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Student Perspectives on the Impact of Distance Learning on Audiology Education in Türkiye: A Descriptive Study

Türkiye'de Uzaktan Eğitimin Odyoloji Eğitimine Etkisine İlişkin Öğrenci Görüşleri: Tanımlayıcı Bir Çalışma

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ABSTRACT Objective: This study aimed to assess the experiences of audiology undergraduate students with online education during the coronavirus disease-2019 pandemic, focusing on their perceptions of how online education influences learning, motivation, and success. **Material and Methods:** The study included 331 participants who received at least one semester of online and face-to-face education in audiology undergraduate programs. The data was collected using the demographic information form and the online education evaluation form developed by the authors. **Results:** In the first part of the questionnaire, which evaluated the advantages of online education, 63.13% of the participants stated that being able to offline access course recordings enhanced their learning. In the second part, which assessed the disadvantages, 67.36% of the participants indicated that the lack of a conducive learning environment in online education hindered their success, 63.16% felt a lack of active engagement, and 60.71% experienced difficulties in focusing on lessons due to hardware problems (audio, visual, and connectivity issues). Regarding the adequacy of online education in theoretical and practical courses, 36.54% of the participants mentioned that online education fulfilled their learning needs in theoretical courses, while 80.65% expressed limitations in the effectiveness of online education for applied courses. **Conclusion:** The findings of the study showed that audiology students found online education advantageous in terms of being able to watch the course recordings as offline, learning at their own pace, and providing fast access to information, but disadvantaged due to its inadequacy in presenting the applied course content, the restriction of active participation in the course and technical problems.

Keywords: Distance education; audiology; COVID-19; academic success

ÖZET Amaç: Bu çalışma, çevrim içi eğitimin öğrenmeyi, motivasyonu ve başarıyı nasıl etkilediğine dair algılarına odaklanarak, odyoloji lisans öğrencilerinin koronavirüs hastalığı-2019 salgını sırasında çevrim içi eğitim deneyimlerini değerlendirmeyi amaçlamıştır. **Gereç ve Yöntemler:** Çalışmaya, odyoloji lisans programlarında en az bir dönem çevrim içi eğitim ve bir dönem geleneksel yüz yüze eğitim alan 331 katılımcı dâhil edilmiştir. Verilerin toplanmasında yazarlar tarafından geliştirilen demografik bilgi formu ve çevrim içi eğitim değerlendirme formu kullanılmıştır. **Bulgular:** Çevrim içi eğitimin avantajlarını değerlendiren anketin ilk aşamasında katılımcıların %63,13'ü ders kayıtlarına çevrim dışı erişebilmenin öğrenmelerini geliştirdiğini belirtmişlerdir. Dezavantajların değerlendirildiği ikinci aşamada, katılımcıların %67,36'sı çevrim içi eğitimde elverişli bir öğrenme ortamının olmamasının başarılarını engellediğini, %63,16'sı aktif katılım eksikliği hissettiğini, %60,71'i ise donanım sorunları (ses, görüntü ve bağlantı sorunları) nedeniyle derslere odaklanmakta zorluk yaşadığını belirtmiştir. Teorik ve uygulamalı derslerde çevrim içi eğitimin yeterliliği ile ilgili olarak, katılımcıların %36,54'ü teorik derslerde çevrim içi eğitimin öğrenme ihtiyaçlarını karşıladığını belirtirken, %80,65'i uygulamalı derslerde çevrim içi eğitimin etkinliği konusunda sınırlılık ifade etmiştir. **Sonuç:** Çalışmadan elde edilen bulgular odyoloji lisans öğrencilerinin çevrim içi eğitimi ders kayıtlarını tekrar izleyebilme, kendi hızında öğrenme ve bilgiye hızlı erişim imkânı sağlaması açısından avantajlı bulsa da uygulamalı ders içeriklerinin sunulmasında yetersiz kalması, derse aktif katılımı sınırlaması ve teknik aksaklıklar nedeni ile dezavantajlı bulduklarını göstermiştir.

