Research Article

Hacettepe University Journal of the Faculty of Pharmacy
Volume 44 / Number 3 / September 2024 / pp. 220-227

Pharmacy Students' Perceptions on Distance Learning: A Case of COVID-19

Leyla YUMRUKAYA[1]*
ORCID: 0000-0002-3382-2794
Gizem Nur ALTINSOY[2]
ORCID: 0009-0006-5313-0126
Selen YEĞENOĞLU[1]
ORCID: 0000-0002-5217-8797

[1]Hacettepe University, Faculty of Pharmacy, Department of Pharmacy Management, Ankara, Turkey

[2]Hacettepe University, Faculty of Pharmacy, Ankara, Turkey

Corresponding author:
Leyla YUMRUKAYA
Hacettepe University, Faculty of Pharmacy
Department of Pharmacy Management
Ankara, Turkey
E-mail: leylayumrukaya@hacettepe.edu.tr
eczleylayumrukaya@gmail.com
Tel: +90 312 305 23 49

Received date : 01.11.2023
Accepted date : 23.05.2024

DOI: 10.52794/hujpharm.1383787

ABSTRACT

Online distance learning systems gained importance during school closures all over the world after the COVID-19 outbreak. Pharmacy schools in Türkiye were also affected by these changes and educational activities which shifted to online distance education. In this study, we aimed to evaluate the attitudes of pharmacy students concerning distance education during the pandemic regarding their gender, infrastructural issues, having separate rooms, classes, residency areas and the number of theoretical and applied courses. We conducted an online cross-sectional survey. Thus, a total of 380 pharmacy students participated from pharmacy schools in Türkiye. Perceptions of pharmacy students were compared as per their demographical and educational status. Except gender variable, no significant difference was found among the students. Switching to online distance education formed as a response to the crisis in the pandemic. Although student perceptions from different disciplines have been examined in the existing literature, pharmacy students' perceptions remained limited. Hence, it is important to understand and point out the students' perceptions of online distance education in pharmacy schools to be prepared for future emergencies.

Keywords: COVID-19, distance education, online education, pharmacy education

1. Introduction

Distance learning has been the case almost for two centuries with remarkable changes from the initial phase to the present day [1]. It refers to a method in which teachers and students are physically in a remote location. Even though it is associated with various methods and tools such as teleconferencing and, printable materials. It is currently considered mostly with Internet and web-based technologies [2]. After the COVID-19 outbreak, the whole educational system was affected by shifting to web-based distance learning [3].

Schools and universities were closed as a measure for the spread of the virus after the declaration of the pandemic in 2020 around the globe. During closures, educational activities were massively disrupted among other activities such as working, in our daily lives [4]. Interruption in face-to-face education activities has affected nearly 1,6 billion students all over the globe [5]. In Türkiye, nearly 25 million students have been affected by school closures, and nearly 7 million of them were in higher education [6]. The measures started with school disinfection applications and then in March 2020, all education institutions switched to online distance education in Türkiye [7-8].

The sudden change has led to an education crisis in Türkiye and all around the globe. Having experience in distance education has affected the emergency response to this crisis. Countries with limited capacity for distance learning committed to building their systems from scratch [9]. Even though, technological capacities differ between countries and educational institutions, most of the education systems were not ready for this sudden alteration [10]. Scholars have examined online distance education in COVID-19 closures for different disciplines such as engineering, sports science, medicine, and nursing [11-13]. As in many disciplines, healthcare students were affected by distance education during school closures as well. Since, healthcare disciplines' education mostly consists of applied and theoretical courses, being apart from the laboratories and clinical settings caused major issues in adaptation to the distance learning [12, 14].

As a healthcare discipline pharmacy education programme also includes theoretical and applied courses, mostly in laboratories [15-17]. Hence, scholars examined the effects of the pandemic and school closures on pharmacy education from lecturers' and students' perspectives [18-20]. Besides, a study on the effects of the pandemic on pharmacy schools' stakeholders' wellbeing was examined in Türkiye [21]. However, studies on students' perspectives on distance learning remained limited. Thus, in this study, we aimed to evaluate the attitudes of pharmacy students towards distance education and the web-based distance education system during the COVID-19 pandemic.

