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Evaluation of Distance and Face-to-Face Anatomy Education From the Perspective of Students During the COVID-19 Pandemic Period

Evaluación de la Educación Anatomía a Distancia y Presencial desde la Perspectiva de los Estudiantes Durante el Período de Pandemia del COVID-19

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SUMMARY: During the COVID-19 pandemic, a questionnaire was administered to the students who took anatomy courses through distance education in the Faculties of Medicine and Dentistry. Through the questionnaire, the aim was to figure out whether the infrastructure of Firat University was ready and adequate for distance education, how efficient the distance theoretical and practical anatomy classes were, and in what proportions the students would prefer to take face-to-face and distance anatomy classes when the pandemic is over. A questionnaire of 35 questions was applied to 555 students studying at the Medicine and Dentistry Faculties of Firat University. The students widely accepted the opinion that Firat University successfully implemented the distance education system, and distance education offered the opportunity to receive the lessons repeatedly regardless of time and place. In addition, it has been determined as a common opinion that anatomy classes given via distance education were equally beneficial as face-to-face education in terms of duration, content, and efficiency. Despite these advantages, the lack of face-to-face interaction and weak information permanence were reported as the negative aspects of distance education. The students emphasized that applied anatomy classes and especially cadaver studies should be conducted face to face. Anatomy education is quite substantial in the acquisition and development of professional skills. It is considered that distance anatomy education will be inadequate to provide this gain. The high demand for face-to-face practical classes by students also backs this up.

KEY WORDS: Anatomy; COVID-19 pandemic; Distance education; Face to face education.

INTRODUCTION

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), responsible for the pandemic, was first detected in the People's Republic of China in December 2019 (Lu *et al*., 2020). This epidemic disease, also known as COVID-19, was declared a pandemic by the World Health Organization on March 11, 2020, due to its rapid worldwide spread (World Health Organization, 2022).

The COVID-19 pandemic has adversely affected education, as it has globally affected many aspects of life. Within the framework of pandemic measures, many countries had to discontinue face-to-face education and switch to the distance education model at short notice (Kang, 2021). The first COVID-19 case in Turkey was detected on March 11, 2020. In the first stage, on March 16, 2020, education was suspended for 1 week in primary and secondary education institutions and for 3 weeks in universities. With the acceleration of the epidemic, distance education continued for the rest of the period (Karagoz *et al*., 2020; Babacan & Yuvarlakbas, 2022).

Distance education can be defined as teaching and planned learning activities where teaching and learning take place differently from known formal education methods, and the communication requirement is provided through different technologies and private institutional organizations. In this process, education at the Firat University Faculty of Medicine was kept going asynchronously through the Firat University Distance Education Center (FUZEM), a web-based e-learning platform, Blackboard, and the Advancity Learning Management System (ALMS).

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Anatomy education is one of the most substantial courses that contribute to medical students' acquisition and development of clinical skills. The a sine qua non of this anatomy education today is cadaver training. When compared with other courses, distance anatomy education has many challenges in this respect. The distance education model, which was switched to due to the COVID-19 pandemic, also caused unexpected setbacks in anatomy education. With the cessation of students' direct access to the cadavers, bones, and models, it has become very arduous to adequately fathom the three-dimensional relationships between structures in the body through only online methods. Though theoretical lessons were convenient to deliver in videoconference format, students became deprived of the practical courses where they learned by applying, touching, in other words, by being personally involved in the process (Thom *et al*., 2021; Singal *et al*., 2021).

When returning to face-to-face education in medical training during the normalization process of the pandemic, it is important to determine the pros and cons of the methods used during distance or hybrid education in this period (Smith & Pawlina, 2021).

It is obvious that the materials prepared during the distance education process, which commenced in universities at once due to the COVID-19 pandemic, may turn out to be inadequate, especially in courses such as anatomy classes where active involvement is needed. This research aimed to determine the efficiency of the distance education infrastructures in the Medicine and Dentistry Faculties of Fırat University, the students' degree of accepting the methods applied in the distance anatomy education process, as well as their concerns, opinions, and expectations about the anatomy education they received.

