J Surg Med. 2024;8(10):163-167.
https://doi.org/10.28982/josam.8149

JOSAM

Research article
https://jsurgmed.com/

Journal of Surgery and Medicine

e-ISSN: 2602-2079

Surveying dentistry students' perspectives on anatomy education: A questionnaire-based study

Nazire Kılıç Şafak, Hüseyin Erdem

Department of Anatomy, Çukurova University, Adana, Turkey

ORCID of the author(s)

NKŞ: https://orcid.org/0000-0003-1521-5437
HE: https://orcid.org/0000-0002-7746-7464

Corresponding Author
Nazire Kılıç Şafak
Department of Anatomy, Çukurova University, Adana, Turkey
E-mail: kilicn@cu.edu.tr

Ethics Committee Approval
The study was approved by the Çukurova University Non-Interventional Clinical Research Ethics Committee, February 23, 2024, 141. All procedures in this study involving human participants were performed in accordance with the 1964 Helsinki Declaration and its later amendments.

Conflict of Interest
No conflict of interest was declared by the authors.

Financial Disclosure
The authors declared that this study has received no financial support.

Published
2024 October 25

Abstract

Background/Aim: Anatomy plays a crucial role in medical and dental education, equipping students with vital knowledge for comprehending the human body and its clinical implications. The COVID-19 pandemic led to a significant transition to online learning, raising questions about the efficacy of virtual anatomy education. Additionally, recent natural disasters like earthquakes have disrupted traditional learning settings, highlighting the need for alternative methods such as online instruction. This study sought to investigate dentistry students' opinions on anatomy education, specifically comparing the perspectives of students affected by earthquakes with those who were not, to determine any disparities in their attitudes towards online anatomy courses.

Methods: A voluntary survey was conducted on 135 first-year students at Çukurova University Faculty of Dentistry during the 2023-2024 academic year. A 5-point Likert-type survey with 21 questions was used for data collection. Results were presented as percentages and analyzed. The Likert scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree. Statistical analysis was performed using SPSS 20.0, including Kolmogorov-Smirnov and Shapiro-Wilk Tests for normal distribution assessment and the Mann-Whitney U-test for non-normally distributed scores comparison (P-value <0.05).

Results: Students directly affected by earthquakes showed a significant difference in their perception of online education compared to unaffected students, particularly in the question "Theoretical anatomy course can be followed online" (P=0.036).

Conclusion: This study provides insights for enhancing education planning and development based on student feedback.

Keywords: anatomy, online education, survey

Introduction

Dentistry education has a long history, initially integrated into medical education before evolving into a distinct discipline. Anatomy plays a crucial role in the foundational courses of the curriculum [1] and is universally recognized as a key component of medical education [2]. The study of anatomy, which explores the structure, function, and spatial relationships within the human body, forms the basis for clinical sciences, aiding in the accurate interpretation of patient symptoms and facilitating proper physical examinations in clinical settings [3,4]. A comprehensive understanding of anatomy is essential for diagnosing and treating diseases [5]. Effective learning methods are vital for grasping anatomy concepts thoroughly and accurately, with visualization and spatial ability playing key roles in understanding the intricate organization of the human body [6,7]. Traditional modalities such as didactic learning, cadaveric dissection, and the use of anatomical models are commonly employed in anatomy education [8]. Cadaveric dissection remains the most effective method due to its provision of real tissue information and depth perception [6]. However, the COVID-19 pandemic necessitated a shift to distance education in medical schools worldwide, impacting various areas, including anatomy education [9].

As the educational disruptions caused by the pandemic were beginning to subside, two powerful earthquakes struck on February 6, 2023, with magnitudes of 7.7 and 7.6 centered in Gaziantep Şehitkamil-Sofalarca and Kahramanmaraş Ekinözü, respectively [10]. Subsequently, a state of emergency was declared in the most affected cities to expedite search and rescue efforts [11], leading to the postponement of the spring term in universities [12]. Following this, students were granted the option of attending face-to-face classes alongside the ongoing distance education starting in April [13]. The earthquakes significantly disrupted anatomy education, traditionally reliant on methods like cadaveric dissection [14]. While distance education during the pandemic was challenging and concerning for both educators and students, it became a necessary adaptation for earthquake-affected students [15].

Feedback from students is crucial for improving education, fostering better communication between faculty and students, and addressing learning challenges [2]. This survey aims to explore dentistry students' perspectives on Anatomy education in the post-earthquake period and assess potential differences in opinions on online anatomy courses between students directly impacted by the earthquakes and those who were not.

