

Understanding Medical Students' Perceptions of E-Learning: A Study at the Faculty of Medicine and Pharmacy in Casablanca

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Abstract

Original Research Article

Introduction: E-learning is essential in today's medical education, since it enhances the learning outcomes through easy access to resource materials and interactivity. Nonetheless, obstacles like technological aspects and the limited interaction of the student-teacher can impact its effectiveness. The purpose of this study was to understand how medical students perceive e-learning. **Methods:** A cross sectional study was conducted at the Faculty of Medicine and Pharmacy in Casablanca in 2023. A stratified cluster sampling method was adopted to select the participants. A self administrated questionnaire was distributed. We asked students about their demographic data, previous experience with online learning, learning formats preference and perception of e-learning. **Results:** A total of 373 students participated in the survey, with a mean age of 20.4 years and 61.4% being female. Just over half supported implementing e-learning (55.8%), about 63% of students had prior experience with the university's platform, and 59.8% found it easy to use. Most students preferred blended learning (74.8%) and asynchronous online learning (79.9%), additionally 72% favored live streaming with recordings as an e-learning resource. The primary advantage cited was flexibility (93.6%), whereas challenges included technical issues (71.5%) and limited interaction (54.8%). Prior experience significantly influenced students' positive perceptions of e-learning ($p < 0.001$). **Conclusion:** Overall, medical students have a positive perception regarding e-learning, valuing its flexibility and convenience. However, technological difficulties must be resolved. These insights can help policymakers put effective e-learning infrastructure and strategies into place.

Keywords: E-learning, Traditional Learning, Medical Education, Medical Students, Perception.

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I. INTRODUCTION

Depending on individual perspectives, there are several definitions for e-learning. It is often described as "the use of information and communication technologies to access online learning resources" or as "an instructional process that gives online learners access to a wide range of resources independently of place and time." [1, 2]. E-learning can be delivered asynchronously or synchronously. While asynchronous e-learning is available whenever and from anywhere, synchronous e-learning requires students to be online at the same time in order to facilitate real-time engagement. Blended learning is a technique that combines synchronous, asynchronous, and traditional classroom methods [3, 4].

In the current digital age, the adoption of e-learning in medical education is imperative [5]. Since they grew up with computers and electronic media, today's medical students feel comfortable utilizing these tools [6]. Thus, to support and encourage e-learning in public universities, the Moroccan government has started implementing programs to incorporate information and communication technologies into higher education [7].

It has been demonstrated that using e-learning and e-modules in medical education improves student learning results in a variety of learning settings [5, 6]. E-learning is an essential part of contemporary medical education because it gives students flexible access to

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learning resources at any time and location, assisting them in managing their clinical rotations and other responsibilities [7]. Additionally, e-learning platforms often provide features such as interactive modules, webinars and discussion forums, that not only increase the students' understanding of the subject but also bridge the gap between theoretical knowledge and practical application [8, 9]. Still, E-learning is also the reason for some difficulties. There is technological infrastructure, inadequate student-teacher interaction, cheating, digital literacy, and student perceptions [8, 10].

In the modern era of medical education, our study focused on the perceptions of E-learning among medical students in Casablanca.

II. METHODS

A cross-sectional study was conducted in March 2023 at the Faculty of Medicine and Pharmacy in Casablanca (FMPC). The inclusion criteria were: first to fifth year medical students.

Based on the prevalence of 50%, and a precision of 5% we calculated the sample size. A stratified cluster sampling method was utilized to select the respondents.

This study used a self administered questionnaire. The questionnaire consisted of 4 parts: demographic information, previous experience with online learning, learning formats preference and perception of e-learning. We guarantee the anonymity of all students in this questionnaire.

We used Microsoft Excel for cleaning and coding the database, which we then exported to R

software for statistical analysis. Descriptive statistics was used to summarize data characteristics and Chi-square test to assess the association with a statistical significance at 5% level.

III. RESULTS

• *Description of the Study Sample*

A total of 373 students completed the survey, of which 229 were female. The mean of age was 20.4 years with a standard deviation of 1.6 years. Participants were distributed across year levels as follows: 1st year (19.0%), 2nd year (21.7%) 3rd year (21.2%) 4th year (19.3%) and 5th year (18.8%).

Just over half of the students (55.8%) support the implementation of e-learning in the FMPC.

About 63% of participants had already experienced the University e-learning platform.

Additionally, 59.8% of students appreciated the platform's ease of use.

• *Medical Students Preference for Different Course Formats*

Three fourths of the respondents (74.8%) indicated a preference for blended learning and nearly 80% (79.9%) favored asynchronous online learning mode.

• *Favorite E-learning Resources*

A large proportion of medical students' responses were for live streaming with recording (72%), followed by 43% for online video based learning platforms. (Figure 1)

