

Perception and preference of pharmacy students toward e-learning during the COVID-19 pandemic

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ABSTRACT

This study is designed to evaluate students' knowledge and perceptions about the online learning of pharmacy curricula in Iraq during the COVID-19 quarantine. A descriptive, cross-sectional study involving 278 pharmacy students was done between October 2020 and June 2021. About 42.44% preferred face-face lecturers over other modes of delivery for lectures in the pharmacy curriculum. Most participants preferred both active learning and face-face lectures. The results show that 72.66% of responders chose to stay at home as one of the privileges of e-learning. However, the main barriers that associated with e-learning were lack of patient involvement and some technical issues regarding IT equipment, (74.82%) and (62.23%), respectively. E-learning is seen as a lack of social presence, less social contact, and synchronization of connections. However, e-learning undoubtedly benefits students in several ways. Online learning is an essential podium for students to achieve their studies in periods of crisis.

Key words: COVID-19, e-learning, face-to-face learning, pharmacy students

INTRODUCTION

Since the first report issued by China, the disease has spread in an alarming manner in more than 195 countries.^[1] In February 2020, Iraq reported the first case of disease for an Iranian student who had recently visited Iraq.^[2]

In addition to the health and economic impact of this pandemic globally, it also affects the field of medical education.^[3] The pandemic has caused the closure of most schools, institutions, and campuses all over the world, which has led to the emergence of several challenges at

many educational levels and particularly for students.^[4] As a result of these conditions, medical institutions all over the world have looked forward to remote learning, and it has become necessary for medical teachers to develop new strategies and methods of teaching, learning, and evaluation for students to face all obstacles and continue education.^[5]

There are several reasons why e-learning is acceptable, including ease of control, affordability, flexibility in its use, and remote skill development. However, despite these advantages, there are several restrictions imposed on e-learning, such as isolation, distractions, reliance on screens, low interaction between students and teachers, and communication issues.^[6,7] Education of medical sciences has been greatly disrupted because it includes personal learning or lessons, hospital training and clinical and laboratory practice, monitoring, and assessment of therapeutic outcomes.^[8] The development of learning management systems and new software for teaching and

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assessment provides effective and successful solutions for teachers and decision-makers and enables them to expand using technology to cover educational courses during the quarantine time.^[9] The hypothetical clinical experience as a result of the suspension of clinical training courses contributed to allowing medical students to act as health-care professionals by meeting with the patients, planning treatments, assisting with paperwork, and advising patients about their disease and diagnosis.^[10] The COVID-19 pandemic has placed us in a unique position to assess the importance of online educational platforms in terms of medical education. Many students have also attested to how the pandemic has affected their academics.^[11,12]

Distance education is a new concept in Iraqi universities, so it is difficult to predict acceptance, particularly for pharmacy curriculum which involves lectures, laboratory sessions, and active learning. Only a single previous similar study was conducted in Iraq at Hawler Medical University (2023).^[13] However, this is the first study in Iraq that involves pharmacy students from four different universities, to assess perception and preferences of e-learning during the COVID-19 quarantine.

METHODS

This was a descriptive, cross-sectional study involving 278 pharmacy students from four pharmacy colleges in Iraq (Baghdad, Mustansiriyah, Nahrain, and Kofa). Face-to-face interviews or an online survey were administered and developed based on the research in the literature.^[14,15] The questionnaire consists of several domains, the first one deals with the students' characteristics (age, gender, and year of study) and whether or not taking any online courses during his university studies. In the following domains, students should answer multiple-choice questions about their preferred lecture delivery techniques, kind of presentations, active learning (problem-based learning or case discussion), or recitation, benefits and drawbacks of attending online lectures. The last three domains of the questionnaire using rating questions evaluate the benefits of e-learning with face-to-face teaching methods, student activity, and the degree of acceptance of online courses during e-learning using a 5-point Likert scale (1– strongly disagree and 5– strongly agree). The study was registered in pharmacy colleges/Mustansiriyah University with approval certificate number 8.

RESULTS

The mean of students' age who participated in the current study was 22.32 ± 4.26 years (range: 18–29). Among the 278 students who completed the questionnaire of the study, 72.3% were female and 27.7% were male, as depicted in Table 1. Part of the participants were in the 5th year 41.36%.

However, 224 students declared their attendance of online courses before the pandemic, and 164 of them have been exposed to e-learning in their college.

Table 2 shows that 42.44% of respondents preferred face-face lecturers over other modes of delivery for lectures in the pharmacy curriculum ($P = 0.036$).