Anahtar Kelimeler: Uzaktan eğitim; odyoloji; COVID-19; akademik başarı

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The coronavirus disease-2019 (COVID-19), initially appeared in Wuhan, China at the end of 2019, rapidly turned into a global pandemic. In Türkiye, the first case was diagnosed on March 11, 2020.[1] In line with global efforts to mitigate the severe and potentially fatal consequences of this virus, urgent protective measures were taken. These measures included restrictions on intercity travel, curfews, closure of public areas such as parks and shopping centers, the transition to remote working systems in some workplaces, closure of schools and a shift to online remote learning, and the requirement to wear masks and adhere to various social distancing rules.[2] The COVID-19 pandemic has led to significant societal, cultural, and economic changes and has also brought about innovations in the education system. Starting March 24, 2019, students at all educational levels in Türkiye were included in online education programs delivered through various digital platforms, EBA, and television channels. This process continued until the second semester of the 2019-2020 academic year.[3,4]

Online education is a modern and effective way of learning that enables educational materials to be accessed anytime and anywhere without any restrictions, and it can be easily updated and modified.[5] The online education model has 2 different approaches; synchronous and asynchronous, depending on the type of communication used. In synchronous teaching, students receive live instruction and can communicate with their instructors in real-time. In asynchronous teaching, students have the flexibility to work at their own pace and time, without any live interaction with their instructors.[6] While online education offers several benefits on economic, social, and individual levels, it also poses some challenges and limitations.[7]

Research has shown that computer usage skills and motivation are the most critical factors for success in online education.[8,9] Additionally, the use of interactive materials such as animation, video, and simulation can enhance students' interest and motivation.[10] According to Yılmaz and Horzum, if appropriate communication is established between the student and the instructor, online education can be as successful as traditional education.[11] Prati et al. study with dental students showed that online education promotes self-learning independence and improves online resource utilization skills.[12] However, Koska et al. argued that online education is not as effective as traditional education, and knowledge learned through theoretical courses is forgotten more quickly when taught online.[13] Furthermore, other studies suggest that online education is not as efficient in applied fields, such as health related science and also audiology, as students require more face-to-face instruction.[14,15] This difference in results suggests that students in different fields have different views on online education, and applied fields require more face-to-face techniques.[16,17]

Audiology undergraduate education relies heavily on clinical applications, and it is not yet clear how students perceive online education and how it affects their motivation and success levels. Therefore, the current study aims (1) to reveal the opinions of audiology undergraduate students about the online education process applied during the COVID-19 pandemic, the effect of online education on the learning, motivation, and success levels of the students on the basis of the theoretical and applications courses, (2) to determine advantageous and disadvantageous of online education from the students' perspective (3) to evaluate whether there is a difference between the results obtained from 2nd, 3rd, and 4th grade and graduate student on the perception of quality of remote courses.

MATERIAL AND METHODS

This study employed a descriptive cross-sectional design using a structured questionnaire prepared through Google Forms (Google LLC, Mountain View, California, United States). The study protocol was approved by the Social and Human Sciences Research and Publication Ethics Committee of İstanbul Medeniyet University with approval granted on (date: May 17, 2021; number: 2021/33) and followed the guidelines of the Declaration of Helsinki, 2013.

PARTICIPANTS

The study included voluntary participants who were either currently enrolled in or had graduated from an audiology department at a university in Türkiye. To be eligible for inclusion, participants were required to have experienced at least one semester of face-to-

face education and at least one semester of online education during the COVID-19 pandemic period. All participants were required to provide informed consent by filling out a voluntary consent form before participating in the study.

DATA COLLECTION AND ANALYSIS

Data collection involved two instruments: a demographic information form and the online education evaluation (OEE) form. The demographic information form encompassed questions about participants' age, gender, living area, household size, current grade level, number of completed semesters in face-to-face education, number of completed semesters in online education, and grade point averages (GPA) for both education periods.