Materials and methods

A survey was conducted on 135 first-year students at Çukurova University Faculty of Dentistry during the 2023-2024 academic year on a voluntary basis. The survey underwent a reliability analysis. Student identities and any information that could reveal their identities were not requested to ensure unbiased results. Approval was obtained from the Çukurova University Non-Interventional Clinical Research Ethics Committee on February 23, 2024 (Approval No. 141). The survey comprised 21 questions and did not include any influencing or guiding factors that could impact responses. The average completion time for the 5-point Likert-type survey, which included demographic information and opinions on anatomy, was approximately 6 minutes. The survey questions focused on anatomy education, online learning, and face-to-face instruction. Additionally, students were asked if they had experienced an earthquake in one of the 11 cities most affected by earthquakes.

The results of the survey, presented on a 5-point Likert scale, were analyzed and expressed as percentages. The responses were collected and analyzed as percentages due to the survey format. The frequency distribution of categorical responses and the scoring of answers were both included in the analysis. The 5-point Likert scale ranged from 1 = Strongly Disagree to 5 = Strongly Agree.

Statistical analysis

Data analysis was performed using IBM SPSS V20. Normal distribution was assessed using Kolmogorov-Smirnov and Shapiro-Wilk Tests. For non-normally distributed data, the Mann-Whitney U-test was utilized to compare between two groups, with a significance level set at $P < 0.05$.

The reliability of the survey questions was evaluated using Cronbach's Alpha Coefficient, yielding a value of 0.756, indicating good reliability.

A limitation of this study is the reliance on self-reported data from a single university cohort, resulting in a small sample size. Due to variations in educational practices during earthquakes across different universities, the questionnaire could not be administered to other institutions.

Results

A total of 135 dentistry faculty students participated in the study voluntarily, with 55 males (40.7%) and 80 females (59.3%). The mean age of the participants was 19.31 (0.94) years, ranging from 17 to 22 years.

Of the participants, 114 (84.4%) directly experienced the February 6, 2023 earthquakes in cities under a state of emergency, while 21 individuals (15.6%) did not. Following the earthquakes, 64.4% of the participants received face-to-face education, while 35.6% received online education. Among the students from earthquake-affected cities, 30.7% continued online education, and 69.3% continued face-to-face education.

On average, students spent 3.31 (2.83) hours per week studying anatomy, ranging from 0 to 20 hours. Men reported studying for 3.3 hours per day, while women studied for 3.28 hours per day. The majority of students (89.6%) chose to study dentistry voluntarily, while 10.4% did not (Table 1).

Table 1: Demographic characteristics of students and non-Likert questions

	Frequency (n)/Mean (SD)	Percentage (%)/median (min. - max.)
Sex		
Male	55	40.7
Female	80	59.3
Age	19.31 (0.94)	19 (17 - 22)
Experiencing the February 6 earthquakes		
Yes	114	84.4
No	21	15.6
Did you choose to follow classes online or face-to-face in the Spring Semester after the earthquakes?		
Online	48	35.6
Face-to-face	87	64.4
Anatomy study time per week (Hours)	3.31 (2.83)	3 (0 - 20)
Choosing the faculty on your own will		
Yes	121	89.6
No	14	10.4