Regarding the preferable type of lecture for active learning component or recitation, Table 3 depicts that 47.84% preferred both active and face-face.

Moreover, Table 4 reveals that most of the students preferred incorporating online lectures in pharmacoeconomics (83.09%), medicinal chemistry (77.69%), and pharmacology (71.22%), $P = 0.028$. Fewer students recommended this type of learning for hospital training, graduation project, and therapeutics.

However, Table 5 demonstrates that the opportunity to study at home (72.66%) and the ability to record a meeting (58.27%) were the two most frequently

Table 1: Characteristics of the study population (n=278)

Parameter	Subgroup	n (%)
Age	18–19	17 (6.11)
	20–22	167 (60.07)
	23–25	88 (31.65)
	26–29	6 (2.15)
Gender	Male	77 (27.7)
	Female	201 (72.3)
Year of study	2 nd	25 (9)
	3 rd	51 (18.34)
	4 th	87 (31.3)
	5 th	115 (41.36)
Campus	Baghdad	74 (26.61)
	Mustansiriyah	119 (42.8)
	Nahrain	56 (20.14)
	Kofa	29 (10.43)
Did you attend any online courses earlier? (before the wake of COVID-19)		
	Yes	224
	No	54
Previous exposure to e-learning in your college		
	Yes	164
	No	114

Table 2: Preferable modes of delivery for lectures in the pharmacy curriculum

Modes of delivery	n (%)	P
Face-to-face lecture	118 (42.44)	0.036
Online live session	84 (30.21)	
Online recorded session	52 (18.7)	
No preference	24 (8.63)	

mentioned benefits of online learning. The absence of patient connection (74.82%) and IT equipment technical issues (62.23%) were cited as the key drawbacks by the majority of respondents.

Face-to-face versus e-learning

Respondents chose face-to-face learning as a very effective method to increase knowledge 48.56%, while 34.53% said that e-learning is somewhat effective. On the other hand, 39.92% of students said that face-to-face teaching is more fruitful than online teaching in terms of boosting skill levels. Regarding social competence, 31.65% of students showed that real teaching is more beneficial than online teaching, while online teaching was somewhat effective in 25.53%, [Figure 1].

Activity and acceptability level for online teaching

Participants were asked to rate their degree of activity while e-learning; 44.96% and 24.1% indicated they were somewhat active and very inactive, respectively [Figure 2]. Regarding acceptance of online learning, 32.01% of respondents found that e-learning is somewhat enjoyable, while 26.97% found it very unenjoyable and 8.99% found it extremely enjoyable [Figure 3].

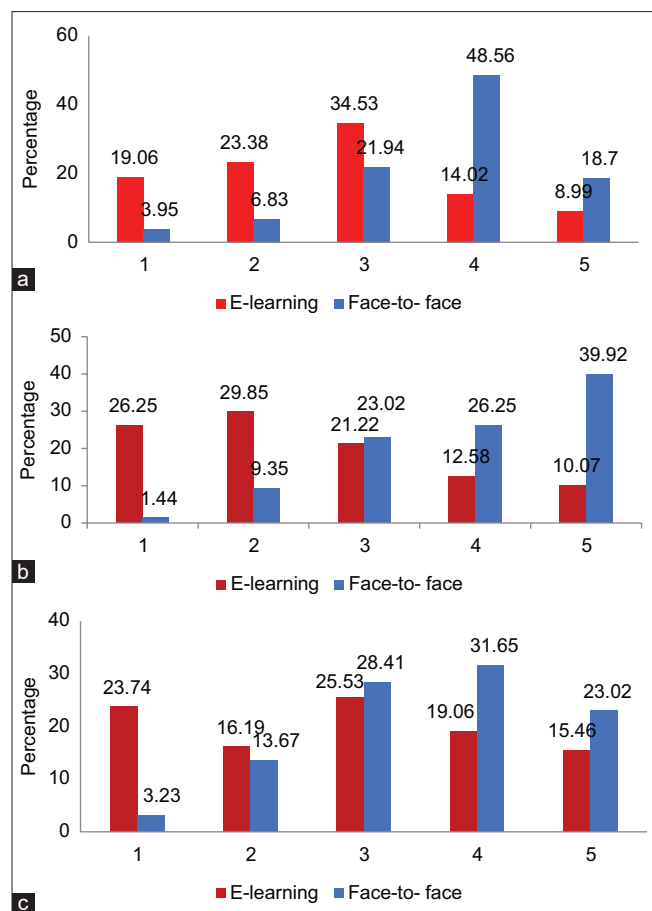


Figure 1: Students' beliefs about their ability to improve knowledge (a), Clinical skills (b), Social competence (c), regarding face-to-face and online teaching

DISCUSSION

Pharmacy schools in Iraq have never had to perform online education on such a large scale before the COVID-19 outbreak.

