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Obstacles Faced in Online Pharmacy Education amid the COVID-19 Pandemic: A Cross-Sectional Study in Jordan

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ABSTRACT

The COVID-19 pandemic has profoundly impacted various aspects of daily life, with education being one of the most affected sectors. In response, academic institutions in Jordan, as in many other countries, transitioned to virtual learning. After four semesters of online instruction, it became essential for both faculty members and pharmacy students to evaluate their experiences, preferences, and attitudes toward different modes of online teaching. This study aimed to examine the impact of the COVID-19 pandemic on online learning among pharmacy students enrolled in Jordanian universities. A structured survey was distributed via email to a large group of pharmacy students across Jordan between January and February 2022.A total of 230 students completed the survey, with females representing 87.2% of the participants, and the majority being enrolled in pharmacy programs. Among respondents, 75% favored a blended approach that combined online and in-person learning, while 13% preferred traditional classroom instruction, and only 12% opted exclusively for online classes. The most commonly reported difficulties associated with online education were lack of face-to-face interaction (87%), challenges in student evaluation (65%), and problems with digital tools and technology (35%).Conducted during the fourth semester of pandemic-related remote learning, the findings indicate that most students had become proficient and confident in using online platforms and university IT support systems. Overall, pharmacy students demonstrated a strong level of confidence in the effectiveness and practicality of online pharmacy education.

Keywords: COVID-19, Communications and pandemic, Online learning

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Introduction

In response to the COVID-19 pandemic, educational institutions worldwide have transitioned from conventional classroom-based instruction to online or hybrid (blended) learning formats that combine both in-person and virtual approaches [1]. Following the World Health Organization's declaration of COVID-19 as a global pandemic in March 2019, authorities in both developed and developing nations suspended in-person university operations. Consequently, Jordan's Ministry of Higher Education and Scientific Research mandated the closure of all universities and colleges—including medical and pharmacy faculties—and instructed them to adopt online or blended teaching modalities [2].

The pandemic, much like its impact on other aspects of life, has profoundly affected students, academic staff, and university administrations. COVID-19 triggered significant transformations and challenges in higher education, particularly among medical and health science students, whose academic and professional development depends heavily on practical and interactive training [3]. One of the most notable disruptions was the abrupt transition from traditional face-to-face teaching to online education.

There remains an ongoing debate among educators, students, and administrators regarding the actual effect of e-learning on medical education. Some researchers argue that the pandemic has accelerated the acceptance of digital platforms and positively influenced the perception of online medical education [4]. Conversely, other studies highlight the negative consequences of this shift, citing challenges such as poor time management, limited

technological proficiency, difficulties in assessment, restricted communication, and lack of interpersonal engagement. In light of these contrasting perspectives, the current study sought to assess the impact of the COVID-19 pandemic on the transition to online teaching methods among pharmacy students in Jordan [5].

Materials and Methods

Study design and sample size

This cross-sectional institutional study was conducted across pharmacy faculties in Jordan between January 28 and February 5, 2022. The sample size was determined using the RaoSoft online calculator, based on an estimated student population of 450. With a 95% confidence level and a 5% margin of error, the minimum required number of participants was calculated to be 230, assuming a 50% expected response rate [6].

Survey instrument

A modified version of a pre-validated questionnaire was developed after an extensive review of relevant literature. The preliminary version was evaluated by a panel of experts with substantial experience in medical and pharmaceutical education to ensure clarity, relevance, and content validity. The finalized survey was then distributed electronically through Google Forms via email. The questionnaire underwent refinement after group discussions to ensure comprehensiveness and appropriateness [4].

Statistical analysis

Data obtained from the completed questionnaires were coded and analyzed using the Statistical Package for the Social Sciences (SPSS), version 21.0 (SPSS Inc., Chicago, IL). A p-value of less than 0.05 was considered statistically significant. The internal consistency of the questionnaire was verified in a pilot study using Cronbach's alpha coefficient [7].

Results and Discussion

A total of 230 pharmacy students participated in the study. Among them, 78.2% were female and 21.8% were male. The majority (91%) were undergraduate students pursuing a bachelor's degree, while 9% were enrolled in master's programs. The demographic and academic characteristics of the respondents are presented in **Table 1.**

Table 1. Characteristics of the study respondents (N = 230).

Characteristics	N (%)
Gender	
Female	180 (78.2%)
Male	50 (21.8%)
Government	
Amman	200 (87%)
Other government	30 (13%)
Degree of education	
Bachelor	210 (91%)
Master	20 (9%)

Out of the 230 participants, 173 students indicated a preference for blended learning that combines online and in-person instruction, while 30 students favored traditional classroom-based teaching, and only 27 students opted exclusively for online learning. The distribution of students' preferences is presented in **Table 2.**

Table 2. Teaching/learning preferences before the COVID-19 pandemic (N=230).

Preferences	N (%)
Combining online with face-to-face instruction	173 (75.2%)
Face-to-face instruction	30 (13%)
Online instruction	27 (11.8%)

During the COVID-19 pandemic, the institution identified several obstacles associated with online education. These included limited face-to-face interaction (87%), difficulties in student evaluation (65%), challenges related to the use of technological tools (35%), lack of prior experience with online learning (93%), pandemic-induced anxiety and stress (8%), a steep learning curve (33%), time management difficulties (48%), and issues related to student engagement (7%). **Figure 1** illustrates the main challenges encountered in online learning during the COVID-19 pandemic.