SD: Standard deviation, min: minimum, max: maximum

Table 2: Descriptive statistics of survey question responses

	I totally disagree		I disagree		I am undecided		I agree		I totally agree		Mean (SD)	Median (min.-max.)
	n	%	n	%	n	%	n	%	n	%		
Theoretical anatomy course can be followed online.	25	18.5	30	22.2	24	17.8	43	31.9	13	9.6	2.92 (1.29)	3.00 (1.00-5.00)
Anatomy practical course can be followed online.	37	27.4	45	33.3	18	13.3	18	13.3	17	12.6	2.50 (1.35)	2.00 (1.00-5.00)
Online education may be an option in cases of necessity.	8	5.9	9	6.7	18	13.3	70	51.9	30	22.2	3.78 (1.06)	4.00 (1.00-5.00)
If online education was an option, I would choose it.	23	17.0	34	25.2	32	23.7	32	23.7	14	10.4	2.85 (1.25)	3.00 (1.00-5.00)
Online education can be useful for us not to waste time.	17	12.6	26	19.3	28	20.7	45	33.3	19	14.1	3.17 (1.26)	3.00 (1.00-5.00)
Anatomy is very important for medical education.	8	5.9	0	0.0	4	3.0	50	37.0	73	54.1	4.33 (1.00)	5.00 (1.00-5.00)
I enjoy studying anatomy.	6	4.4	12	8.9	48	35.6	50	37.0	19	14.1	3.47 (0.99)	4.00 (1.00-5.00)
I have a hard time studying anatomy.	5	3.7	10	7.4	33	24.4	53	39.3	34	25.2	3.75 (1.03)	4.00 (1.00-5.00)
Theoretical anatomy courses interest me.	7	5.2	20	14.8	38	28.1	54	40.0	16	11.9	3.39 (1.04)	4.00 (1.00-5.00)
Anatomy practical lessons interest me.	9	6.7	11	8.1	36	26.7	60	44.4	19	14.1	3.51 (1.05)	4.00 (1.00-5.00)
The number and duration of theoretical lessons are sufficient.	7	5.2	18	13.3	29	21.5	54	40.0	27	20.0	3.56 (1.11)	4.00 (1.00-5.00)
The number and duration of practical lessons are sufficient.	14	10.4	22	16.3	33	24.4	43	31.9	23	17.0	3.29 (1.23)	3.00 (1.00-5.00)
Cadaver training is required.	6	4.4	7	5.2	15	11.1	41	30.4	66	48.9	4.14 (1.09)	4.00 (1.00-5.00)
Educational videos are useful.	5	3.7	3	2.2	18	13.3	60	44.4	49	36.3	4.07 (0.96)	4.00 (1.00-5.00)
Anatomy models (dummies) are useful.	7	5.2	7	5.2	9	6.7	57	42.5	54	40.3	4.07 (1.07)	4.00 (1.00-5.00)
I use social media while studying anatomy.	5	3.7	6	4.5	23	17.2	61	45.5	39	29.1	3.92 (0.99)	4.00 (1.00-5.00)
I can easily reach my instructors to ask questions.	8	6.0	13	9.7	46	34.3	42	31.3	25	18.7	3.47 (1.09)	3.50 (1.00-5.00)
I study anatomy by myself.	5	3.7	15	11.2	23	17.2	57	42.5	34	25.4	3.75 (1.07)	4.00 (1.00-5.00)
I study anatomy with my friends.	14	10.5	12	9.0	20	15.0	54	40.6	33	24.8	3.60 (1.25)	4.00 (1.00-5.00)

SD: Standard deviation, min: minimum, max: maximum; Cronbach's alpha coefficient=0.756

Table 3: Comparison results based on earthquake experience

	Experiencing the February 6 earthquakes				Test statistics	*P*-value
	Yes		No			
	Mean (SD)	Median (min.-max.)	Mean (SD)	Median (min.-max.)		
Theoretical anatomy courses can be followed online.	3.02 (1.28)	3.00 (1.00-5.00)	2.38 (1.24)	2.00 (1.00-5.00)	861.000	**0.036**
Practical anatomy courses can be followed online	2.54 (1.37)	2.00 (1.00-5.00)	2.29 (1.27)	2.00 (1.00-5.00)	1079.000	0.459
Online education may be an option in cases of necessity.	3.80 (1.02)	4.00 (1.00-5.00)	3.67 (1.24)	4.00 (1.00-5.00)	1164.500	0.830
If online education was an option, I would choose it.	2.88 (1.26)	3.00 (1.00-5.00)	2.71 (1.23)	3.00 (1.00-5.00)	1107.500	0.577
Online education can be useful for us not to waste time.	3.23 (1.24)	3.00 (1.00-5.00)	2.86 (1.31)	3.00 (1.00-5.00)	1003.500	0.226
Anatomy is very important for medical education	4.31 (1.01)	5.00 (1.00-5.00)	4.48 (0.98)	5.00 (1.00-5.00)	1036.500	0.273
I enjoy studying anatomy.	3.44 (1.00)	3.00 (1.00-5.00)	3.67 (0.97)	4.00 (2.00-5.00)	1047.500	0.339
I have a hard time studying anatomy.	3.74 (1.06)	4.00 (1.00-5.00)	3.81 (0.93)	4.00 (2.00-5.00)	1196.500	0.997
Theoretical anatomy courses interest me.	3.40 (1.03)	4.00 (1.00-5.00)	3.29 (1.15)	3.00 (1.00-5.00)	1123.000	0.637
Anatomy practical lessons interest me.	3.47 (1.06)	4.00 (1.00-5.00)	3.71 (1.01)	4.00 (1.00-5.00)	1043.500	0.323
The number and duration of theoretical lessons are sufficient.	3.57 (1.14)	4.00 (1.00-5.00)	3.52 (0.98)	4.00 (2.00-5.00)	1134.500	0.692
The number and duration of practical lessons are sufficient.	3.25 (1.26)	3.00 (1.00-5.00)	3.48 (1.03)	4.00 (2.00-5.00)	1094.500	0.522
Cadaver training is required.	4.16 (1.11)	4.50 (1.00-5.00)	4.05 (1.02)	4.00 (2.00-5.00)	1089.500	0.480
Educational videos are useful.	4.02 (0.98)	4.00 (1.00-5.00)	4.38 (0.80)	5.00 (2.00-5.00)	927.500	0.078
Anatomy models (dummies) are useful.	4.03 (1.10)	4.00 (1.00-5.00)	4.33 (0.91)	5.00 (2.00-5.00)	983.500	0.180
I use social media while studying anatomy.	3.86 (1.03)	4.00 (1.00-5.00)	4.24 (0.62)	4.00 (3.00-5.00)	973.000	0.163
I can easily reach my instructors to ask questions.	3.4 (1.06)	3.00 (1.00-5.00)	3.38 (1.24)	4.00 (1.00-5.00)	1153.000	0.831
I study anatomy by myself.	3.73 (1.04)	4.00 (1.00-5.00)	3.81 (1.25)	4.00 (1.00-5.00)	1094.000	0.551
I study anatomy with my friends.	3.67 (1.22)	4.00 (1.00-5.00)	3.24 (1.37)	3.00 (1.00-5.00)	947.500	0.140