2. Material and Methods

2.1. Study design

This study was designed as a cross-sectional survey study. The participants were students at pharmacy schools in Turkey, in the 2020– 2021 academic year. This study was approved by the Ethical Commission of Hacettepe University (Permit date-No. 14.12.2021-E-35853172-300-00001927469). A three-sectioned survey was designed as an online questionnaire. A summary of the study purpose and the ethical statements is included in the first section considering informed consent. Participants could reach the other two sections only if they accepted participation in the first section.

A 35-item measurement tool was used, developed by Kışla [22]. The tool is a five-point Likert-type questionnaire, containing statements about distance learning and each item is rated from strongly disagree to strongly agree. The 1., 2., 4., 5., 9., 11., 14., 15., 16., 18., 19., 22., 23., 25., 26., 28., 29., 33. and 34. The items of the tool's statements ranged from 5 for "strongly agree" and 1 for "strongly disagree" respectively. Since the other items included negative statements, their scoring was reversed as 5 for "strongly disagree" and 1 for "strongly agree". Therefore, the maximum score for this tool is 175 and 35 is the minimum score. Thus, the higher total scores indicate more positive perceptions of participants towards distance learning. Prior to the tool items, demographic and educational questions were addressed considering the participants' gender, class, residential status, having a separate room, issues about technical infrastructure, and theoretical and practical courses that they had joined in the 2020 – 2021 academic year.

ISSN: 2458 - 8806

2.2. Research hypotheses

The evaluation was conducted on pharmacy schools' students as per the existing literature. The differences in gender have been emphasized in the existing literature. In addition, technical issues such as lack of internet infrastructures and learning environment are highlighted as determining factors in distance education activities [10, 23]. Since pharmacy education includes applied and theoretical courses, adaptation issues are stated in the literature [18, 24-26]. Next to course content, the class is another factor in motivation and engagement with universities [25]. Thus, the six hypotheses were formed as follows:

H1: According to the gender of pharmacy faculty students, there is a difference in their attitudes towards distance education and web-based distance education system.

H2: There is a difference in the attitudes of pharmacy faculty students towards online distance education according to whether they have their own study room or not.

H3: Internet infrastructure problems cause a difference in the attitudes of pharmacy faculty students towards online distance education.

H4: The class causes a difference in the attitudes of pharmacy faculty students towards online distance education.

H5: The number of theoretical courses causes a difference in the attitudes of pharmacy faculty students towards online distance education.

H6: The number of applied courses causes a difference in the attitudes of pharmacy faculty students towards online distance education.

2.3. Data collection

The sample size was determined as 374, at a 95% confidence level and a 5% margin of error. Data were collected between January – May 2022. The survey was formed as an online questionnaire via Google Forms and distributed by pharmacy students' social media networks such as WhatsApp groups and Twitter.

2.4. Statistical analysis

Statistical analyses were conducted via SPSS Ver 23 (SPSS, Inc. Chicago, IL, USA). Descriptive statistics were determined, and normality was ensured. Afterwards, to compare the two groups t-tests were conducted. Also, to compare the differences between classes, residential areas, the number of theoretical and applied courses prior to post hoc tests, a one-way analysis of variance (one-way ANOVA) test was conducted. The level of significance was set a priori at $p < .05$. The 35-item tool was analyzed using a principal component analysis. The exploratory factor analysis was conducted, and the reliability of the tool was confirmed.

3. Results and Discussion

A total of 380 participants responded to the survey. The majority of participants were female (73.9%). The demographical and educational information on participants is given in Table 1.