Table 3: Preferable type of lecture for active learning or recitation

Type of lecture	n (%)	P
Active learning activities	49 (17.62)	0.006
Selected face-to-face lectures	74 (26.61)	
Both methods	133 (47.84)	
Not necessary to meet	22 (7.91)	

Table 4: Preferable topic(s) for electronic lecture

Topics	n (%)	P
Therapeutics	133 (47.84)	0.028
Medicinal chemistry	216 (77.69)	
Pharmaceutics	126 (45.32)	
Pharmacology	198 (71.22)	
Graduation research project	79 (28.41)	
Hospital training	42 (15.1)	
Pharmacoeconomics	231 (83.09)	

Table 5: Advantage(s) and disadvantage(s) of e-learning

	n (%)
Advantages	
Online resources are available	134 (48.2)
Can learn at your own pace	81 (29.13)
Capability to remain at home	202 (72.66)
Interactivity in classes	70 (25.17)
Capability to record a meeting	162 (58.27)
Relaxing environment	112 (40.28)
Disadvantages	
Less interaction with the teacher	58 (20.86)
Technical issues	173 (62.23)
Fewer interactions with patients	208 (74.82)
Poor home learning	94 (33.81)
Lack of self-control	57 (20.5)
Social withdrawal	63 (22.66)

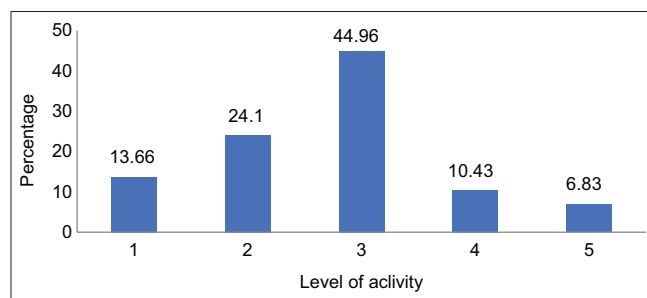


Figure 2: Students' activity during e-learning (1 = extremely inactive and 5 = extremely active)

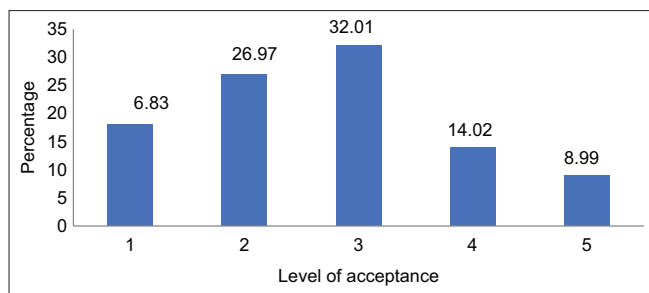


Figure 3: Students' acceptability level for online teaching (1 = extremely unenjoyable and 5 = extremely enjoyable)

Research in developing nations has frequently fallen short of providing a holistic picture by concentrating primarily on contextual issues (knowledge management, sociocultural norms economy, and funding) or technological issues (software design, access, and cost).^[16] It is critical to report any additional advantages and disadvantages that might not have existed in high-income nations, in which these strategies were often sophisticated and initially assessed. The results of the current study show that (42.44%) of participants preferred in-person lectures (42.44%) over online live sessions (30.21%) as the mode of delivery for the pharmacy curriculum. This suggests that Iraqi students are drawn to dedicated, traditional learning approaches rather than self-learning. This is also supported by two previous studies regarding pharmacy education in Saudi Arabia.^[17,18]

The majority of students in pharmacy schools preferred "spoon-feeding" teaching methods;^[14] this is parallel to the results of the current study. However, many earlier studies considered e-learning as a viable choice for delivering lectures of pharmacy curriculum attributed to its low cost.^[19-21]