SD: Standard deviation, min: minimum, max: maximum; *Mann-Whitney U-test

The survey responses regarding anatomy education were analyzed using a 5-point Likert scale, with the frequency distribution and mean values presented in Table 2.

A significant difference was found in the opinion that "Theoretical anatomy course can be followed online" between students who experienced the earthquakes and those who did not (*P*=0.036). The median score for students who experienced the earthquakes was 3.00, compared to 2.00 for those who did not. No other significant differences were observed in the responses. Detailed information on P-values can be found in Table 3.

The comparison of responses between students who experienced the earthquakes and those who did not is detailed in Table 3, showing a significant difference in the perception of online education, particularly for the question "Theoretical anatomy course can be followed online" (*P*=0.036).

Discussion

The significant earthquakes that occurred on February 6, 2023, had a profound impact on various sectors, including education. The educational process was disrupted due to housing issues and inadequate learning conditions in the earthquake-affected cities [17]. Distance education, which gained prominence during the COVID-19 pandemic, revealed certain limitations in global studies assessing its outcomes [15]. The concept of social distancing in education dates back to the early 20th century when open-air classrooms were introduced to prevent the spread of infections during the tuberculosis epidemic. The first application of distance education through correspondence occurred in 1918 during the Spanish flu pandemic, followed by radio lecture broadcasts at Pennsylvania State College in 1922 [18]. Countries affected by previous epidemics like SARS and MERS had also experimented with web-based education [19,20]. Turkey initiated online education in medical training during the COVID-19 crisis [21]. Subsequently, in response to the consecutive earthquakes on February 6, 2023, online education was regionally implemented in our country, leading to the transition of the 2023 spring semester to online platforms [10,12].

Distance education offers advantages such as flexibility in time and space, easy access to course content, and cost-effectiveness due to the absence of physical classroom requirements. However, it also presents challenges like the lack of direct supervision for students struggling with discipline and the inability to provide immediate face-to-face responses to queries [22]. Practical anatomy education, in particular, necessitates physical settings for students to observe and interact with anatomical structures on cadavers and models, fostering active learning through discussions with peers in a physical environment [23]. The impact of distance education extends beyond academic realms, affecting socialization and stakeholder analysis, which require long-term evaluation. Furthermore, the enduring effects of remote anatomy education on professional and academic development warrant thorough investigation through surveys to establish a feedback mechanism [24].

Studies conducted with medical students have highlighted the inadequacy of online theoretical and practical anatomy courses for medical training [25]. Student feedback on distance anatomy education has indicated lower efficiency compared to traditional methods, emphasizing the need for curriculum enhancements to optimize distance learning outcomes [23]. While distance education offers benefits such as flexibility and time savings, a significant proportion of students still prefer face-to-face instruction, underscoring the importance of tailored curricula based on student feedback [26]. Instructors have also expressed concerns about the efficacy of distance education compared to traditional methods, particularly in practical anatomy education [24]. Student surveys have revealed mixed opinions on the effectiveness of distance education for anatomy courses, with a consensus emerging on the necessity of face-to-face instruction for practical components and professional skill development [27].