MATERIAL AND METHOD

Ethics approval. The research was started upon the approval of the Firat University Non-Interventional Research Ethics Committee (sessions no 2021/12-15).

Participants. This descriptive research included 555 students actively studying at the Medicine and Dentistry Faculties of Firat University. Data were collected through a questionnaire of 35 questions prepared by the researchers. The questionnaire was applied at an appropriate time and environment so as not to interfere with the education of the students. The students' personal details, such as name, surname, and phone numbers were not collected to ensure the reliability of the answers.

Statistical analysis. The descriptive statistics method was used for the statistical analysis of the data.

RESULTS

Semester I, II, and III students, 555 in total, 316 (56.9 %) female and 239 (43.1 %) male from the Medicine and Dentistry Faculties of Fırat University, took part in the questionnaire study. 37.8 % (n=210) of the participants were Semester I, 47 % (n=261) Semester II, and 15.2 % (n=84) were Semester III students.

The students taking part in the survey were asked which device/devices they used for online course tracking during the distance education process. According to the answers, some students used a single device while some used many devices. In this question, which allowed multiple answers, the devices used by the students were grouped within themselves, and the ones used by less than 10 student attendees were gathered under the title of "other". The frequency table for the device usage is as depicted in Table I.

During the normalization process, students were asked in what percentages they wanted to take the theoretical and practical anatomy classes face-to-face and online. Besides, it was asked how much of the online courses should be synchronized and how much should be asynchronous. 33.5 % of the students stated that they wanted all the theoretical anatomy lessons to be delivered face-to-face, with the highest rate among the answers. The demand for all practical anatomy lessons to be done face-to-face was expressed more strongly by 62.6 % of the students (Fig. 1). Although most of the students wanted both theoretical and practical lessons face-to-face, their preferences about how to conduct online classes were that they should be half-synchronized-half-asynchronous by 21.2 %.

The remaining 29 questions of the questionnaire had the type of five-point Likert scale (strongly disagree - disagree - undecided - agree - strongly agree).

The answers to the questions regarding the running systematic infrastructure and order related to the university's informing the students about this process, announcing the current changes to the students quickly, easy and fast access to the essential directions about distance education were "agree" by a majority. The students mostly gave the answer "I agree" to the question "I do not have any problems in connecting to distance education with the technological infrastructure I have".

Table I. Device(s) used by students in distance education.

Device(s) Used	n	%
Smart phone	100	18 %
Personal Computer	93	16.8 %
Personal Computer Smart phone Headphone	58	10.5 %
Smart phone Headphone	36	6.5 %
Communal In-Home Computer	34	6.1 %
Personal Computer Smart phone	30	5.4 %
Personal Computer Smart phone Headphone Microphone	24	4.4 %
Communal In-Home Computer Smart phone	21	3.7 %
Personal Computer Tablet Smart phone	19	3.4 %
Communal In-Home Computer Smart phone Headphone	18	3.2 %
Personal Computer Tablet Smart phone Headphone	17	3.1 %
Tablet Smart phone Headphone	10	1.8 %
Other	95	17.1 %