In addition to clinical training that requires direct contact with patients, pharmacy education includes practical sessions in physiology, biochemistry, and anatomy. This has been verified as a determining factor in online learning.^[22] Regarding this survey, most students preferred online learning techniques in courses such as pharmacoeconomics, medicinal chemistry, and pharmacology as such courses might have less rigorous course work than pharmaceuticals, therapeutics, and hospital training that require contact with patients to ensure clinical learning. However, another study conducted in Saudi Arabia revealed some differences, the majority of students preferred online courses for communication skills in pharmacy, ethics, hospital training, marketing, and graduation research project, they found these subjects require less course work from their point of view.^[14]

According to the results of this survey, staying at home and having the option to record meetings are the two main benefits of online learning, these are consistent with

those of Sindiani and colleagues, who discovered that most responders believed that e-learning will preserve the social distance between them and opportunity to record lectures.^[23] However, e-learning is not free from drawbacks, the primary issue reported by participants in this survey, was the inability to communicate with patients. This outcome is consistent with previous surveys that assess the perceptions about online courses throughout the epidemic.^[24,25] In clinical sessions, cases of real patients are necessary for medical learning and it is irreplaceable with distance learning.^[26]

Technical issues were the second main drawback of online teaching in this survey; this may be due to poor Internet connection, power interruptions, and Internet costs. This finding is parallel with the result of Bączek *et al.*, who represented these two obstacles as the main disadvantage facing students in e-learning.^[15]

In terms of developing skills and social competency, pharmacy students perceived that the superiority was toward face-to-face teaching over online. Regarding knowledge, greater than half of the participants said that real teaching is extremely effective in knowledge acquisition. Two previous studies revealed that not only students but also teachers found it difficult to depend on e-learning alone because of the presence of many challenges.^[27,28] In contrast, another survey by Subramanian *et al.* reported that online teaching significantly improved student knowledge with respect to conventional teaching methods.^[29] This discrepancy may be attributed to the limited experience of Iraqi pharmacy students and their lack of readiness for technology.

Many students still think that e-learning was enjoyable despite their preference for actual class education.^[15] Students' personal characteristics and experiences are related to the level of engagement and performance in distance learning.^[30]

