Research Article

Journal of *the Best Available Evidence in* Medicine

https://doi.org/10.63720/v2i1009

Perception and Attitude of Medical Students Towards Online Learning

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Abstract

Background: On the 11th of March 2020, the World Health Organization categorized COVID-19 as severe enough to warrant the act of social distancing. In response, the Libyan International University (LIU) implemented online learning platforms to reduce the rate of transmission among students and staff, allowing them to study and instruct from anywhere, at any time, and with more convenience. This study aimed to explore students' attitudes and perceptions towards online learning in medical education.

Methodology: A cross-sectional study involving 250 medical students was conducted. The completed questionnaire comprised questions related to demographic characteristics and their online learning experience. Statistical significance and inferential statistics were determined through SPSS software analysis.

Results: About 178 (71.2%) reported health issues during online learning, and 156 (62.4%) did not feel that online learning adequately prepares them for mastering clinical skills. Additionally, 117 (46.8%) struggled with motivation, though 142 (56.8%) valued the flexibility of online classes.

Conclusion: Overall, the study concluded that the students' perception was positive towards online learning. However, more is required to instill confidence in the ability to practice medicine under these circumstances.

Key Words: Perception; Attitude; Online Learning; Students; Libyan International University

Submitted: 23/02/2026

OPEN ACCESS

Published online: 26/05/2026

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Introduction

COVID-19 took the world by storm, limiting mobility and preventing human contact and gatherings—including schools and universities—in order to reduce the spread of infection.[1] Consequently, educational institutions worldwide were forced to rapidly transition from traditional face-to-face teaching to digital platforms.[1,2] Advances in digital connectivity had already facilitated universal access to education, catalyzing the emergence of e-learning as a distinct educational framework.[3,4] Online education, which employs the World Wide Web and information technologies to deliver instructional content synchronously and asynchronously, has progressively become an integral component of medical education.[4,5] The COVID-19 pandemic decisively accelerated this integration, resulting in a large-scale shift toward online teaching with both significant benefits and notable drawbacks.[1,2,5]

One of the major advantages of e-learning lies in the availability of new educational resources and the potential for innovative learning approaches, such as blended learning, aimed at maximizing learning effectiveness.[4,5] However, over time it has become apparent that the successful optimization of online learning depends critically on overcoming multiple barriers.[5] E-learning—also referred to as Internet or web-based learning—constitutes a broad educational paradigm encompassing distant, blended, and mobile learning modalities, each defined by distinct instructional methods and technological foundations.[5,6]

As a dynamic and evolving instructional medium, e-learning utilizes diverse digital tools, applications, and resources to facilitate the learning process. Its effective implementation depends heavily on careful planning and structured course design, which significantly influence educational outcomes.[7] A clear distinction must be made between deliberately designed online education and emergency remote teaching, the latter often adopted as a temporary response to crises.[5,7] Within medical education, e-learning has proven effective when supported by proactive strategies, hybrid models, and integrated online assessment.[4,8] Although Libyan International University has implemented online learning extensively, limited evidence exists regarding its effectiveness and medical students'

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perceptions. This study therefore aims to evaluate students' attitudes toward online learning and identify its challenges and limitations.

Methodology

A cross-sectional study was conducted between June and July 2024 among students at the Libyan International University (academic year 2024–2025). The study included 250 male and female students of all ages, recruited via convenience sampling. The estimated sample size was 250, based on the total enrolment of 700 medical students in the faculty for 2024 and calculated using the Raosoft sample size calculator, assuming a 95% confidence level and a 5% margin of error, and data were collected through face-to-face interviews.

Study Tools

Data were collected via a semi-structured, self-administered questionnaire during face-to-face encounters. The instrument comprised two primary sections: the first gathered demographic data, including gender, age, and academic year. The second section was divided into two distinct domains: the first addressed major issues that students experienced during online learning (9 items), and the second assessed student confidence in learning outcomes and exam preparedness (6 items).

Reliability and Validity

The questionnaire was conducted with some faculty students. Besides, Cronbach's alpha was used to check the reliability of the values of the selected questions in the provided questionnaire. To ensure the internal consistency of the questionnaire, a pilot study was conducted. The analysis yielded a Cronbach's alpha coefficient of 0.74, exceeding the widely accepted reliability threshold of 0.70. This confirms that the questionnaire items possess satisfactory internal reliability for the main study.

Data Analysis

The data were analysed using Statistical Package for Social Sciences (SPSS) version 26.0. Every Likert scale scoring parameter was tabulated and analysed. For each of the questionnaire parameters, the observed proportion was computed as a percentage, and the significance level was determined. Statistical significance was defined as a p-value of less than or equal to 0.05.