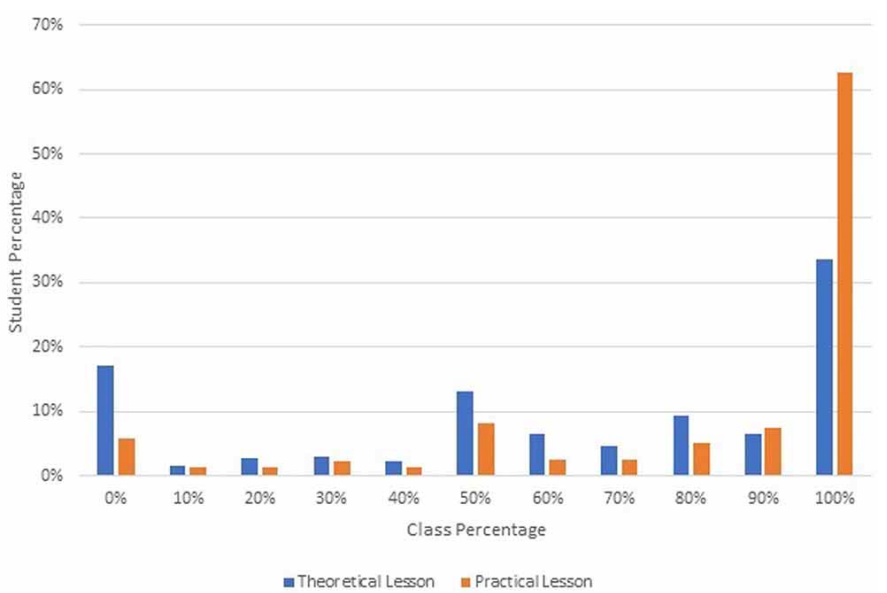

Fig.1. Percentage of the students preferring face-to-face education.

The students agreed by the highest percentage with the opinion that, in the distance education system, the individual knew about the course tracking process and could follow the courses at an appropriate speed. Students agreed to a considerable extent that the distance education system provided space flexibility and time savings during the day.

Despite the positive responses about distance education, the students stated in a high percentage that the deprivation of face-to-face interaction in this system made the learning process difficult, and the permanence of the knowledge they learned was extremely low.

Following the ordinary questions about the distance education system, the students were asked questions concerning the efficiency of the theoretical and practical sessions for the Anatomy course. With a high percentage of "I agree" answers, the students stated that both the duration and the content of the anatomy theoretical courses were sufficient, they could access the anatomy theoretical course contents quickly, and the courses were adequately efficient. Along with this satisfaction, the challenges in communicating conveniently and frequently with the lecturers were deemed a significant problem. Regarding the distance education process, a high number of students noted that the duration of the anatomy practice courses, the course content and the efficiency were sufficient, they could access the course content quickly and whenever they wanted, and the quality of the lectures was adequate and necessary. There turned out to be a widespread view that this system offered the opportunity to watch practical lessons repeatedly. On the other hand, the participants were undecided about the contribution of the distance anatomy practical trainingreceived to the permanence of the knowledge in the long term.

Although some students answered "undecided" to the question asking about the adequacy of the cadaver lessons delivered in this system, a higher number of students found it adequate. Most of the students agreed, saying "strongly agree" that face-to-face education and cadaver studies would be beneficial in the life of medicine and that being able to see and dissect cadavers makes one feel that they are more involved in medical education.

DISCUSSION

The COVID-19 pandemic has gained momentum and has reached a level that threatens public health. This situation not only engendered a global crisis but also intensely affected the living standards in Turkey and led to restrictions and difficulties in many areas. In this process, rapid transitions to compulsory changes in education had to be done. This encountered health problem necessitated switching from the classical amphitheater and laboratory education standards to online education methods inanatomy education, as it happened in general medical education.

Student feedback has a major place in determining the arrangements to be made in order to conduct the education and training that should continue within the framework of the measures taken while fighting the COVID-19 pandemic (Singal *et al*., 2021). Receiving the opinions and thoughts of students and instructors on anatomy education, which is the basis of medical education even in typical periods, has been a frequently used method to obtain more successful results in education. In the distance education system, which is passed on mandatorily with the onset of the pandemic, the deficiencies of online anatomy education can be eliminated through student feedback, and better learning of theoretical and practical lessons can be achieved (Brassett *et al*., 2020; Mahdy, 2020).

When the technological equipment used by the students taking part in our study for online course tracking is investigated, it is observed that students with socioeconomic differences either have or can access multiple devices. It is clear that deprivation due to the economic level that may lead to inequality of opportunity is not commonly experienced. In similar studies, the devices being used the most for accessing online courses were reported to be smartphones and computers, in line with the results of the present research (Singal *et al*., 2021; Ortadeveci *et al*., 2022).