The ongoing debate between online and traditional education methods underscores the importance of adapting educational approaches to evolving circumstances. While traditional methods like dissections and models provide visual orientation for anatomy learning, the COVID-19 pandemic has necessitated the integration of online education, prompting calls for its enhancement and development [14]. Comparative studies have shown varying outcomes between face-to-face and blended learning methods, with blended learning demonstrating higher course success rates attributed to improved online course delivery and self-directed study opportunities [28]. The optimal approach to anatomy education involves a blend of traditional and remote methods, leveraging synchronous and asynchronous online tools to enhance learning outcomes [29].

Student perspectives on online education during the pandemic have highlighted challenges such as technical issues and lack of self-motivation, underscoring the need for continuous improvement in digital learning platforms [30]. Studies have also indicated a decrease in anatomy study time among students during the pandemic, emphasizing the importance of maintaining engagement and motivation in remote learning environments [31]. Student feedback has been instrumental in shaping the future of anatomy education, with calls for a balanced approach that combines traditional and online methods to maximize learning outcomes [32].

Conclusion

In conclusion, the integration of online education in response to natural disasters and disruptions underscores the need for continuous improvement and adaptation in educational practices. Student feedback plays a crucial role in shaping the evolution of anatomy education, guiding curriculum enhancements and technological advancements. While online education presents challenges for practical anatomy courses, it remains a valuable resource in emergency situations. By leveraging technological innovations such as 3D technologies and augmented virtual reality, anatomy education can be further enhanced to provide a comprehensive and engaging learning experience. Continuous evaluation and refinement of online education platforms based on student input are essential for ensuring the effectiveness and relevance of anatomy education in the digital age.

Acknowledgements

We extend our gratitude to the students who participated in this study.

