

CHALLENGES OF ONLINE LEARNING: PERCEPTIONS OF JORDANIAN PARAMEDICS TEACHERS

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Abstract: *Objective:* the research aim was to identify the online learning challenges from the perspective of Jordanian paramedical teachers. *Methods:* a cross-sectional online-based survey of academic faculty members of two community colleges was utilized from 1/11/2021 to 14/11/2021. The participants of this research were 155 teachers. The instrument used in this study consisted of online five Likert scale questionnaires. *Results:* The findings revealed multiple challenges in online learning. In terms of administration, the most significant issues included the lack of clarity in the faculty's mission for online learning (mean = 4.55) and inadequate technical support (mean = 4.07). Faculty members reported challenges such as increased workload due to online teaching methods (mean = 4.17) and a shortage of suitable online educational materials (mean = 3.97). Infrastructure-related barriers included frequent network disconnections (mean = 4.17) and limited availability of technological resources like virtual classrooms (mean = 3.91). Overall, all challenges were rated with a high degree of agreement by the participants, highlighting significant obstacles in the effective implementation of online learning. *Conclusion:* The study concludes that addressing these challenges, particularly in administration, faculty support, and technological infrastructure, is critical for improving the online learning experience in Jordanian paramedical education. Enhanced administrative guidance, targeted faculty training, and better technological infrastructure are necessary steps to ensure the sustainability and success of online education.

Keywords: Challenges, Online Learning, Paramedics, Teachers.

INTRODUCTION

The COVID-19 pandemic, which emerged in late 2019, forced educational systems worldwide to shift abruptly from traditional face-to-face learning to online modalities to mitigate the spread of the virus (1). While this transition was smoother in technologically advanced countries, developing nations like Jordan faced substantial challenges due to their limited infrastructure and preparedness (2)(Farid et al., 2018). The education sector in Jordan, including paramedical training programs, was significantly impacted as institutions were forced to adopt online teaching methods, disrupting the conventional hands on, practical nature of paramedic education(3, 4).

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Paramedics require a high level of practical and clinical skills, which are typically gained through in-person training sessions and real-life simulations (5). The sudden transition to online learning raised concerns about the quality and effectiveness of paramedic education, as many educators and institutions lacked the necessary resources, technological expertise, and pedagogical strategies to facilitate this shift effectively(5) . Additionally, the nature of paramedic training, which involves critical decision-making in real-time situations, made it particularly challenging to deliver essential components of the curriculum through virtual platforms (6). The study of online teaching's impact on paramedic education is essential as it addresses the unique challenges faced by instructors and students in a field where practical skills are paramount (7).

Understanding these challenges is crucial for developing effective strategies to enhance the delivery of paramedic education, ensuring that future paramedics are equipped with the skills and knowledge necessary to perform in high-pressure, real-world healthcare setting (7)s. Moreover, examining the Jordanian context provides insights into the difficulties encountered in low-resource settings, where the pandemic has further exposed gaps in the educational and technological infrastructure(8).

Studying the impact of the COVID-19 pandemic on paramedic teaching is crucial because paramedics are essential frontline workers who respond to emergencies where practical skills and hands-on experience are critical (9). During the pandemic, the sudden shift to online learning disrupted the traditional, practice-based approach to paramedic education, potentially affecting the preparedness of future paramedics (9, 10)(Eaton et al., 2020).

Research has shown that the lack of hands-on training in a virtual environment can lead to gaps in clinical competence, a concern that is particularly pressing in

paramedicine, where decision-making in life-threatening situations is key (10). Understanding how this shift impacted paramedic educators and students is vital for ensuring the future workforce is ready for real-world healthcare challenges(11). The importance of this study is underscored in the context of developing countries like Jordan, where educational institutions faced additional barriers, including limited access to technology and insufficient digital infrastructure(4) . Recent studies emphasize the need for well-designed online learning environments, supported by adequate technological and institutional resources, to maintain the quality of healthcare education during crises(12) (Mosa, 2021; (13). By identifying the specific challenges encountered in paramedic education during the pandemic, this study can inform the development of blended learning models that combine the benefits of online learning with essential hands-on training(14, 15). These findings are particularly relevant not only for Jordan but also for other countries facing similar challenges in healthcare education(15). The insights gained can drive improvements in training programs, ensuring that paramedics are fully prepared to provide high-quality care in future public health emergencies (16) . Therefore, this study aims to investigate the specific challenges encountered by Jordanian paramedic educators during the pandemic, providing valuable data that can inform future educational reforms and improvements in online learning systems. The findings will be instrumental in ensuring that paramedic training programs can effectively adapt to both current and future crises, ultimately improving the preparedness of paramedics to meet the demands of evolving healthcare environments.

