

RESEARCH ARTICLE

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Evaluation of Online Anatomy Education Given in Medicine and Dentistry Faculties of Universities During Covid-19 Pandemic with Student

ABSTRACT

Objective: We are experiencing the effects of Covid-19 pandemic as the whole world. All educational facilities have been negatively affected within this period. In this study, the aim was to evaluate online Anatomy education during Covid-19 pandemic with students' feedbacks and it was questioned whether it would be efficient to use online education more actively in the following years.

Methods: A total of 1127 first and second year students from Dentistry Faculty and Medicine Faculty of Düzce, Karabük and İnönü Universities were included in the study. The survey prepared in "Google Forms" was sent online to students via "WhatsApp" application. Descriptive statistical analyses were used in data.

Results: According to analysis results, it was found that the students agreed on the content and efficiency of online anatomy education, not having learning difficulties, the layout of the lessons, the importance of the lesson, the necessity for their profession, the importance of visual tools, they are worried about not being able to do face-to-face lessons, and anatomy theoretical courses shouldn't be taught online when the pandemics is over. It was found that medicine faculty students placed more importance on anatomy education in terms of professional aspects.

Conclusions: As a result, we believe that the online Anatomy education students receive is important in terms of their professional development. However, we believe that it won't be possible for online Anatomy education to replace face-to-face education. This study will be a resource for studies to be conducted in medicine and health sciences fields in terms of online education.

Keywords: Anatomy, Online Education, Covid-19 Pandemic

Covid-19 Pandemisi Sürecinde Üniversitelerin Tıp ve Diş Hekimliği Fakültelerinde Verilen Online Anatomi Eğitiminin Öğrenci Geri Bildirimleri ile Değerlendirilmesi

ÖZET

Amaç: Dünya olarak Covid-19 pandemisinin etkilerini yaşamaktayız. Bu süreçte tüm eğitim faaliyetleri olumsuz etkilendi. Bu çalışmada Covid-19 pandemisi sürecinde online Anatomi eğitiminin öğrenci geri bildirimleri ile değerlendirilmesi amaçlandı ve online eğitimin sonraki yıllarda daha aktif kullanılmasının verimli olup olmayacağı sorgulandı.

Gereç ve Yöntem: Çalışmaya Düzce, Karabük ve İnönü Üniversitesi'nin Diş Hekimliği ve Tıp Fakültesi Dönem I ve II öğrencilerinden toplam 1127 öğrenci dahil edildi. Öğrencilere "WhatsApp" uygulaması üzerinden "Google Forms"da hazırlanan anket online olarak gönderildi. Verilerde tanımlayıcı istatistiksel analizler kullanıldı.

Bulgular: Analiz sonuçlarına göre öğrencilerin verilen online anatomi eğitimin içeri, verimliliği, öğrenme zorluğu çekmedikleri, derslerin düzeni, dersin önemi, meslekleri için gerekliliği, görsel unsurların önemi, dersi yüz yüze ders yapamamaktan dolayı endişeli oldukları ve pandemi bittikten sonra anatomi teorik derslerinin online olarak yapılmasını istemedikleri konularında hemfikir oldukları görüldü. Tıp fakültesi öğrencilerinin mesleki açıdan anatomi eğitimine daha çok önem verdikleri gözlemlendi.

Sonuç: Sonuç olarak öğrencilerinin aldığı online anatomi derslerinin mesleki gelişimleri için önemli olduğu kanısındayız. Ancak yine de online eğitimin yüz yüze örgün eğitim sisteminin yerini almasının söz konusu olmayacağını düşünmekteyiz. Bu çalışma online eğitimler açısından tıp ve sağlık bilimleri alanlarında yapılacak çalışmalar için bir kaynak oluşturacaktır.

Anahtar Kelimeler: Anatomi, Online Eğitim, Covid-19 Pandemisi

INTRODUCTION

Covid-19 pandemic affected all aspects of life negatively in the world and after the healthcare field; the biggest negative effects were experienced in the field of education. In this context, this is the first time that education has been affected on such as global scale and after the pandemic with the suspension of physical education in schools of all countries in the world, a transition was made to online education by necessity. For the whole world, online education is now the only resort, not the last resort (1). Countries quickly started to close this compulsory gap in education with different distance education platforms and tried to overcome the negative effects of the process on education with minimal damage. The effects of this process on the learning process of medicine and dentistry faculty students can be very serious (2).

