender?
☐Male
☐Female
2-)How old are you?
☐18
☐19
☐20
☐20+
3-)In which academic year are you?
☐First year
☐Second year
☐Third year
4-)Nationality

Section B: Advantages of Online Education

Compared to traditional education
5-)More convenient and flexible than ordinary classes.
☐Disagree
☐Not sure
☐Agree
6-)Students have more time to learn and do other activities.
☐Disagree
☐Not sure
☐Agree
7-)Easy to reach learning objects.
☐Disagree
☐Not sure
☐Agree
8-)Chance to go back and listen again wherever you missed from the lecture.
☐Disagree
☐Not sure
☐Agree
9-)Give students the opportunity to plan their study time.
☐Disagree
☐Not sure
☐Agree
10-)More comfortable.
☐Disagree
☐Not sure
☐Agree
11-)Saves money.
☐Disagree
☐Not sure
☐Agree

Section C: Disadvantages of Online Education

Compared to traditional education

12-)Loss of interest

☐Disagree

☐Not sure

☐Agree

13-)Lack of effective communication

☐Disagree

☐Not sure

☐Agree

14-)The shortness of the available time to solve the online tests, which causes panic

☐Disagree

☐Not sure

☐Agree

15-)It is hard to teach the practical lessons of clinical subjects in online basis

☐Disagree

☐Not sure

☐Agree

16-)Less interactive due to no contact between students, professors which makes it very boring and easily lose concentration.

☐Disagree

☐Not sure

☐Agree

17-)Facing technical difficulties during online lectures.

☐Disagree

☐Not sure

☐Agree

18-)Lecturers just read from PowerPoint slides.

☐Disagree

☐Not sure

☐Agree

19-)Lack of socializing which badly affects mood.

☐Disagree

☐Not sure

☐Agree

20-)Could be prone to plagiarism.

☐Disagree

☐Not sure

☐Agree

21-)Hard to get all the answers you needed.

☐Disagree

☐Not sure

☐Agree

Section D: Preference

22-)What type of learning method would you prefer after Covid-19?

☐Traditional

☐Blended (hybrid)

☐Online learning