METHODS

Study design:

A cross-sectional online-based survey design was utilized.

Setting:

The research was conducted in two Jordanian paramedical Colleges.

Data Collection:

Population & Sampling

The target population for this study comprised faculty members from two paramedical colleges in Jordan. Participants were recruited through multiple channels, including announcements made by college deans, newsletters, and recruitment emails sent to all faculty members. A total of 191 questionnaires were received; however, 36 submissions were excluded from the analysis as the participants had not provided consent for their data to be used.

To ensure the integrity and quality of the data, responses were carefully examined for irregularities or patterns that might indicate unreliable submissions. No inconsistencies were identified during this review process. Additionally, platform technology was employed to monitor for multiple submissions, and further manual checks for duplicate entries were conducted. No evidence of duplicate or multiple submissions was detected, confirming the validity of the remaining data set for analysis.

Instruments

An anonymous online-based questionnaire was distributed through several social media platforms. Participants could easily access and respond to the questionnaire by clicking on the provided link. The cover page of the questionnaire included a brief introduction outlining the study's objectives, procedures, consent form, the voluntary nature of participation, and assurances of confidentiality and anonymity. The

questionnaire was developed by the researchers based on relevant literature. The initial version was presented to a panel of PhD experts for their feedback and recommendations regarding its clarity, suitability, appropriateness, and validity. Based on the panel's feedback, the questionnaire was revised and finalized. To assess its reliability, the test-retest method was applied by administering the final version of the questionnaire to 25 faculty members from the study population who were not part of the final sample. The questionnaire was re-administered two weeks later. The Pearson correlation coefficient (0.838–0.688) was found to be acceptable for use in this study. The internal consistency of the questionnaire was measured using Cronbach's Alpha (0.88), indicating a high level of reliability. The final version of the questionnaire consisted of 39 items, divided into three domains: challenges related to faculty administration, challenges related to faculty members, and challenges related to infrastructure. Responses were measured on a five-point Likert scale with the following values: Strongly Agree (5), Agree (4), Neutral (3), Disagree (2), and Strongly Disagree (1). Participants were instructed to mark their level of agreement by selecting the appropriate response. Mean scores were used for data analysis, and the degree of agreement was categorized as follows: less than 2.33 indicated low agreement, 2.34 to 3.66 indicated medium agreement, and more than 3.67 indicated high agreement.

Planned analysis

Statistical analysis was conducted using SPSS version 25. Descriptive statistics, including frequencies and percentages, were used to summarize demographic information. The reliability of the questionnaire was assessed using Cronbach's alpha, while Pearson correlation coefficients were calculated to evaluate the relationship

between individual items and the total score. Additionally, means and standard deviations were computed for each item and overall scores.

RESULTS

Demographical Data of Study Participants:

Table (1) showed that the study participants consisted of 155 teachers, more than half of them were male 52.3%. The participants used a variety of online applications in their classes, the highest percentage was Zoom 21.9% and the lowest percentage were Webinar and Microsoft team 1.3%.

Table 1: Participants Demographical Data

Criterion	Factor	Frequency	Percentage
Gender	Male	81	52.3
	Female	74	47.7
Online application used to deliver teaching	Zoom	34	21.9
	Google meet	11	7.1
	Microsoft team	2	1.3
	Webinar	2	1.3
	Other	106	68.4
Total		155	100.0

Online Education Challenges

Table (2) shows 13 online challenges related to faculty administration were all with a high degree of agreement. The foremost challenges according to the faculties' teachers were the limited clarity of the mission, vision and goals of the faculty application of online learning (mean 4.55). While, initiating the positive organizational culture towards online learning was the least challenge (mean 3.86).