To ensure the normal distribution, descriptive analysis was computed. Since the skewness and kurtosis values are between +1 and – 1 (0.658 and 0.549, respectively), normal distribution can be assumed for our data [27]. Considering the tool's reliability, Cronbach's alpha value was calculated as 0.88, which is between accepted levels. This value can be interpreted as the tool being reliable for our sample [28]. To compare the two groups independent samples t-tests were computed. The results of the comparisons are given in Table 2. There is no statistical difference between having separate rooms and internet infrastructure issues ($p > .05$). Significant statistical difference only resulted in gender groups. ($p < .05$). Thus, H1 hypothesis was accepted and H2 and H3 were rejected.

Comparisons for class, residency area, and number of theoretical and applied courses were computed using one-way ANOVA. We found that there is no significant difference between the groups. Thus, additional post hoc tests were not conducted and H4, H5, and H6 were rejected. The results of comparisons for these groups are given in Table 3.

Exploratory factor analysis (EFA) was computed using principal component analysis considering the structural reliability of the tool for our sample. The Kaiser-Meyer-Olkin (KMO) value resulted as 0.965, and Bartlett's sphericity test was significant ($p < .05$). These values demonstrated that our sample was adequate, and the scale is reliable for our sample [29].

The COVID-19 pandemic has affected educational activities all over the world and Türkiye as well.

Table 1. The demographical and educational information on participants

Variable	N (%)
Gender	
Female	281 (%73.9)
Male	99 (%26.1)
Class	
1st	88 (%23.2)
2nd	89 (%23.4)
3rd	116 (%30.5)
4th	66 (%17.4)
5th	21 (%5.5)
Residency area	
City	257 (%67.6)
Town	90 (%23.7)
Village	21 (%5.5)
Hamlet	12 (%3.2)
Having separate room	
Yes	309 (%81.3)
No	71 (%18.7)
Internet infrastructure issues	
Yes	182 (%47.9)
No	198 (%52.1)
Number of theoretical courses	
0-2	5 (%1.3)
3-5	30 (%7.9)
6-8	112 (%29.5)
More than 9	233 (%61.3)
Number of applied courses	
None	64 (%16.8)
1-2	86 (%22.6)
3-4	152 (%40.0)
≥5	78 (%20.5)

ISSN: 2458 - 8806

Table 2. Comparison for gender, having separated room and internet infrastructure issues.

Comparison groups	Mean Scores	P values
Gender		
Female	92.05	<.05
Male	99.95	
Having separate room		
Yes	94.49	>.05
No	92.45	
Internet infrastructure issues		
Yes	92.27	>.05
No	95.80	

Table 3. ANOVA results for class, residency area, and the number of theoretical and practical courses

Variable	p value
Class	
Between groups	p > .05
Within groups	
Residency area	
Between groups	p > .05
Within groups	
Number of theoretical courses	
Between groups	p > .05
Within groups	
Number of theoretical courses	
Between groups	p > .05
Within groups	

Switching from traditional face-to-face education to the online distance education has brought its unique problems and solutions. Since healthcare disciplines consist of theoretical and applied courses, adaptation to online distance education posed difficulties in learning outcomes [25]. Uysal et al., showed that nursing students had negative perception on online distance learning regarding their applied and clinical courses [30]. However, controversially, in our study, we found no statistical differences in perceptions of pharmacy students towards online distance learning regarding the number of theoretical and applied courses.

One of the challenges stated as internet access considering infrastructural problems. Sari and Nayır, emphasized that students faced the lack of infrastructure, which hinders internet access [10]. In-

frastructural issues are also described in residential areas, expecting lower issues in city centers [31]. In our study, we found no statistically significant difference between having infrastructural issues and the residency areas. Along with the infrastructural issues, another factor is described as the proper physical learning environment. Cicha et al., emphasized that the complex environment at home or work area influenced the online educational activities [26]. On the contrary, in our study, we examined pharmacy students' perceptions on online distance education during school closures. As shown in Table 1, the differences in having separate room were not statistically significant ($p<.05$).