The OEE form developed by the authors was used to collect data on the perspectives of audiology undergraduate students regarding online education in Türkiye. This form, meticulously crafted after an extensive literature review, comprises 2 sections and a total of 20 questions, aimed at evaluating the benefits and drawbacks of online education in both practical and theoretical courses.[7,18-21] Each question in the OEE form is rated on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree) (Appendix 1).

APPENDIX 1: Turkish version of online education evaluation form.

Avantajlar	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**
1. Çevrim içi eğitimde verilen derslerin kalitesinden memnunum.					
2. Çevrim içi eğitimde teorik ders içeriklerinin yeterli olduğunu düşünüyorum.					
3 Çevrim içi eğitimde uygulamalı ders içeriklerinin yeterli olduğunu düşünüyorum.					
4. Çevrim içi eğitim teorik derslerdeki öğrenme ihtiyaçlarımı karşılıyor.					
5. Çevrim içi eğitim uygulamalı derslerdeki öğrenme ihtiyaçlarımı karşılıyor.					
6. Çevrim içi eğitim olanakları sayesinde derslerimi kendi hızımda öğrenebiliyorum.					
7. Çevrim içi eğitim sayesinde ders kayıtlarını tekrar izleyebilmek öğrendiklerimi pekiştiriyor.					
8. Çevrim içi eğitim derslerinde kendimi daha aktif hissediyorum.					
9. Çevrim içi eğitimin bilgi birikimimi ve başarımı artırdığını düşünüyorum.					
10. Çevrim içi eğitim sayesinde gerekli bilgilere daha hızlı erişebiliyorum.					
Dezvantajlar					
1. Çevrim içi eğitimde sisteme girerken yaşadığım teknik ve donanımsal sorunlar motivasyonumu düşürüyor.					
2. Çevrim içi eğitimdeki gürültülü ortam öğrenmemi zorlaştırıyor.					
3. Çevrim içi eğitim sırasında çevresel uyaranlar (TV, telefon, ev halkı vs.) dikkatimi dağıtıyor.					
4. Çevrim içi eğitimde ders sürelerinin uzunluğu öğrenmemi zorlaştırıyor.					
5. Çevrim içi eğitim sürecinde arkadaşlarımla bir arada olamamak derse katılma motivasyonumu düşürüyor.					
6. Çevrim içi eğitimin sosyal becerileri azalttığını düşünüyorum.					
7. Teorik derslerde çevrim içi eğitimin etkisinin sınırlı olduğunu düşünüyorum.					
8. Uygulamalı derslerde çevrim içi eğitimin etkisinin sınırlı olduğunu düşünüyorum.					
9. Çevrim içi eğitimde öğrenme ortamının eksikliğinin başarımı düşürdüğünü düşünüyorum.					
10. Çevrim içi eğitimde görsel materyal ve örneklere rağmen uygulamalı dersleri anlamakta zorlandım.					

1: Kesinlikle katılmıyorum; 2: Katılmıyorum; 3: Bazen katılıyorum; 4: Katılıyorum; 5: Kesinlikle katılıyorum.

STATISTICAL ANALYSES

The statistical analyses were performed using IBM SPSS Statistics for Windows, Version 23.0 (SPSS INC., Chicago, IL, USA). Descriptive statistics were used to analyze the categorical data of the OEE form. The categorical variables were summarized using frequencies and percentages and were presented as tables. Since it was seen that the groups were normally distributed according to the Shapiro-Wilk test, the significance of the difference in the percentages of participants from different classes finding online education advantageous or disadvantageous was evaluated with one-way analysis of variance test. The independent sample t-test was used to determine the significance of the difference between the GPAs obtained in face-to-face education and online education. A p value of <0.05 was accepted as the level of significance in all statistical analyses.

TABLE 1: Demographic information of the participants.