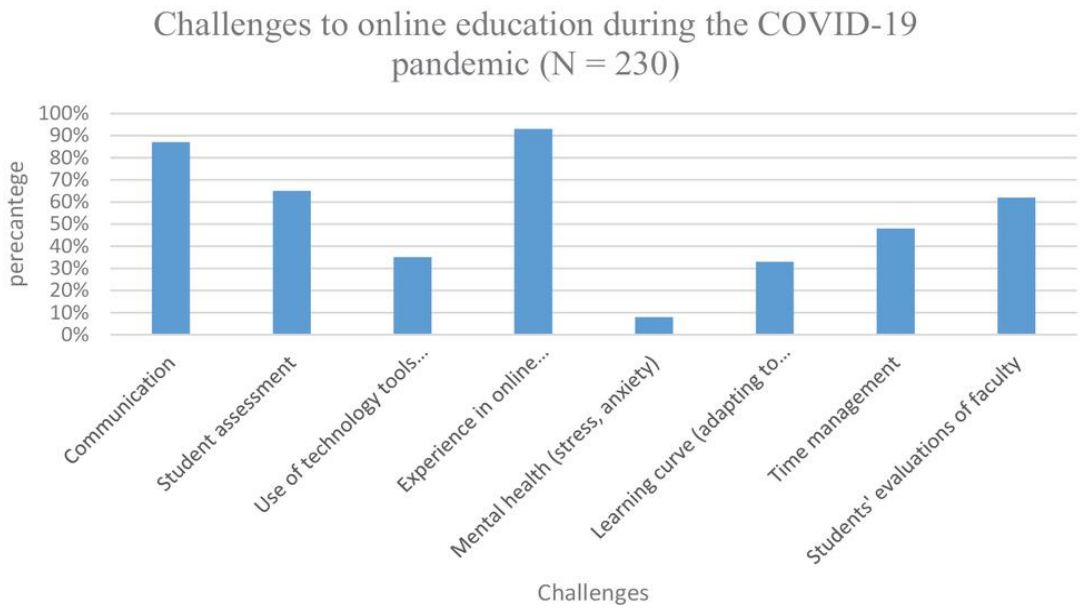

Figure 1. Challenges to online education during the COVID-19 pandemic (N = 230).

Most participants (83%) expressed their intention to apply the online learning skills and experiences gained during the COVID-19 pandemic to future teaching and learning practices. **Table 3** presents the respondents' views on the utilization of online expertise acquired during the pandemic.

Table 3. Willingness to integrate online expertise garnered during the COVID-19 pandemic into practice.

	N (%)
Agree	190 (83%)
Disagree	20 (8.7%)
No opinion	20 (8.7%)

Universities and higher education institutions worldwide were abruptly confronted with the challenges brought about by the COVID-19 pandemic, which forced them to rapidly adapt to an entirely new educational environment [8]. Among the major transformations was the sudden shift to online education, which became a practical necessity rather than an option. This swift transition created a disruptive and often stressful experience for both students and faculty members. A considerable number of pharmacy students at both the undergraduate and postgraduate levels participated in this study, reflecting their strong interest in contributing to discussions that could influence their academic and professional development. The findings of this research highlight several key observations related to online learning during the pandemic.

Firstly, the majority of pharmacy students favored blended learning—an approach that integrates online and face-to-face instruction. This preference can be attributed to the nature of pharmacy education, which emphasizes hands-on training and practical application. Thus, a combination of virtual and in-person learning is essential for enhancing students' professional competencies and practical skills [9]. This observation aligns with previous research suggesting that hybrid models are increasingly accepted in higher education. However, the effectiveness of such methods largely depends on adequate staff training, faculty preparedness, and institutional support [10].

Secondly, similar to findings from other international studies, the challenges reported by participants in this research mirrored those observed globally. Nonetheless, these difficulties appeared to be less severe compared to

earlier reports, likely because both students and instructors had gained experience with online platforms and benefited from improvements in IT infrastructure [11]. Notably, technology-related anxiety—or "technophobia"—was among the least reported issues, which is consistent with previous findings and may indicate growing familiarity and comfort with digital learning tools among users.

Thirdly, only a small percentage of students (8%) reported experiencing anxiety or stress, possibly stemming from uncertainties surrounding online examinations and assessments. Postgraduate students also expressed concern over the impact of remote learning on their research progress. Furthermore, the pandemic itself—recognized by the World Health Organization (WHO) as a global public health emergency—contributed to heightened psychological distress, with some students fearing infection and its consequences [12].

Fourthly, and somewhat unexpectedly, many students indicated that they adapted well to online education, reporting fewer difficulties than those documented in similar studies elsewhere [13].

Finally, this study offers valuable insight into pharmacy students' preferences regarding instructional methods during the pandemic. Most respondents viewed blended learning as the most suitable approach, given its compatibility with the practical and interactive nature of pharmacy education [14].

Conclusion

This study indicates that the COVID-19 pandemic had an overall positive influence on the development of online pharmacy education. Despite facing challenges such as reduced interaction, difficulties in assessment, limited technological proficiency, varying levels of online experience, stress and anxiety, and time management issues, pharmacy students demonstrated strong confidence in the effectiveness of online learning. Since the survey was conducted during the fourth semester of pandemic-related remote education, it appears that students had already gained substantial familiarity with digital platforms and benefited from robust IT support provided by their universities. Consequently, the findings suggest that pharmacy students in Jordan have developed a high level of trust in the efficiency and potential of online and blended pharmacy education.

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