Ethical Considerations

Before data collection, informed consent was sought from the academic director. Once permission had been granted by the university ethics committee (No. MHS-2-G-00343), the consenting students completed the consent forms. The participants were told and assured that their participation and the information they provided would not be disclosed to any third party.

Results

The study showed that the mean ± standard deviation of student age was 20.7 ± 1.8 years, the minimum age in the sample was 18 years, while the maximum age was 28 years. The majority of students, 129 (51.6%), were between 18 and 20 years old, with a higher proportion being female, 148 (59.2%). Additionally, 73 students (29.2%) were in their third academic year (Table 1).

Table 1: Distribution of the students according to age, gender, and academic year.

Variable	Number (No.)	Percentage
Age (Years)		
18-20	129	51.6
21-23	106	42.4
>23	15	6.0
Gender		
Male	102	40.8
Female	148	59.2
Academic Year		
1st	66	26.4
2nd	52	20.8
3rd	73	29.2
4th	17	6.8
5th	42	16.8
Total	250	100

71.2% of respondents admitted to experiencing probable online learning health complaints, including headaches, anxiety, and sleep problems (Table 2).

The study shows that there was little variation in the kind of perceived self-confidence in reproducing learnt material and actualization of skills attained. According to mean scores, it was found that a low level of confidence existed, as 20.0% were confident in their ability to recall most of the information taught in class. Similarly, lower confidence in learning clinical skills online demonstrate the existing loophole in adapting online learning competency based education, which encompasses an even more practical area, such as medicine (Table 3).

Table 2: Major issues that students experienced during online learning.

First Sub-Axis	Yes		Not Sure		No	
	No.	%	No.	%	No.	%
Do you experience any of the following problems during or after online learning sessions (headache, difficulty concentrating, sleep disturbance, anxiety, and eye strain)?	178	71.2	26	10.4	46	18.4
Did you do online learning before the pandemic?	83	33.2	52	20.8	115	46.0
Do you feel the online sessions are more interactive than offline classes?	88	35.2	41	16.4	121	48.4
Do you feel that online teaching leads to poor motivation?	117	46.8	64	25.6	69	27.6
Are you able to complete the online exams independently?	166	66.4	42	16.8	42	16.8
Do you feel the benefits of attending the online classes are more flexible than traditional learning?	142	56.8	51	20.4	57	22.8
Would you recommend online learning to other medical students?	135	54	57	22.8	58	23.2
Do you notice any decrease in your academic level during online learning?	94	37.6	65	26.0	91	36.4
Do you feel online learning adequately prepares you for performing clinical skills on real patients?	91	36.4	94	37.6	65	26

Table 3: Perceived self-efficacy in knowledge retention versus the behavioural actualization of learned skills.

Second Sub-Axis	Strongly Disagree		Disagree		Neutral		Agree		Strongly Agree	
	No.	%	No.	%	No.	%	No.	%	No.	%
I can recall most of the information taught in the class.	55	22	86	34.4	59	23.6	38	15.2	12	4.8
Doubts asked by other students in online lectures have helped me to clear my own concepts.	62	24.8	76	30.4	60	24	37	14.8	15	6.0
I feel confident enough to perform the acquired skills.	45	18.0	80	32.0	70	28.0	40	16.0	15	6.0
I feel confident about appearing for the university theory exams of the university.	58	23.2	89	35.6	65	26.0	29	11.6	9	3.6
I feel confident about appearing for the practical examinations of the university.	59	23.6	82	32.8	62	24.8	32	12.8	15	6.0
Technical problems make it difficult for me to participate actively in online classes.	71	28.4	73	29.2	64	25.6	25	10	17	6.8

One sample t-test suggests that the comprehension mean score of 2.178 (First Sub-Axis) was significantly greater than the theoretical mean of 2 (p value < 0.001) affirming that students have a positive attitude towards online learning. The scores (Second Sub-Axis) were also above the theoretical average 3.546 (p-value < 0.001); consequently, this research finds that there is a relatively positive perception of the learning outcomes from online education among

the respondents. The study revealed that there was no difference in the perception based on age, meaning that the age factor did not influence the participants' attitudes towards online learning. Gender-related differences and the academic year are statistically significant in perceptions of students: male students are more positively disposed towards online learning in analysis of the first thematic axis revealed that the academic year significantly influenced perceptions, with first-year students demonstrating the most positive attitude toward online learning (Table 4 and 5).

Table 4: Determinants of positive disposition toward online learning: the role of gender.

	Gender	No.	Mean	S.D.	p-value
First Sub-Axis	Male	102	2.229	0.336	0.033
	Female	148	2.143	0.289	
Second Sub-Axis	Male	102	3.592	0.698	0.395
	Female	148	3.515	0.705	

Table 5: Determinants of positive disposition toward online learning: the role of academic seniority.