When the face-to-face and online sharing rates of anatomy classes in the hybrid education model are questioned, the importance the students attach to face-to-face education is realized. Half of the students who attended the survey remarked that 80 % or more of the theoretical classes should be given face-to-face. This rate was higher for practical courses, and 62.6 % of the students argued that all practical courses should be done face-to-face. This result indicates that the already known importance of practical courses in terms of dexterity and occupational development is recognized also by students who are just at the beginning of the road.

Some earlier studies emphasized that students had difficulties in time management during the distance education period and that the home environment caused a loss of attention and motivation (Singal *et al*., 2021; Yoo *et al*., 2021). Contrarily, some other studies report that students' attention levels increase in the time and learning environment they specify themselves (Shahrvini *et al*., 2021). The data noting the students have a consensus that they can learn at any place and time in online education in conformity with their own planning is consistent with the results of some studies in the literature, while it contradicts some others.

Relevant studies indicate that only during face-to-face education can the three-dimensional structure of the human body be learned through various senses and that the developing technology and current alternative education materials can never replace cadaver dissection training, which is of immense importance in medical training (Smith *et al*., 2014; Brassett *et al*., 2020). It is considered necessary for students to receive training with cadavers in every field related to health since it ensures occupational professionalism (Pirri *et al*., 2021). In conformity with the preceding ones, the present research showed that, together with the benefits of multiple learning methods, students prefer face-to-face education that provides close-multiple interactions. In addition, the students widely thought that the knowledge gained through cadavers and other materials in face-to-face applied courses would be more permanent and that online cadaver education was insufficient. Moreover, it was concluded that face-to-face cadaver training plays a substantial role in developing students' occupational sense of belonging and preparing them for clinical training.

As a result, the online anatomy education at the Medicine and Dentistry Faculties of Firat University were observed to achieve the desired success from the students' perspective. Yet, it is considered that anatomy education, practical cadaver training (cadaver dissection) in particular, should be delivered face-to-face so that students can fully gain their occupational professionalism.

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RESUMEN: Durante la pandemia de COVID-19, se administró un cuestionario a los estudiantes que cursaban asignaturas de anatomía a distancia en las Facultades de Medicina y Odontología. A través del cuestionario, se pretendía conocer si la infraestructura de la Universidad de Firat estaba preparada y era ade-

cuada para la educación a distancia, ¿qué tan eficientes eran las clases teóricas y prácticas de anatomía a distancia? y ¿en qué proporciones los estudiantes preferirían tomar clases presenciales? y clases de anatomía a distancia cuando termine la pandemia. Se aplicó un cuestionario de 35 preguntas a 555 estudiantes de las Facultades de Medicina y Odontología de la Universidad de Firat. Los estudiantes aceptaron ampliamente la opinión de que la Universidad de Firat implementó con éxito el sistema de educación a distancia, y la esta manera de enseñar ofreció la oportunidad de recibir lecciones repetidamente, independientemente de la hora y el lugar. Además, se ha determinado como opinión común que las clases de anatomía impartidas a distancia fueron igualmente beneficiosas que las presenciales en términos de duración, contenido y eficiencia. A pesar de estas ventajas, la falta de interacción cara a cara y la débil permanencia de la información fueron reportadas como los aspectos negativos de la educación a distancia. Los estudiantes enfatizaron que las clases de anatomía aplicada y en especial los estudios de cadáver deben ser presenciales. La educación en anatomía es bastante sustancial en la adquisición y desarrollo de habilidades profesionales. Se considera que la educación anatómica a distancia será inadecuada para proporcionar esta ganancia. La alta demanda de clases prácticas presenciales por parte de los estudiantes también lo avala.

PALABRAS CLAVE: Anatomía; Pandemia de COVID-19; Educación a distancia; Educación cara a cara.

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