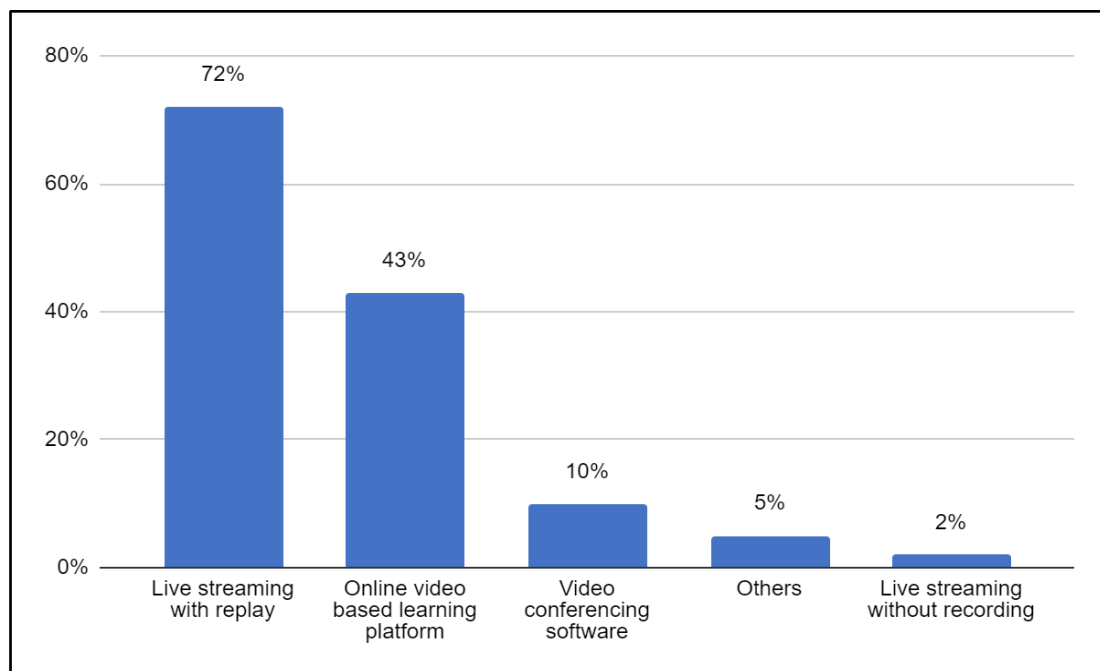


Figure 1: Favorite E-learning resources among medical students

• **Medical Students Perception Regarding E-Learning**

Among our respondents, 89.5% agreed that e-learning could improve medical education, 75.0% preferred online learning to face-to-face learning and 74.1% believed that e-learning could replace traditional

teaching methods. However, 51.7% disagreed that e-learning would negatively affect their motivation.

The ability to access courses anytime was the major advantage of e-learning (93.5%), while the main challenges were technical problems (71.5%) and lack of interaction (54.8%).

Table 1: Medical student’s perception toward E-learning

Question	Disagree N (%)	Neutral N (%)	Agree N (%)
E-learning could improve medical education	8 (2.3)	31 (8.2)	334 (89.5)
I prefer online learning to face-to-face learning	36 (9.7)	58 (15.3)	279 (75.0)
E-learning could replace traditional teaching methods	36 (9.7)	61 (16.2)	276 (74.1)
Easy access to courses at any time as a key advantage of e-learning	12 (3.0)	13 (3.5)	348 (93.5)
Interaction with the teacher would be reduced	93 (24.8)	76 (20.4)	204 (54.8)
Technical problems would be an obstacle to online learning	37 (10.3)	69 (18.2)	267 (71.5)
A lack of motivation is a barrier to e-learning	193 (51.7)	80 (21.4)	100 (26.8)

• **Association between medical students’ perception of how E-learning improves medical education and their prior experience with the University E-learning platform**

According to the results, previous use of the University E-learning platform was significantly associated with the student’ perception that E-learning enhances medical education ($p < 0.001$). Indeed 94% of students who had already used the platform agreed that e-learning could improve medical education.

IV. DISCUSSION

The present study intended to understand medical students’ perceptions about e-learning. In our findings, more than half of students are in support of integrating e-learning within the Faculty. Most participants had experienced University's e-learning platform prior to the study, and many appreciated its ease of use, suggesting that both familiarity and accessibility contribute to support e-learning.

Based on our results, 74.8% of medical students preferred blended learning. This is in line with other studies that report 66.3% believe a blended learning approach will be more effective for medical education in the years to come [11]. Furthermore, nearly 80% favored asynchronous online learning. As opposed to this, a separate study conducted in Saudi Arabia found that medical students were satisfied with both synchronous and asynchronous formats in terms of satisfaction knowledge improvement, with asynchronous learning helping time management and synchronous learning promoting interaction [5].

The most popular option for e-learning resources was live streaming with recordings, selected by 72% of participants, whereas 43% preferred video-based

online learning systems. Other studies indicate that the majority of students found lectures that were live-streamed and recorded more effective as a learning tool in comparison to in-person classes [12]. This finding highlights student's preference for resources that enable self-paced review and offer interactive, dynamic content.

It has been previously reported that traditional face-to-face learning is more effective for improving knowledge, clinical skills, and social competencies [13]. Nevertheless, a large percentage of our participants (89.5%) think that e-learning improves medical education, with 75% preferring online learning instead of in-person classes and 74.1% regard it as an alternative to traditional methods. Although 51.7% do not believe e-learning will harm their motivation.

Easy access to courses at any time is one of the primary benefits of e-learning that medical students perceive. This finding aligns with another study carried out in Gaza, that observed the first advantage of e-learning to be its accessibility, especially with asynchronous formats like pre-recorded lectures, which allow students to revisit the content as often as necessary [14].

In contrast, our study identified technical problems and lack of interaction as the potential challenges. This is consistent with previous research where the limited interaction between lecturers and students, especially in practical courses, was a key disadvantage of e-learning [15]. While online classes are effective in certain areas, they are insufficient in others. Considering these limitations, blended learning is recommended as it combines the benefits of both online and in-person teaching methods, offering a more comprehensive approach to education [16, 17].

V. CONCLUSION

In this study, we found that while appreciating the advantages of e-learning, medical students still prefer a combined approach that encompasses both online and face-to-face teaching. Even if they appreciate the flexibility that e-learning offers, they have profound concerns about technical issues and limited interaction. Therefore, implementing a blended learning model is needed for enhancing medical education and may incorporate improved technical support as well as more opportunities for interaction with tutors and students.

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