Demographic Information	n	%
Sex		
Female	263	79.5
Male	68	20.5
Living area		
Home	241	72.8
Hostel	90	27.2
Living with		
1 person	17	5.1
2 person	44	13.2
3 person	87	26.3
4 person	94	28.4
5 person	89	27
Academic levels		
2nd-grade	98	29.6
3rd-grade	114	34.4
4th-grade	81	24.5
Graduate students	38	11.5

RESULTS

The study included 331 participants who had received audiology undergraduate education from 17 different universities in Türkiye (Figure 1). The mean age of the participants was 21.38±2.52 years. Table 1 shows the descriptive statistics regarding the demographic characteristics of the participants.

The cumulative GPA (out of 4) for face-to-face education was 2.80±0.49, while for online education, it was 2.85±0.45. The study revealed a statistically significant dissimilarity between the mean GPAs of online and face-to-face education, indicating a higher average grade point in online education (p=0.016).

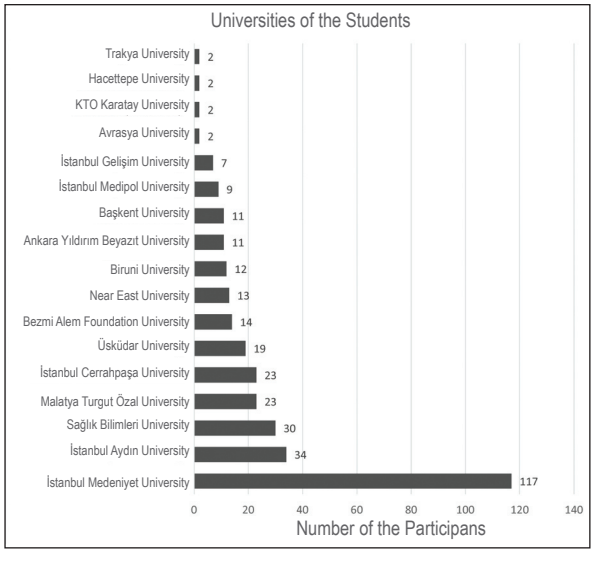

FIGURE 1: Number of sudents accordig to their respective universities.

FINDING FROM OEE FORM

The answers given to each item of the OEE form and their percentage of answers are shown in Table 2 and Table 3. However, for ease of interpretation, the findings will be presented by combining the answers "strongly agree" and "agree" as positive, and "strongly disagree" and "disagree" as negative answers for each item. Regarding the perceived advantages of online education, the majority of participants (63.13%) agreed that watching course recordings reinforces learning, while 37.25% reported that online training allows for flexible pacing. Furthermore, 30.81% expressed satisfaction with the quality of courses offered online, and 39.87% found the theoretical course content sufficient. A smaller proportion of participants (13.88%) reported feeling more actively engaged in online education, while 19.93% expressed satisfaction with their knowledge and success in online education. However, the majority of participants (80.96%) reported that the applied course content in online education was insufficient. In the

TABLE 2: Responses to the online education evaluation form; the advantages of online education.

Advantages	n	Strongly disagree (1) %	Disagree (2) %	Neither agree nor disagree (3) %	Agree (4) %	Strongly agree (5) %	SD ±SD
1. I am satisfied with the quality of the courses given in the online training.	331	13	20	36	22	9	1.13
2. I think the theoretical course content is sufficient in online education.	331	13	18	29	27	13	1.21
3. I think the applied course content is sufficient in online education.	331	53	26	13	4	4	1.06
4. The online education meets my learning needs in theoretical courses.	331	18	15	31	24	12	1.25
5. Online education meets my learning needs in practical courses.	331	57	24	13	4	2	0.98
6. I can learn my lessons at my own pace thanks to online education opportunities.	331	13	19	30	22	16	1.24
7. Being able to watch the lecture recordings again thanks to online education reinforces my learning.	331	9	11	17	24	39	1.31
8. I feel more active in online education courses.	331	32	31	22	7	8	1.20
9. I think that online education increases my knowledge and success.	331	23	28	29	12	8	1.19
10. I can access the necessary information faster thanks to online education.	331	11	20	31	23	15	1.20

SD: Standard deviation.