Axis	Academic Year	No.	Mean	S.D.	p-value
First Sub-Axis	1st	66	2.268	0.317	0.002
	2nd	52	2.169	0.306	
	3rd	73	2.198	0.302	
	4th	17	2.170	0.281	
	5th	42	2.019	0.286	
Second Sub-Axis	1st	66	3.785	0.547	0.001
	2nd	52	3.362	0.629	
	3rd	73	3.525	0.784	
	4th	17	3.794	0.617	
	5th	42	3.333	0.768	

Discussion

The accelerated integration of online learning into medical education during the COVID-19 pandemic has revealed a complex and dual reality. Findings from this study of 250 medical students at the Libyan International University confirm that online platforms are widely recognized as essential educational tools. Nevertheless, student perceptions highlight persistent challenges related to social presence, well-being, engagement, and pedagogical effectiveness, with overall satisfaction emerging as a key indicator for evaluating this learning modality.

A major concern identified was the impact of prolonged screen exposure on student health and engagement. More than half of respondents reported digital fatigue and associated health complaints, underscoring the need for institutions to integrate digital well-being safeguards within online learning environments. Although some students (33.2%) had prior exposure to online learning before the pandemic—consistent with regional findings by Barakat et al.—this familiarity did not offset reports of poor motivation (46.8%) or non-interactive sessions (48.4%).[7-9] Similar deficits in motivation and interaction have been reported in many other countries, reinforcing the global nature of these challenges.[9,10,11]

These findings suggest that platform familiarity alone is insufficient; rather, the effectiveness of e-learning depends on dynamic, participatory instructional design and deliberate curricular integration.[4,5] Notably, 62.0% of students perceived reduced subject mastery, echoing international concerns regarding inadequate preparation for clinical and practical skills.[1,4] Technical difficulties were also prominent, with 57.6% citing connectivity issues, consistent with findings from other countries.[4,12]

Overall, while students demonstrated moderate confidence in knowledge recall, lower confidence in interpretation and skills performance—alongside a preference for face-to-face teaching—highlights the persistent theory-practice gap that continues to challenge e-learning in medical education.

Disclosure Statement

The author has no conflicts of interest to declare.

References

1. Bączek M, Zagańczyk-Bączek M, Szpringer M, Jaroszyński A, Wożakowska-Kapłon B. Students' perception of online learning during the COVID-19 pandemic: a survey study of Polish medical students. Medicine (Baltimore). 2021;100(7):e24821. doi:10.1097/MD.0000000000024821.
2. Shabu SA. Hawler Medical University students' perceptions of e-learning during the COVID-19 pandemic. PLoS One. 2023;18(2):e0281117. doi:10.1371/journal.pone.0281117.
3. O'Doherty D, Dromey M, Lougheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education: an integrative review. BMC Med Educ. 2018;18(1):130. doi:10.1186/s12909-018-1240-0.
4. Barteit S, Guzek D, Jahn A, Bärnighausen T, Jorge MM, Neuhann F. Evaluation of e-learning for medical education in low- and middle-income countries: a systematic review. Comput Educ. 2020;145:103726. doi:10.1016/j.compedu.2019.103726.
5. Pei L, Wu H. Does online learning work better than offline learning in undergraduate medical education? A systematic review and meta-analysis. Med Educ Online. 2019;24(1):1666538. doi:10.1080/10872981.2019.1666538.
6. Zhao P, Sintonen S, Kynäslahti H. The pedagogical functions of arts and cultural-heritage education within online art galleries and museums. Int J Herit Digit Era. 2015;4(1):103-120. doi:10.1260/2047-4970.4.1.103.
7. Barakat M, Abu Farha R, Muflih S, Ala'a B, Othman B, Allozi Y, et al. The era of e-learning from the perspectives of Jordanian medical students: a cross-sectional study. Heliyon. 2022;8(7):e09928. doi:10.1016/j.heliyon.2022.e09928.
8. Arkorful V, Abaidoo N. The role of e-learning, advantages and disadvantages of its adoption in higher education. Int J Instr Technol Distance Learn. 2015;12(1):29-42.
9. Islam N, Beer M, Slack F. E-learning challenges faced by academics in higher education. J Educ Train Stud. 2015;3(5):102-12.
10. Songkram N. E-learning system in virtual learning environment to develop creative thinking for learners in higher education. Procedia Soc Behav Sci. 2015;174:674-9. doi:10.1016/j.sbspro.2015.01.600.
11. Aparicio M, Bacao F, Oliveira T. Cultural impacts on e-learning systems' success. Internet High Educ. 2016;31:58-70.
12. Sawarkar G, Sawarkar P, Kuchewar V. Ayurveda students' perception toward online learning during the COVID-19 pandemic. J Educ Health Promot. 2020;9:342. doi:10.4103/jehp.jehp_558_20.