Even though online distance education is mostly considered in relation to technical issues, studies emphasized that another factor is gender regarding students' perceptions of online distance education [32-33]. Some studies have showed that gender has an effect on students' perceptions towards online distance learning, while others have not [34-36]. In our study, we only found statistically significance in gender. Similarly, Demir and Narlıkaya showed significant differences between male and female students' perceptions towards online distance education [34].

Apart from demographic characteristics, years of education are defined as a dimension in online distance education. In our sample, the first- and second-year students had faced online distance education from the beginning, and the older students had experienced face-to-face education. However, we found no statistical difference between different classes of pharmacy schools. Existing literature states that engagement is a factor influencing the outcomes of educational activities [26]. The dimensions of engagement such as institutions – student interaction and supportive campus environment are stated as crucial elements of the student engagement to with the university [37]. Controversially, Kaban showed that the level of grade affected students' perceptions towards online distance learning in favor of older students [38].

Limitations

Apart from the limitations of the nature of the survey study, the sample size limits the generalizability in our study. The survey form as an online survey to enhance participation. Although the survey was distributed from different channels to the students, the participation remained limited. However, an adequate sample size regarding statistical calculations was obtained during the data collection process. Though the hypotheses were formed as per the comprehensive literature review, our study resulted in differences from existing studies. The causes should be examined in further studies that compare different factors in this manner,

4. Conclusion

The COVID-19 pandemic has altered our daily lives in various aspects, including education. School closures have interrupted face-to-face education all over the globe. In this crisis, the online distance education took place as a new tool with its unique characteristics. Scholars from all around the world examined this alteration from different perspectives. Here, in this study, we examined the pharmacy students' perceptions towards online distance learning in Türkiye during the school closures due to the pandemic regarding their gender, having infrastructural issues, having separate room, their class, residency area and number of theoretical and applied courses (Ethical Commission of Hacettepe University; 14.12.2021-E-35853172-300-00001927469). Even though many studies exist in the literature, reflections from pharmacy schools in Türkiye remain limited. Therefore, this study will be important to point out the issues from students' perspectives regarding online distance education in pharmacy schools.

Acknowledgements

We are thankful to the undergraduate students who voluntarily participated in this study.

Conflict of Interest

The authors have no conflicts of interest, financial or otherwise, to declare.

Statement of Contribution of Researchers

Concept – L.Y, G.N.Y., S.Y.; Design – L.Y, G.N.Y., S.Y..; Supervision – S.Y; Data Collection and Processing – L.Y, G.N.Y.; Analysis and Interpretation – L.Y.; Literature Search –L.Y., G.N.Y.; Writing – L.Y.; Critical Reviews – S.Y.