In medicine faculties in our country, pre-graduation medical education is generally mostly classical and in the first three years theoretical courses are carried out in lecture halls, while in the second three years applied and theoretical education is conducted in faculty hospitals. Seeking alternatives to classical medicine education, especially with new technological devices that increase visuality are becoming more and more common around the world (3). This process has also been mentioned in our country recently. Anatomy is one of the disciplines in which visuality is very important and in this process of change, anatomist can have a leading role, they can switch to the fast-moving education model with modern approaches, flexible and innovative attitudes (4). Students play a vital role in medical education. At every stage of education, it is necessary to ensure student participation in the determination of objectives and curricula, faculty management and evaluation of the education and results (5, 6).

Dentistry education consists of a stressful and complicated process of education. The aim of dentistry faculties is to prepare students for the profession theoretically and practically. In dentistry faculties in our country, theoretical and clinical practices are generally carried out together (7, 8). Everyday education and technological innovations are becoming intertwined. Lectures through online systems and using three dimensional education materials in the field of education are just two simple examples (9).

Anatomy is a discipline which is not a stranger to this development. 3D digital materials produced for Anatomy education, online Anatomy atlases and technological devices such as hololens started to be used in some universities in our country. The aim of this study was to evaluate online Anatomy education given in medicine and dentistry faculties of universities during Covid-19 pandemic with students' feedbacks and it was questioned whether this compulsory online education could be a preliminary to technological innovations which are considered to be used more actively in the following years.

MATERIAL AND METHODS

In order to conduct this study, first of all permission was taken from "Scientific Research

Studies on COVID-19" in the Scientific Research Platform of Republic of Turkey Ministry of Health. After İnönü University non-interventional Ethics Committee Approval (Code: 2020/817) was taken, the study was conducted on Düzce University, Karabük University and İnönü University first and second year students. The survey prepared in "Google Forms" was sent online to students via "WhatsApp" application.

In the survey text, after the information was given, the students were asked to participate voluntarily. In order to increase the reliability of feedbacks, the students who filled in the survey were told in the text that they did not have to write their names and student numbers. In this way, they were able to express their ideas more openly without being under pressure. The questions used were designed as multiple choice questions and open-ended questions were used as little as possible. Two data collection instruments were used in the study. The first one is "student information form". This form includes multiple choice and open-ended questions including students' age, gender, year of study and their views on online Anatomy education. In multiple choice questions were asked such as the importance of taking their opinions for the anatomy course, whether the interrupted anatomy course worries them, which source they use most in their laboratory studies and which resource they cannot use in online education process can affect their education more. The second data collection instrument was "Evaluation of the Online Anatomy Education Received during Covid-19 Pandemic". As a result of related literature review, the categories to be evaluated were organized as the evaluation of online Anatomy courses. In open-ended questions were asked about online anatomy educations duration, competence, visual tools, resources, comprehensibility of Latin terms, physical conditions of online education environment, importance of anatomy education in professional life. In the questions in the second part, the expressions strongly disagree, disagree, undecided, agree, strongly agree were included (10).

In power analysis, it was calculated that when $\alpha:0,05$ $1-\beta(\text{power}): 0,80$, at least 191 subjects had to be included for average change in the feedbacks and recommendations of medicine and dentistry faculty first and second year students about online Anatomy education to be 4 units.

Statistical Analysis: Descriptive statistics were used in the analyses and SPSS Statistics 22.0 (IBM Corp., Armonk, NY, USA) for Windows package program was used for analysis. Average \pm standard deviations (ave \pm sd) and minimum-maximum (min-max) values of students' ages were given.

RESULTS

Descriptive statistics were used in the analysis of this study. Descriptive statistical analysis results were shown in the tables.

A total of 1127 first and second year Medicine Faculty and Dentistry Faculty students from Düzce University, Karabük University and İnönü University participated in the study. A total of 280 students, 111

(39.6%) male and 169 (60.4%) female, from Dentistry Faculties participated in the study. A total of 847 students, 366 (43.2%) male, 481 (56.8%) female, from Medicine Faculties participated in the study. Average±standard deviations (ave±sd) and minimum-

maximum (min-max) values of the individuals who participated in the study are given in Table 1.

Table 2 shows the questions in the first part of the survey and the answers of students to these questions.