TABLE 3: Responses to the online education evaluation form; the disadvantages of online education.

Disadvantages	n	Strongly disagree (1) %	Disagree (2) %	Neither agree nor disagree (3) %	Agree (4) %	Strongly agree (5) %	SD ±SD
1. The technical and hardware problems I experience while entering the system in online education reduce my motivation.	331	7	13	23	27	30	1.23
2. The noisy environment in my online education makes it difficult for me to learn.	331	8	8	21	29	34	1.22
3. Environmental stimuli (TV, telephone, household, etc.) distract me during online education.	331	10	11	21	27	31	1.29
4. The length of the lessons in online education makes it difficult for me to learn.	331	8	12	28	27	25	1.21
5. Not being together with my friends during the online education process reduces my motivation to attend the class.	331	12	13	20	26	29	1.34
6. I think that online education reduces social skills.	331	14	13	25	19	29	1.39
7. I think that the effect of online education in theoretical courses is limited.	331	13	17	33	17	20	1.28
8. I think that the effect of online education in applied courses is limited.	331	4	6	9	18	63	1.12
9. I think that the unsufficent of learning environment in online education reduces my success.	331	7	8	17	33	35	1.21
10. Despite the visual materials and examples in the online education, I had a hard time understanding the applied lessons.	331	7	10	20	29	34	1.22

SD: Standard deviation.

inquiries made regarding disadvantages, 56.48% of the participants reported experiencing technical and hardware issues while accessing the online education system, which reduced their motivation. Additionally, 62.83% stated that they had difficulty learning in online education due to environmental noise, 36.85% were undecided about the effectiveness of theoretical courses, and 70.65% felt that the impact of online education was limited in practical courses.

Additionally, the majority of participants expressed concerns related to online education. A significant percentage (67.36%) believed that the absence of a conducive learning environment negatively affects their success. Moreover, 63.44% reported difficulties in grasping the course content, even with the aid of visual materials and examples provided in online education. The lack of social interaction was another significant factor, with 54.68%

indicating that not being able to be with their friends during online classes decreased their motivation. Additionally, 48.03% mentioned that they did not prefer online education due to its negative impact on their social skills. In the comparison between different class levels (2-3 classes, 2-4 classes, 2-graduates, 3-4 classes, 3-graduates, 4-graduates), there was no statistically significant difference between any group in terms of finding online education advantageous [F(3.327)=0.305; p=0.822]. However, in terms of the comparison made regarding disadvantages, it was observed that 2nd-grade students exhibited a statistically significant higher tendency to perceive online education as disadvantageous compared to their 3rd-grade counterparts [F(3.327)= 3.75; p=0.011].

DISCUSSION

As part of the protective measures taken due to the COVID-19 pandemic, schools have been closed and the use of online education tools has become mandatory. It is thought that the chaos environment created by the pandemic and the unplanned changes in the education model against this sudden developing situation may have negatively affected the quality of education. On the other hand, identifying the faults and deficiencies in the process will enable the development and improvement of online education management. For this reason, in this study, by examining the effect of online education on audiology education in Türkiye, it has been tried to create a profile that reveals the general attitudes and academic performance levels of university students towards the online education process during the pandemic. Within the scope of the research, the effectiveness of online education in terms of applied and theoretical courses, the learning, motivation and success status of audiology undergraduate students in the online education process, and the advantages and disadvantages of online education were examined. The findings of the current study reveal that audiology undergraduate students had diverse experiences with online education during the COVID-19 pandemic. Many students reported perceiving online education as advantageous due to allowing them to watch the course recordings again and to learn at their own pace. Consistent with our results, Yılmaz et al. also reported student satisfaction with online education, attributing it to the ease of accessing course materials and reviewing lectures.[22]