ISSN: 2458 - 8806

References

1. Moore JL, Dickson-Deane C, Galyen K. E-Learning, online learning, and distance learning environments: Are they the same?. Int J High. 2011;14(2):129-35. https://doi.org/10.1016/j.iheduc.2010.10.001
2. Sadeghi M. A Shift from Classroom to Distance Learning: Advantages and Limitations. IJREE. 2019;4(1):80-8. https://doi.org/10.29252/ijree.4.1.80
3. Tarkar P. Impact of Covid-19 Pandemic on Education System. IJAST. 2020;29(9):3812-4.
4. Debata B, Patnaik P, Mishra A. COVID-19 pandemic! It's impact on people, economy, and environment. J Public Aff. 2020;20:e2372. https://doi.org/10.1002/pa.2372
5. Azevedo J, Hasan A, Goldemberg D, Geven K, Iqbal S. Simulating the Potential Impacts of COVID-19 School Closures on Schooling and Learning Outcomes: A Set of Global Estimates. World Bank Research Observer. 2021 [cited September 2023]. Available from: http://fdslive.oup.com/www.oup.com/pdf/production_in_progress.pdf
6. Bozkurt A. Koronavirüs (Covid-19) pandemi süreci ve pandemi sonrası dünyada eğitime yönelik değerlendirmeler: Yeni normal ve yeni eğitim paradigması. Açıköğretim Uygulamaları ve Araştırmaları Dergisi. 2020;6(3):112-42.
7. Karadağ E, Çiftçi K, Gök R, Su A, Ergin-Kocatürk H, Çiftçi S. COVID-19 pandemisi sürecinde üniversitelerin uzaktan eğitim kapasiteleri. Üniversite Araştırmaları Dergisi. 2021;4(1):8-22. https://doi.org/10.32329/uad.874799
8. Gençoğlu C, Çiftçi M. Covid-19 salgınında eğitim: Türkiye üzerinden bir analiz. J Hist Sch. 2020;12(XLVI);1648-73. https://doi.org/ 10.29228/joh.44212
9. Pregowska A, Masztalerz K, Garlińska M, Osial M. A Worldwide journey through distance education-From the post office to virtual, augmented and mixed realities, and education during the COVID-19 pandemic. Educ Sci. 2021;11(3):118. https://doi.org/10.3390/educsci11030118
10. Sari T, Nayır F. Challenges in distance education during the (Covid-19) pandemic period. Qual Res J. 2020;9(3):328-60. https://doi.org/10.17583/qre.2020.5872
11. Khan ZH, Abid MI. Distance learning in engineering education: Challenges and opportunities during COVID-19 pandemic crisis in Pakistan. Int J Electr Eng Educ. 2021;0(0):1-20. https://doi.org/10.1177/0020720920988493
12. Baykal D, Koç-Tütüncü S. Online education experiences of the students studying in health care departments during the COVID-19 pandemic. TOJDE. 2022;23(1):131-43. https://doi.org/10.17718/tojde.1050379
13. Terzi B, Azizoğlu F, Özhan F. Factors affecting attitudes of nursing students towards distance education during the COVID-19 pandemic: A web-based cross-sectional survey. Perspectives in Psychiatric Care. 2021;57(4):1765-73. https://doi.org/10.1111/ppc.12747
14. Camargo CP, Tempski PZ, Busnardo FF, De Arruda Martins M, Gemperli R. Online learning and COVID-19: a meta-synthesis analysis. Clinics. 2020;75:e2286. https://doi.org/10.6061/clinics/2020/e2286
15. Katoue MG, Schwinghammer TL. Competency-based education in pharmacy: A review of its development, applications, and challenges. J Eval Clin Pract. 2020;26(4):1114-23. https://doi.org/10.1111/jep.13362
16. Sosabowski MH, Gard PR. Pharmacy education in the United Kingdom. Am J Pharm Educ. 2008;72(6):130. https://doi.org/10.5688/aj7206130
17. Yıldız B, Çalıkuşu M, Özçelikay G. Comparison of 4 year and 5 year pharmacy degree education in Turkey. Ankara Ecz. Fak. Derg. 2022;664-83. https://doi.org/10.33483/jfpau.1084463
18. Almetwazi M, Alzoman N, Al-Massarani S, Alshamsan A. COVID-19 impact on pharmacy education in Saudi Arabia: Challenges and opportunities. SPJ. 2020;28(11):1431-4. https://doi.org/10.1016/j.jsps.2020.09.008
19. Bouali H, Okereke M, Adebayo Adebisi Y, Eliseo Lucero-Prisno III D. Impact of COVID-19 on pharmacy education. SciMed J. 2020;2:92-5. https://doi.org/10.28991/SciMedJ-2020-02-SI-8
20. Lyons KM, Christopoulos A, Brock TP. The COVID-19 Pandemic across the academy sustainable pharmacy education in the time of COVID-19. Am J Pharm Educ. 2020;84(6):8088. https://doi.org/10.5688/ajpe8088
21. Çalıkuşu M, Özçelikay G. The effects of the COVID-19 pandemic on the psychology of the pharmacy school stakeholders in Türkiye. Turk J Pharm Sci. 2022;19(6):657-65. https://doi.org/10.4274/tjps.galenos.2021.68726
22. Kışla T. Uzaktan eğitime yönelik tutum ölçeği geliştirme çalışması. Ege Eğitim Dergisi. 2016;17(1):258-71. https://doi.org/10.12984/eed.01675
23. Roslan NS, Halim AS. Enablers and barriers to online learning among medical students during COVID-19 pandemic: An explanatory mixed-method study. Sustainability. 2021;13(11):6086. https://doi.org/10.3390/su13116086
24. Kotera Y, Spink R, Brooks-Ucheaga M, Green P, Rawson R, Rhodes C, et al. Teaching healthcare professional students in online learning during COVID-19: Reflection of university lecturers. JCD. 2020;3(3). https://doi.org/10.54127/QLOU9458
25. Shawaqfeh MS, Al Bekairy AM, Al-Azayzih A, Alkatheri AA, Qandil AM, Obaidat AA, et al. Pharmacy students perceptions of their distance online learning experience