Table 1. Average±standard deviation (min-max) values of students

| Faculty | Male | | Female | |
|-------------------|----------|---------|----------|---------|
| | ave±sd | min-max | ave±sd | min-max |
| Dentistry Faculty | 20.2±1.3 | 18-25 | 20±0.9 | 18-24 |
| Medicine Faculty | 20.1±1.4 | 17-25 | 19.8±1.2 | (17-28) |

Table 2. Answers given to the questions in the first part of the survey

| Survey Questions (Part I) | Dentistry Faculty | Medicine Faculty |
|---|-------------------|------------------|
| What do you think about getting the opinions of students related with the teaching of anatomy course? | | |
| Not necessary | 7.9% | 4.1% |
| Necessary | 92.1% | 95.9% |
| Does the fact that your formal anatomy education is interrupted due to Covid-19 pandemic worry you in terms of your internship period? | | |
| No, I am not worried | 45% | 45% |
| Yes, I am worried | 55% | 55% |
| Which of the following did you benefit more in your laboratory studies during you formal education? | | |
| Working with my friends | 27.5% | 20.8% |
| Working in the laboratory with models | 45.4% | 52.7% |
| Working alone with atlas/lecture notes | 21.1% | 20.3% |
| Working with cadaver | 6 % | 6.2% |
| Which of the following do you think affected your anatomy education process during your online education? | | |
| Not being able to provide a formal education environment at home | 38.6% | 30.9% |
| Not being able to work with models in the laboratory | 41.4% | 48.3% |
| Not being able to examine the information learned on cadaver | 14.6% | 14.4% |
| Not being able to ask the instructor the question you want during online courses | 5.4% | 6.4% |

Table 3 and Table 4 show the questions asked to the students in the second data collection part of the survey. The highest rated answers given by the students to the survey questions are shown in tables. The tables were grouped in two sections as the answers that were agreed and disagreed for the students of dentistry and medicine faculty according to the highest rated answers given to survey questions.

According to analysis results in Table 3, it can be seen that dentistry and medicine students agree upon the content and efficiency of online education given during the pandemic. However, according to survey results, students stated that they did not want Anatomy theoretical courses to be taught online after pandemic was over.

Table 3. Student opinions agreed upon according to the highest rated answers given to questions in the second part of the survey

| Survey Questions (Part II) | Dentistry Faculty | Medicine Faculty |
|--|---------------------------|-------------------------|
| The layout of the online curriculum was sufficient for anatomy learning | Disagree (27.5%) | Disagree (32.2%) |
| I did not have difficulty about learning anatomy with online education | Disagree (25.4%) | Disagree (27.7%) |
| Visual tools increasing the sufficiency of online course are used | Agree (32.5%) | Agree (39%) |
| In online anatomy course, visuality is more important than face-to-face education | Agree (31.4%) | Agree (27.9%) |
| The information I learned in online anatomy course aroused professional interest | Agree (34.3%) | Agree (33.1%) |
| I consider online anatomy course necessary for my profession | Agree (44.3%) | Agree (46.4%) |
| I would choose online anatomy course if it was elective | Agree (30.4%) | Agree (28.6%) |
| I attend online anatomy course with my own will | Agree (42.1%) | Agree (46.8%) |
| I would attend online anatomy course even if it was not compulsory | Agree (39.3%) | Agree (44%) |
| Courses should be followed on time to be successful in online anatomy course | Agree (36.4%) | Agree (44.2%) |
| Sources about online anatomy course were sufficient | Undecided (31.4%) | Undecided (33.8%) |
| It is important that I prepare for the course to be successful in online anatomy course | Agree (56.4%) | Agree (49.4%) |
| The physical conditions (internet connection, speed, sound level, interactive facility, etc) of the environment in which I attended online courses were suitable for learning | Agree (32.9%) | Agree (38.3%) |
| The physical conditions (internet connection, speed, sound level, interactive facility, etc) of the environment in which the instructor taught online courses were suitable | Agree (46.4%) | Agree (46%) |
| Online anatomy course is taught in relation to clinical courses | Agree (40%) | Agree (40.6%) |
| Latin terms I learn in online anatomy course facilitate learning subjects in other courses | Agree (49.6%) | Agree (52.5%) |
| In online anatomy theoretical courses, instructors explain Latin terms by giving their meaning | Agree (47.5%) | Agree (41.9%) |
| Interruption of formal anatomy courses worries me | Agree (29.6%) | Agree (32%) |
| I think that anatomy theoretical courses should be taught online when the pandemics is over | Strongly disagree (33.9%) | Strongly disagree (36%) |

When analysis results in Table 4 are examined, it was seen that dentistry and medicine faculty students disagreed about some answers. In the light of the answers given in Table 4, we think

that medicine faculty students give more importance to Anatomy education professionally and understand the place of anatomy better in their professional life.