On the other hand, the study results also revealed that students felt less engaged in synchronous lessons and lacked motivation. The absence of a physical classroom environment in online education may hinder meaningful teacher-student and student-student interactions.[8] A substantial proportion (67.36%) of students in our study reported that the lack of conducive learning environments in online education negatively affected their academic performance. Mavis et al. similarly found that students perceive online education as less interactive compared to traditional classroom settings.[23] Furthermore, the study by Akdemir and Kılıç revealed that verbally inclined students expressed higher satisfaction with online teaching, suggesting that the effects of online education vary across different disciplines.[24] The fact that 80.65% of the students in our study expressed that online education was less adequate for applied courses further supports this view. Moreover, a significant number of participants in our study reported encountering internet and hardware problems, impacting their focus during online lessons. These problems have also been reported in previous studies as some of the major challenges in online education.[4,22] Dissatisfaction with practical courses in online education may stem from various factors, including course delivery methods, classroom environment, attention requirements, and technological limitations. In a study conducted on audiology, students have highlighted negative effects of online education on practical knowledge and professional competence.[25] Rizun and Strzelecki observed that although students had positive perception that online education enhances self-efficacy and productivity, they expressed a desire to return to traditional education.[26] Our study also indicated that a substantial proportion of participants (32.91%) expressed dissatisfaction with the quality of online courses, while another segment (36.25%) remained undecided about the quality. Similarly, another research has reported lower perceived quality of online education a lack of course materials and insufficient interactive teaching.[27] These findings

suggest that online education can negatively impact students' knowledge, motivation, and success. Thus, adopting a hybrid approach that integrates traditional applied courses with online theoretical education could offer more advantages for audiology undergraduate students.

Interestingly, in our study, female students perceived online education as more advantageous than their male counterparts, which contradicts previous literature reporting higher satisfaction and self-efficacy among male students in online education.[28,29] The disparity in our study's results, which favored female participants' perception of online education, may be attributed to the larger number of females in the sample. Moreover, it's essential to acknowledge the study's limitations, such as not including students from all universities and the unequal distribution of participants. Future research should adopt a more comprehensive approach by including a larger and more diverse sample. Additionally, investigating the benefits and drawbacks of hybrid education, blending face-to-face and online learning, would offer valuable insights into students' experiences and factors influencing their knowledge, motivation, and success.

CONCLUSION

The study sheds light on the advantages of online education, such as its capacity for quick and easy access to information, while also acknowledging potential challenges, especially in practical courses, which include limited class participation, deficiencies in course materials, and restricted interaction with instructors.

These findings hold paramount importance in contributing to the improvement of future online education applications that can be implemented not only during pandemics but also in other emergency circumstances, like earthquakes.

Based on these findings, the following recommendations can be made to enhance the effectiveness of online education:

- Increasing student-instructor interaction to foster a more engaging and participative learning environment.
- Providing diverse and comprehensive course content, incorporating written, visual, and relevant materials to cater to different learning preferences.
- Developing innovative strategies specifically tailored to enhance learning experiences in applied courses.
- Utilizing interactive tools and technologies to maximize student engagement and improve learning outcomes.
- Encouraging collaborative learning and peer interaction through group discussions and activities.
- Offering training and support to instructors for effective implementation of online teaching methods.
- Investing in reliable online platforms to ensure smooth and seamless content delivery.
- Conducting regular evaluations and research to continuously improve the quality of online education.
- Considering adopting a hybrid approach that combines traditional and online instruction to leverage the benefits of both approaches for better educational outcomes.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Sıdıka Cesur Coşkun;* ***Design:*** *Sıdıka Cesur Coşkun;* ***Control/Supervision:*** *Sıdıka Cesur Coşkun;* ***Data Collection and/or Processing:*** *İbrahim Sarı, Buse Harman, Onur Üstündağ, Ensar Uyar, Merve Torun Topçu, Başak Mutlu;* ***Anal-***

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