CONCLUSIONS

This study provides further evidence about the feasibility of e-learning compared to conventional learning at various levels and topics of pharmacy curricula. Even though online learning is viewed as having a lack of social presence, fewer social interactions, and synchronized connections, such type of learning have some beneficial impacts on students and considered as a crucial resource.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Saeed AY, Assafi MS, Othman HE, Shukri HM. Prevalence of SARS-CoV-2 IgG/IgM antibodies among patients in Zakho city, Kurdistan, Iraq. *J Infect Dev Ctries* 2022;16:1126-30.
- Allawi J, Abbas H, Rasheed J, Sulaiman T, Gatea A, Al-Lami F, *et al.* The first 40-days experience and clinical outcomes in the management of coronavirus COVID-19 crisis. Single center preliminary study. *J Fac Med Baghdad* 2020;61:94-7.
- Ferrel MN, Ryan JJ. The Impact of COVID-19 on medical education. *Cureus* 2020;12:e7492.
- Aggarwal A, Comyn P, Fonseca PM. Discussion: Continuing Online Learning and Skills Development in Times of the COVID-19 Crisis; 2020. Available from: https://www.skillsforemployment.org/KSP/en/Discussions/EDMSP1_256625. [Last cited on 2022 Dec 16].
- Snekalatha S, Marzuk SM, Meshram SA, Maheswari KU, Sugapriya G, Sivasharan K. Medical students' perception of the reliability, usefulness and feasibility of unproctored online formative assessment tests. *Adv Physiol Educ* 2021;45:84-8.
- Senhaji-Tomza B, Unni E, Ng KE, Lonie JM. Pharmacy student perceptions of remote learning and wellness during the pandemic: Lessons learned from a metropolitan commuter city. *Curr Pharm Teach Learn* 2023;15:130-8.
- Maheshwari S, Zheleva B, Rajasekhar V, Batra B. E-Teaching in pediatric cardiology: A paradigm shift. *Ann Pediatr Cardiol* 2015;8:10-3.
- Rose S. Medical student education in the time of COVID-19. *JAMA* 2020;323:2131-2.
- Abbasi S, Ayoob T, Malik A, Memon SI. Perceptions of students regarding E-learning during COVID-19 at a private medical college. *Pak J Med Sci* 2020;36:S57-61.
- Chandra S, Laoteppitaks C, Mingioni N, Papanagnou D. Zooming-out COVID-19: Virtual clinical experiences in an emergency medicine clerkship. *Med Educ* 2020;54:1182-3.
- Ahmed H, Allaf M, Elghazaly H. COVID-19 and medical education. *Lancet Infect Dis* 2020;20:777-8.
- Sandhu P, de Wolf M. The impact of COVID-19 on the undergraduate medical curriculum. *Med Educ Online* 2020;25:1764740.
- Shabu SA. Hawler Medical University students' perceptions of e-learning during the COVID-19 pandemic. *PLoS One* 2023;18:e0281117.
- Almaghaslah D, Ghazwani M, Alsayari A, Khaled A. Pharmacy students' perceptions towards online learning in a Saudi pharmacy school. *Saudi Pharm J* 2018;26:617-21.
- Bączek M, Zagańczyk-Bączek M, Szpringer M, Jaroszyński A, Woźakowska-Kapłon B. Students' perception of online learning during the COVID-19 pandemic: A survey study of polish medical students. *Medicine (Baltimore)* 2021;100:e24821.
- Andersson A, Grönlund Å. A conceptual framework for E-learning in developing countries: A critical review of research challenges. *Electron J Inf Syst Dev Ctries* 2017;38:1-16.
- Aljadhey H, Asiri Y, Albogami Y, Spratto G, Alshehri M. Pharmacy education in Saudi Arabia: A vision of the future. *Saudi Pharm J* 2017;25:88-92.
- Dergham P, Saudagar FN, Jones-Nazar CC, Hashim SA, Saleh K, Mohammedhussain AA, *et al.* Medical students' perceptions towards online teaching during the COVID-19 pandemic: A cross-sectional study from Saudi Arabia. *Adv Med Educ Pract* 2023;14:407-19.
- Gonzalvo JD, Chomicki JR, Chu MA, Frail CK. Incorporation of online clinical topic modules in an introduction to advanced pharmacy practice experience course. *Curr Pharm Teach Learn* 2013;5:438-43.
- Bollmeier SG, Wenger PJ, Forinash AB, Gleason BL. Impact of an online self-paced lecture to teach primary literature evaluation to second professional year students. *Curr Pharm Teach Learn* 2011;3:148-53.
- Vaughan KT. Development of targeted online modules for recurring reference questions. *Med Ref Serv Q* 2009;28:211-20.
- Frehywot S, Vovides Y, Talib Z, Mikhail N, Ross H, Wohltjen H, *et al.* E-learning in medical education in resource constrained low- and middle-income countries. *Hum Resour Health* 2013;11:4.
- Sindiani AM, Obeidat N, Alshdaifat E, Elsalem L, Alwani MM, Rawashdeh H, *et al.* Distance education during the COVID-19 outbreak: A cross-sectional study among medical students in North of Jordan. *Ann Med Surg (Lond)* 2020;59:186-94.
- Thomas A, Shenoy MT, Shenoy KT, Kumar SS, Sidheeque A, Khovid C, *et al.* Survey among medical students during COVID-19 lockdown: the online class dilemma. *Int J Med Stud* 2020;8:102-6.
- Minh N, Huy T, Hoang D, Thieu M. COVID-19: Experience from Vietnam medical students. *Int J Med Stud* 2020;8:62-3.
- Gaman MA, Ryan PM, Bonilla-Escobar FJ. To stay at port or to go to sea: Are clinical clerkships a double-edged sword during the COVID-19 pandemic? Where do we go from here? *Int J Med Stud* 2020;8:92-5.
- Elsaid N, El Nagar H, Kamal D, Bayoumi M, Kamel M, Abuzeid A, *et al.* Perception of online learning among undergraduate students at Suez Canal Medical School during the COVID-19 pandemic: A cross-sectional study. *Egypt J Hosp Med* 2021;85:2870-8.
- Alsoufi A, Alsuyihili A, Mshergahi A, Elhadi A, Atiyah H, Ashini A, *et al.* Impact of the COVID-19 pandemic on medical education: Medical students' knowledge, attitudes, and practices regarding electronic learning. *PLoS One* 2020;15:e0242905.
- Subramanian A, Timberlake M, Mittakanti H, Lara M, Brandt ML. Novel educational approach for medical students: Improved retention rates using interactive medical software compared with traditional lecture-based format. *J Surg Educ* 2012;69:253-6.
- Kaspar K, Burtiak K, Rütth M. Online learning during the COVID-19 pandemic: How university students' perceptions, engagement, and performance are related to their personal characteristics. *Curr Psycho* 2023. p. 1-20. [doi: 10.1007/s12144-023-04403-9].