Table (2): Online Education’s Challenges related to Faculty Administration (n= 155)

Items	Mean	Standard Deviation	Agreement Degree	Rank
There is limited clarity of the faculty 's mission, vision, and goals to implement online learning system	4.55	0.95	High	1
There is limited support and motivation of administrative leaders to implement online learning	4.50	1.05	High	2
There is limited technical assistance to students and faculty members support available	4.07	1.24	High	3
There is limited availability of continuous training of online learning for students and faculty members	4.01	1.29	High	4
There is limited availability of financial resources to finance the requirements of online learning	3.92	1.26	High	5
There limited cooperation between administrations and online learning expertise to develop appropriate online system	3.92	1.13	High	6
There is limited availability of faculty resources to allow the use of technology-enhanced learning methods	3.91	1.12	High	7

There is limited cooperative and coordinating teams and workshops to implement quality improvement programs in the online learning	3.89	1.26	High	8
There is limited online learning policies and strategies adopts by faculty that meet the needs of all groups	3.88	1.10	High	9
There is limited preventive and remedial measures to address the expected errors in the online programs provided to students before they occur	3.88	1.28	High	10
There is limited documented information and records system that meets the needs of planning, follow-up and decision-making at the faculty	3.88	1.17	High	11
There is insufficient work team to implement projects to improve the quality of the online product	3.87	1.16	High	12
There is insufficient initiating positive organizational culture towards implementing online learning for all student are limited.	3.86	1.13	High	13

Table (3) shows the online challenges related to faculty members were all with a high agreement degree. The foremost challenge according to the teachers was that online learning methods added additional workload to their responsibilities (mean 4.17). While the classroom large number of students was the least challenge (mean 3.68).

Table (3): Online Education’s Challenges related to Faculty Members

Items	Mean	Standard Deviation	Agreement Degree	Rank
Online learning methods cause additional workload to my responsibilities	4.17	0.94	High	1
There is a shortage in online learning methods, products and educational materials suitable for my subject	3.97	1.00	High	2
I prefer using current traditional teaching methods (such as books or lectures)	3.90	1.24	High	3
I have limited time available for teaching development	3.86	1.08	High	4
I have limited skills required to use these methods	3.83	1.20	High	5
There are no online Learning tools available for my subject	3.82	1.21	High	6
Technology-enhanced learning methods are not suited to my subject	3.81	1.25	High	7
Students won’t acquire proper competencies and skills	3.79	1.17	High	8
Online learning makes it difficult to follow students individually	3.73	1.36	High	9
I lose ownership of my materials	3.72	1.19	High	10
Online learning leads to a lack of human relations between teacher and student	3.72	1.20	High	11
Online learning hinders my work as a teacher	3.71	1.20	High	12
Classroom students’ large number hinders the use of the online learning system	3.68	1.09	High	13

Total degree	4.17	0.94		
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Table (4) shows 13 online challenges related to faculty infrastructure. The foremost challenge according to the faculty's teachers was the recurrent network disconnection which reduced the efficiency of online learning (4.17). While the least challenge was insufficient maintenance of the faculty's internal internet (3.75)

Table (4): Online Education's Challenges related to Faculty Infrastructure:

Items	Mean	Standard Deviation	Agreement Degree	Rank
Network disconnection reduces the efficiency of online learning	4.17	0.94	High	1
There are limited resources, including devices, technologies and material.	3.92	1.13	High	2
There is limited availability of virtual classrooms, laboratories and libraries, that are equipped with students' needs.	3.91	1.12	High	3
There are limited online system with regard to the preservation, control and distribution of documents, references and records to facilitate students' access to them.	3.89	1.26	High	4
There are limited human resources necessary to improve the quality of online learning system.	3.88	1.10	High	5
There are limited integrated methodology for building and strengthening the online organizational culture that supports generation and production of digital knowledge	3.87	1.28	High	6

There is inadequate prepared library with digital knowledge resources that support the learning and teaching processes of students.	3.86	1.17	High	7
There is limited modern and varied technical resources related to educational programs for students.	3.85	1.13	High	8
There are limited databases for all scientific, administrative and financial activities.	3.84	1.21	High	9
There is insufficient number of specialized technicians to continuously solve technical problems related to online learning.	3.78	1.20	High	10
There is insufficient design of computer simulations	3.76	1.31	High	11
There are no free internet services to students in their homes.	3.76	1.22	High	12
There is insufficient maintenance of the faculty 's internal internet.	3.75	1.20	High	13
Total degree	3.86	1.27		

DISCUSSION

Globally, there is a continuous, steady movement of transition of higher education from the traditional paradigm to an online or a hybrid one (1, 2). In the HKJ, this type of transition happened suddenly and without adequate planning due to the Covid-19 crisis. The country realized that future survival of educational programs would depend mostly on the capability of shifting to online education(3) .