during the COVID-19 pandemic: A cross-sectional survey study. J Med Educ Curric Dev. 2020;7:1-9. https://doi.org/10.1177/2382120520963039

26. Cicha K, Rizun M, Rutecka P, Strzelecki A. COVID-19 and higher education: First-year students' expectations toward distance learning. Sustainability. 2021;13(4):1889. https://doi.org/10.3390/su13041889
27. Darren G, Mallery P. IBM SPSS Statistics 26 Step by Step: A Simple Guide and Reference. Sixteenth Edition. New York: Routledge; 2020.
28. Tavakol M, Dennick R. Making sense of Cronbach's alpha. Int J Med Educ. 2011;27(2):53-5. https://doi.org/10.5116/ijme.4dfb.8dfd
29. Shrestha N. Factor analysis as a tool for survey analysis. Am J Appl Math. 2021;9(1):4-11. https://doi.org/10.12691/ajams-9-1-2
30. Uysal A. The relationships among fear of COVID-19, health consciousness, attitude toward supplements, and purchase intention using a moderated mediation analysis. Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi. 2023;18(1):145-61. https://doi.org/10.17153/oguiibf.1233783
31. Özüdoğru G. Problems faced in distance education during Covid-19 pandemic. Particip Educ Res. 2021;8(4):321-33. https://doi.org/10.17275/per.21.92.8.4
32. Atan H, Azli NA, Rahman ZA, Idrus RM. Computers in distance education: gender differences in self-perceived computer competencies. J Educ Media. 2002;27(3):123-35. https://doi.org/10.1080/1358165022000081387
33. Fidan M. Uzaktan eğitim öğrencilerinin uzaktan eğitime yönelik tutumları ve epistemolojik inançları. HUJE. 2016;31(3):536-50. https://doi.org/10.16986/HUJE.2016016666
34. Narlıkaya Z. COVID-19 salgını sürecinde muhasebe ve finans derslerini alan öğrencilerin uzaktan eğitime ilişkin tutumlarının araştırılması. JSHSR. 2020;7(60):2894-904. https://doi.org/10.26450/jshsr.2104
35. Yılmaz NA. Yükseköğretim kurumlarında Covid-19 pandemisi sürecinde uygulanan uzaktan eğitim durumu hakkında öğrencilerin tutumlarının araştırılması: Fizyoterapi ve rehabilitasyon bölümü örneği. Necmettin Erbakan Üniversitesi Sağlık Bilimleri Fakültesi Dergisi. 2020;3(1):15-20.
36. Moore MG, Anderson WG. Handbook of distance education. New Jersey: Lawrence Erlbaum Associates Publishers, 2003.
37. Krause K, Coates H. Students' engagement in first-year university. Assess Eval High Edu. 2008;33(5):493-505. https://doi.org/10.1080/02602930701698892
38. Kaban A. University students' attitudes towards distance education. IJTES. 2021;5(3):311-22. https://doi.org/10.46328/ijtes.241

ISSN: 2458 - 8806