References

1. Cay M, Bakirci S. The views of Usak University Dental Faculty academic staff on anatomy education. Annals of Medical Research. 2019; 26(4):681-4.
2. Yaghoubi M, Charkhat Gorgich EA, Karimi E, Hosseini ZS, Sabet N, Dehghan A, et al. The viewpoint of medical students on the importance of clinical anatomy education. Future of Medical Education Journal. 2019;9(3):49-54.
3. Tokpınar A, Yılmaz S, Değermenci M, Yılmaz H, Payas A, Baş O. Anatomy practical learning: opinions of medical faculty year 2 students about anatomy practical course. Bozok Tıp Dergisi. 2024;14(1):1-8.
4. Staśkiewicz GJ, Walczak E, Torres K, Torres A, Mazgaj M, Kostek H, et al. What do clinicians think of the anatomical knowledge of medical students? Results of a survey. Folia Morphologica. 2007;66(2):138-42.
5. Singh K, Gaur U, Hall K, Mascoll K, Cohall D, Majumder MAA. Teaching anatomy and dissection in an era of social distancing and remote learning. Advances in Human Biology. 2020;10(3):90-4.
6. Priyadarshini AR. Role of visualization techniques in learning anatomy. National Journal of Clinical Anatomy. 2023;12(1):66-7.
7. Roach VA, Mi M, Mussell J, Van Nuland SE, Lufler RS, DeVeau KM, et al. Correlating spatial ability with anatomy assessment performance: A meta-analysis. Anatomical sciences education. 2021;14(3):317-29.
8. Losco CD, Grant WD, Armson A, Meyer AJ, Walker BF. Effective methods of teaching and learning in anatomy as a basic science: A BEME systematic review: BEME guide no. 44. Medical teacher. 2017;39(3):234-43.
9. Totlis T, Tishukov M, Piagkou M, Kostares M, Natsis K. Online educational methods vs. traditional teaching of anatomy during the COVID-19 pandemic. Anatomy & Cell Biology. 2021;54(3):332-9.
10. Access: http://www.koeri.boun.edu.tr/sismo/2/06-subat-20-subat-2023-depremlerine-ait-on-degerlendirme-raporu/# (Accessed 24 Sep 2024).
11. Access: https://www.sbb.gov.tr/wp-content/uploads/2023/03/2023-Kahramanmaras-ve-Hatay-Depremleri-Raporu.pdf (Accessed 24 Sep 2024).
12. Access: https://www.yok.gov.tr/Sayfalar/Haberler/2023/universitelerde-bahar-egitim-ve-ogretim-donemi-acilisi-ikinci-bir-duyuruya-kadar-gecici-olarak-ertelendi.aspx (Accessed 24 Sep 2024).
13. Access: https://www.yok.gov.tr/Sayfalar/Haberler/2023/yok-baskani-ozvar-2022-2023-egitim-ogretim-bahar-donemi-ne-iliskin-alinan-yeni-kararlari-acikladi.aspx (Accessed 24 Sep 2024).
14. Khasawneh RR. Anatomy education of medical students during the covıd 19 pandemic. International Journal of Morphology. 2021;39(5):1264-9.
15. Boduç E. The effect of distance learning anatomy lesson on dentistry students in natural disasters such as earthquakes. Türk Diş Hekimliği Araştırma Dergisi. 2023;2(2):191-7.
16. Nawi FAM, Tambi AMA, Samat MF, Mustapha WMW. A review on the internal consistency of a scale: the empirical example of the influence of human capital investment on Malcom Baldridge quality principles in TVET institutions. Asian People Journal. 2020;3(1):19-29.
17. Tokpınar A, Yılmaz S, Yılmaz H, Değermenci M. Investigation of the opinions of the first-year students of dentistry who go to online education on anatomy education after the Kahramanmaraş Earthquake. Medical Records. 2023;5(3):603-7.
18. Spielman AI, Sunavala-Dossabhoy G. Pandemics and education: A historical review. Journal of dental education. 2021;85(6):741-6.
19. Patil NG, Yan YCH. SARS and its effect on medical education in Hong Kong. Medical education. 2003;37(12):1127-8.
20. Lim EC, Oh VM, Koh DR, Seet RC. The challenges of "continuing medical education" in a pandemic era. Ann Acad Med Singapore. 2009;38(8):724-6.
21. Bozdağ ZK, Çandır BN, Gayretli Ö, Arı Z. A survey-based research of medical faculty students' experiences on anatomy education during the Covid-19 pandemic process. Morphologie. 2023;107(356):12-21.
22. DeOliveira MMS, Penedo AST, Pereira VS. Distance education: advantages and disadvantages of the point of view of education and society. Dialogia. 2018;29:139-52.
23. Ortadeveci A, Ermez MN, Oz S, Ozden, H. A survey study on distance anatomy education: challenges unique to anatomy. Surgical and Radiologic Anatomy. 2022;44(1):41-7.
24. Özen KE, Erdoğan K, Malas MA. Assessment of the opinions and experiences of anatomy educators regarding the distance anatomy education in medical facilities under the effect of COVID-19 in Turkey. Surgical and Radiologic Anatomy. 2022;44(5):791-802.
25. Turamanlar O, Güzel H. The view of medical students on the anatomy course given by distance education during Covid-19 pandemic. Anatomy. 2021;14(3):202-9.
26. Babacan S, Dogru Yuvarlakbas S. Digitalization in education during the COVID-19 pandemic: emergency distance anatomy education. Surgical and Radiologic Anatomy. 2022;44(1):55-60.
27. Aksu F, Akkoc RF, Aras O, Ogeturk M. Evaluation of distance and face-to-face anatomy education from the perspective of students during the COVID-19 pandemic period. International Journal of Morphology. 2023;41(2):522-6.
28. Yoo H, Kim D, Lee YM. Adaptations in anatomy education during COVID-19. Journal of Korean Medical Science. 2021;36(1):1-12.

29. Ortadeveci A, Ermez MN, Oz S, Ozden H. Attainments during the COVID-19: a comparative survey study on ideal anatomy education from the students' perspective. Surgical and Radiologic Anatomy. 2022;44(7):1063-9.
30. Singal A, Bansal A, Chaudhary P, Singh H, Patra A. Anatomy education of medical and dental students during COVID-19 pandemic: a reality check. Surgical and Radiologic Anatomy. 2021;43:515-21.
31. Turhan B, Yakut Y. The opinions of physiotherapy students on online anatomy education during Covid-19 pandemic. Anatomy. 2020;14(2):134-8.
32. Şenol D, Toy Ş, Canbolat M, Pektaş M. Evaluation of online anatomy education given in medicine and dentistry faculties of universities during COVID-19 pandemic with student feedback. Konuralp Medical Journal. 2021;13(1):30-5.