However, the successful implementation of the new system will not be accomplished without defining the challenges that need to be prioritized to efficiently use innovative technologies (3, 4). Therefore, this study examined online learning challenges such as

design, support provided by administrations, institutions, culture, technology and infrastructures from the premedical teachers' perceptions.

The research results showed that faculty members highly agreed that the additional workload imposed by online teaching was a major perceived challenge of online education. This finding was also highlighted in a recent international interview study whose authors found that the ability of paramedics' academic staff to manage the sudden additional workload, that was imposed by online teaching during the pandemic, was challenging(5) . In this context, refining the course design was an additional challenge to faculty members' implementation of online learning technology(6). This can be due to the fact that course design is strictly related to faculty member' pedagogical knowledge for formulating learning goals and designing tasks. Consequently, the course challenges definitely will increase faculty member' challenges to use online learning and the other way around. In general, faculty members require long time, specialized skills, capabilities and competencies to design efficient, resourceful, well-organized and competent learning materials for online learning.

This result is consistent with previous studies that revealed that well designed course necessitates considerable faculty pedological competence, technological skills, educational beliefs and styles and vast administrative and technical supports to be able to use online learning successfully (7-9).

Furthermore, if faculty members are not capable of designing online learning courses or manage and refine existing resources, they will be frustrated and might exhibit more resistance to technology demands (10, 11).This requires enormous support form policy maker, administration and necessary technical support to design online courses(7, 9, 12). Other findings were that the amount and type of support provided

by the administrative and policy makers have a vital part in the challenges faculty members face when applying online learning. These results are similar to previous studies in which the researchers highlighted that the amount of support provided to faculty members were the primary challenge that impacted their enthusiasm, inspiration and obligation to use the online system. The more motivational support and quick feedback provided to them, the more faculty members became active in using online learning systems, which would contribute to positive students' satisfaction with online learning (13, 14).

The results of this research results also revealed that the culture or social challenges have a substantial effect on faculty member' challenges of applying online learning. These challenges appear when the education institution does not study the local context and the dynamics of online learning systems, which would affect faculty member' beliefs, opinions enthusiasm and motivation to use technologies. This finding is consistent with earlier researches which reported a positive association between cultural factors and faculty use of online learning systems which described how the challenges linked to organizational culture impacted individuals' acceptance of online learning systems(11, 15). Furthermore, previous studies highlighted the fact that every demographical area has its individual beliefs and cultural values that may possibly affect the implementation of new technologies (11, 15) .Consequently, academic institutions should carefully consider the individual differences, culture, and other social concerns when implementing online learning systems (11, 13, 15) .

The results of this study highlighted a significant association between organizational challenges and the challenges faced by faculty members in adopting online education. These challenges are particularly evident when educational institutions fail to account for the local context, such as cultural, technological, and institutional factors. This

oversight can negatively influence faculty members' beliefs, attitudes, and motivation toward integrating new technologies into their teaching practices. Studies have shown that when educators feel unsupported or unprepared for digital transitions, their enthusiasm for adopting online learning systems diminishes, which can hinder the overall effectiveness of education delivery (3, 7).

Further research into the specific challenges of online education during and after the pandemic, particularly among paramedic faculties in Jordan, is essential.

Understanding how organizational support, technological resources, and local context impact educators' readiness to adopt and sustain online learning will inform the development of more robust and context-sensitive strategies(1). These studies can also explore how faculty members' beliefs and motivations are shaped by the support they receive, which could significantly enhance the implementation of blended or hybrid learning models that are more suited to paramedic education, where practical skills are crucial(5, 16).