Table 4. Student opinions disagreed upon according to the highest rated answers given to survey questions

| Survey Questions (Part II) | Dentistry Faculty | Medicine Faculty |
|--|--------------------------|-------------------------|
| Course hours of online curriculum are sufficient for learning anatomy | Agree (33.2%) | Undecided (28%) |
| Positive changes occurred in my views about the profession after taking the online anatomy course | Agree (31.1%) | Undecided (34.6%) |
| I can reach the instructors about subjects not understood in online courses | Agree (39.3%) | Undecided (30.6%) |
| I find the online anatomy education professionally sufficient | Agree (33.6%) | Undecided (28.7%) |
| I would like to take again if there are online anatomy courses in internship training | Undecided (32.9%) | Agree (35.9%) |

DISCUSSION

The aim of this study was to evaluate online Anatomy courses with the feedbacks of medicine and dentistry faculty students who received distance education during Covid-19 pandemic. As a result of the study, online education given to medicine and dentistry faculty students during the pandemic was found to be sufficient by the students. In the light of the questions that medicine faculty and dentistry faculty students disagreed on, it was found that medicine faculty students placed more importance on Anatomy education.

Anatomy is a course which is considered as the foundation stone of medical education and it has been used in medical education since 1200s and visuality is at the forefront in Anatomy course. Each health professional who touches the patient should have sufficient information about anatomy. Anatomy information is also important for completing medical examination, making a diagnosis and communicating correctly with colleagues (11). In a study conducted in the USA, it was reported that 80.000 preventable deaths that occurred in hospitals in one year were due to lack of anatomical information (12). This shows the importance of the quality of Anatomy education given in medicine and dentistry faculties. We believe that high rates of “agree” responses given by medicine faculty and dentistry faculty students to the questions ‘The information I learned in online Anatomy course aroused professional interest’, ‘I consider online Anatomy course necessary for my profession’, ‘I would choose only Anatomy course if it was elective’, ‘I attend online Anatomy course with my own will, ‘I would attend online Anatomy course even if it was not compulsory’ show the importance of Anatomy education for the students.

With the measures taken in Turkey, the country met Covid-19 later than European countries. After it was understood that the effects of pandemic would increase in our country, practices put into effect in other countries were evaluated and it was announced that 2020 spring term would be carried out completely with distance education in higher education (13).

Using distance education is reported to be one of the indicators of adaptation of countries, institutions and even individuals to the age they are in and the technology achieved (14). Despite this, the fact that laboratory and clinical practices have an important place in medicine and dentistry faculties cannot be ignored. In many countries, it is reported that the interrupted medical education causes anxiety in students (15). In our study, the result that 55% of the dentistry faculty and medicine faculty students were worried about the time of their internship is remarkable.

In literature review conducted, it has been reported that cadaver dissection training is more efficient than the best 3D training and that digital learning in Anatomy can be used only as an additional material to formal education (16). Magee (17) reported that increasing practical applications made Anatomy courses more interesting. According to Aziz et al.

(18), Anatomy education based on cadaver is a prerequisite for an education that provides the best use of medical information. Adding dissection in this facilitates and accelerates students’ gaining professional skills. In addition to giving scientific education, dissection provides showing an honest, ethical and humanistic approach to the patient (18, 19).

In our study, 45.4% of dentistry faculty students and 52.7% of medicine faculty students stated that “they got more benefit from practical Anatomy practices in which they worked with models in the laboratory”. This situation can be compensated relatively with rich visual resources to be used in online courses. It can be seen that medicine and dentistry faculty students reported visual elements being used more frequently in online Anatomy courses and they agreed that frequent use of visual elements was more important than formal education. Despite all these, 33.9% of dentistry faculty students and 36% of medicine faculty students responded as ‘strongly disagree’ to the question ‘I think that Anatomy theoretical courses should be taught online when the pandemics is over’.

When a study conducted in 2016 which reported that 78% of the medical faculty students used ‘YouTube’ social media platform to get Anatomy information (20) was considered, it can be concluded that students can try to compensate Anatomy practices interrupted due to Covid-19 in these platforms and this requires academic and ethical supervision. In our study, we believe that the “undecided” response given by students to the question about finding the resources in Anatomy courses sufficient and “disagree” responses given to the question ‘I do not have difficulty in learning Anatomy with online education” show that the students may want to make use of these unsupervised platforms.

CONCLUSION

Covid-19 virus becoming a pandemic in the world affected education and higher education systems in all the countries the pandemic was experienced and it has caused distance education given with the support of nations to replace formal education in order to slow down this pandemic. As a result of our study, while students of the dentistry faculty and medical faculty were concerned about practical courses not being carried out and theoretical courses being taught online, they consider the online anatomy courses they take as professionally important, they will choose anatomy if there is an elective course, and what they learn in the anatomy course has a high level of professional interest. It is seen that they are in a great consensus that they do not want the anatomy education to continue online after the pandemic is over. All these answers shows the importance that they give to anatomy education. It was concluded that although distance education model is a modern education method that can be used 7/24, formal education is preferred by students in sciences which are supported with visual elements and laboratory-dissection practices, like Anatomy.

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