This will be key to ensuring the preparedness of paramedic graduates for real-world healthcare scenarios in the post-pandemic era. Furthermore, these findings in line with previous research results, that reported the important role of several organizational factors in enabling faculty members' use of online learning. This includes providing the essential course support, management, resources, and evaluation. As well as other organizational factors (e.g., funding, training and clear mission, vision, goals, learning policies and strategies, preventive and remedial measures to address the expected errors (1, 7, 13, 14). However, there is a necessity for more comprehensive, steady, accurate, precise, and timely support for faculty member in developing countries (1, 2, 7, 13).

The results also showed that the technological infrastructure (such as weak network, limited resources, including devices, technologies material, digital library, databases, insufficient number of specialized technicians...) have a significant connection with faculty member' challenges. This finding is supported by many previous studies which have reported that the online learning technology are the most critical parts that introduce more challenges for people involved in the online learning program (9, 17, 18). Several studies mentioned that the most significant barriers that impede the successful implementation of online learning are the technological factors that may affect teachers' use of technology (10, 11, 17, 19) .For example, researchers reported that deficiencies in the hardware and software support, deficient access to online learning materials would be certainly affected faculty member' use of online learning(6, 12, 16, 20).

IMPLICATIONS TO PRACTICE

This study confirms and adds to the previous studies that examined online learning challenges and its connections to faculty members factors. This study offers some insights into the implementation of online learning by faculty members in developing countries. Challenges facing faculty members when they use online learning include their individual differences and professional skills, course design, administrative support, social and organizational beliefs, cultural values, infrastructure and access to training resources. Therefore, administrative and policymakers should introduce new strategies for course design, organizational beliefs, cultural values, training and online infrastructure that may help faculty members. Moreover, instructional designers should find the best method that fits the context of their society to implement online learning. Faculty members should build their proficiency and experience in designing and using online learning courses. Educational institutions should enhance

stakeholders training, develop the computer self-efficacy of practitioners, and provide flexible courses to ensure a successful implementation of online learning.

LIMITATIONS

This study has several limitations. The use of an online survey may have led to response bias, as those more comfortable with technology might have been overrepresented. Additionally, the study was confined to two paramedical colleges in Jordan, limiting the generalizability of the findings. The sample size, though adequate, may not fully represent the diverse challenges faced by paramedic educators across other institutions. Moreover, only faculty perspectives were gathered, excluding student viewpoints on online learning challenges. Future studies should expand data collection to include students and multiple institutions, offering a broader understanding of online learning challenges in paramedic education. This will help in developing more effective online learning models suited to paramedic training in Jordan

RESEARCH RECOMMENDATIONS

The researchers recommend that the following elements need full consideration when developing and applying an online learning program: administration should be in synchronization with faculty needs, providing staff and faculty development program and mentoring program, faculty incentives and teamwork approach. Information technology (IT) department should be in support role, network, server support, lecture and course management online bookstore and library should be effective and well-supported. Moreover, it is recommended to continuously evaluate and update new online technology and quality of courses and to reconsider workload challenges that might emerge during the transition to online teaching

CONCLUSION

Creating a successful online program requires effective course design, suitable technology, updated policies, and strong institutional support. This study identifies three main challenges: administrative, infrastructural, and cultural, primarily in course design, support, and technology integration, all of which impact faculty's use of online learning platforms.

Ethics approval and consent to participate

Consent for publication : All participants provided informed consent for publication

Availability of data and materials : Available when request.

The Ethical Research Committee gave its approval to conduct the study. The researchers provided participants with a guarantee of research confidentiality. The researchers achieved anonymity by using codes rather than their names. The researchers received explicit written consent from the participants after providing a comprehensive explanation of the study's objectives and contents.

Author's contribution:

Najah Shawish: Writing original draft, Visualization, Supervision, Methodology, Investigation, Formal analysis, Data curation, Methodology , Conceptualization;

Andaleeb Abo Kamel: Software, Resources, Project administration, Data curation;

Duaa Al Maghaireh: Visualization, Supervision, Methodology, Data curation;

Haya Maher Albana: Methodology, Data curation , Formal analysis ; **Mariam**

Kawafha: Writing – review & editing, Validation.

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