

E-Learning Among Medical Students: An Analytical Study

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ABSTRACT

A learning system based on formalized instruction but with the help of electronic resources is known as e-learning. Countries around the world had imposed large-scale physical distancing measures and movement restrictions, often referred to as lockdowns, to slow the transmission of COVID 19 by limiting contact between people. Students across the country had to undergo e-learning. The study is conducted to assess knowledge and perceptions about e-learning among medical students to assess the factors that act as barriers to effective learning through e-learning platforms. A pre-tested questionnaire will be mailed to the students at Allied Health Sciences, Malla Reddy University. 117 students were included in the study. The data was collected in Google Forms and analyzed using Google Sheets. 91.5% of the students had sufficient knowledge and only 43.6% of the students had a positive attitude towards e-learning. There is no significant difference between men and women in knowledge and attitudes.

Key words: E-learning, Medical students, Medical Education, Online Classes.

Introduction

On March 11, 2020, the World Health Organization (WHO) declared the outbreak of the novel coronavirus (COVID-19) a global pandemic [1]. Countries around the world had imposed sweeping physical distancing measures and movement restrictions, often referred to as lockdowns, to slow the transmission of COVID 19 by limiting contact between people. India suffered a huge impact after the second wave of COVID-19 as the new strain of the virus became more common in infecting children and young adults. the possibility of learning in traditional classrooms became questionable. Schools and colleges were locked down for months. Challenges with traditional classroom learning include the risk of a potential outbreak in the classroom, exposure to disease while traveling and during clinical training in the hospital. To meet these challenges, educational institutions have had to switch to more modern methods of teaching and

learning. A learning system based on formalized instruction but with the help of electronic resources is known as e-learning [2]. Students can study wherever they are without fear of the spread of the pandemic.

E-learning is learning that is carried out using electronic media, typically the Internet. Some of the e-learning methods include scheduled live online video lectures with interactive discussions that provide learning materials for students to download and use. These methods require skills from both teachers and students. Other methods include teachers pre-recording lessons and sending them to students for use whenever they want. The few known challenges to these learning models have been the difficulty in assessing and maintaining student focus throughout the lesson.

Objectives

- To assess the knowledge, attitude and perception regarding E-learning among medical students
- To assess the factors which act as a barrier to effective learning via E-learning platforms

Methods

The study was conducted in Allied Health Sciences at Malla Reddy University. First-year medical students were selected by non-probability sampling and provided with a self-completed, pre-tested questionnaire in February 2022. Out of 250 students, 117 students agreed and responded. Those who did not provide informed consent and those who did not fully complete the questionnaire will be excluded from the study and analysis. The questionnaire is created under the guidance of experts. It is a semi-structured questionnaire with open and closed questions. The questionnaire is divided into 5 sections – demographics, questions about knowledge, attitudes, perception and barriers to e-learning. Questions were also asked about their experiences and preferences in the field of

e-learning. Ethical clearance was obtained from the Institutional Ethical Committee. The knowledge of e-learning has 10 questions; Correct answers earn 1 point, while wrong answers earn no points. A score of 7 or more is considered sufficient knowledge and less than 7 as poor knowledge. The Attitude section contains 8 questions in the form of a 5-point Likert scale ranging from “strongly agree” to “strongly disagree”. Positive answers are worth 5 points, negative ones are worth 1 point.

Results

Of 117 responses collected, 57 (48.7%) were male and 60 (51.3%) female. The mean age of the participants was 19.70.7 years. Most students come from District 92 (78.6%). In terms of socioeconomic status, 69 (58.9%) of the students belong to the upper middle class, 37 (31.6%) to the lower middle class, 10 (8.5%) to the upper lower class, and 1 (0.8%) to the upper middle class upper middle class to upper class according to the modified Kuppaswamy scale (Table-1).

Demographic features	No. of Students	Total number
Sex	Men	57
	Women	60
Locality	Urban	92
	Rural	25
Socioeconomic status	Upper class	1
	Upper Middle class	69
	Lower Middle Class	37
	Upper Lower Class	10
	Lower Class	0

All participants have experience with Zoom, 72 (61.5%) had experience with Google Meet, 83 (73.5%) had experience with Telegram, 60 (51.3%) had experience with YouTube-based learning and 34 (29.1%) learned about other platforms such as WebEx and Marrow.

Table -2&3: Proportion of students having adequate knowledge and positive attitude towards E-learning

S.No	Knowledge Level	%
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1	Good Knowledge	91
2	Poor Knowledge	9

S.No	Kind of attitude	%
1	Positive Attitude	44
2	Negative attitude	56

Table 4: Proportion of students who were aware of various E-learning platforms

S.No	E- Learning Platform	%
1	Zoom	100
2	Googlemeet & Classroom	61.5
3	Telegram	73.5
4	Youtube	51.3
5	Others	29.1

A score of at least 70% in Knowledge and Attitude is considered appropriate and positive. 107 (91.5%) students had sufficient knowledge and only 51 (43.6%) had a positive attitude towards e-learning. There is no significant difference between men and women in terms of knowledge ($p=0.79$, independent t-test) and attitude ($p=0.12$,

independent t-test). The trend chi-square is applied to find the difference between knowledge and attitudes at different socioeconomic statuses (between upper-middle, lower-middle and upper-lower bound) and is considered significant ($p < 0.01$) and as not significant for found attitude ($p=0.11$). Knowledge is greater among students with higher socioeconomic status.

Table - 5: Knowledge on E-learning

Questions	Correct Responses	
	N o.	%
E-learning is a type of learning where the teacher teaches virtually from a distance and the student who is far away from learning through that.	111	94.9
E-learning is a type of learning where the student uses electronic devices such as computers, smartphones, etc.	117	100
E-learning is a type of learning where students read by themselves without the help of teachers.	73	62.4
Internet may or may not be used in the process of E-learning	56	47.9
Teachers can never evaluate in E-learning.	94	80.3
E-learning is the learning that teaches with the help of audio-visual aids.	115	98.3

E-learning is a very old method of learning and it had been practiced by developed countries about 150 years back.	114	97.4
E-learning is a type of learning where the student must come to the classroom to sit and read through their mobile phone.	113	96.6
The teacher uses chalk and a board while the students sit in an air-conditioned room.	117	100
E-learning does not require any technology-related skills	117	100

Table-6: Student's attitude on E-learning ranked on a 5-point Likert scale (Strongly agree to Strongly disagree).

Statements on E-learning	Mean \pm SD
E-learning can be a great opportunity to learn during the current Pandemic	4.06 \pm 0.69
E-learning motivates me to learn more.	3.06 \pm 0.78
E-learning is the future of medical learning.	2.61 \pm 0.82
If E-learning services are available for free, I will learn extra time.	3.5 \pm 0.82
Supplementary E-learning services should be there in the medical curriculum in addition to traditional classroom learning.	3.74 \pm 0.88
I would be willing to spend money on E-learning services in future	3.28 \pm 0.79
E-learning can increase productivity	3.41 \pm 0.81
I am satisfied with E-learning	3.12 \pm 0.74

In terms of attendance and interest in class, only 24 (20.5%) students attended all classes, 66 (56.4%) students attended most classes, and 27 (23.1%) students only attended some classes. In terms of concentration in class, only 19 (16.2%) students attend the entire class, 62 (53%) students attend most parts of the class, 34 (29.1%) students attend only a few parts of the class, and 2 (1.7%) The students do not participate in any part of the lesson. 58 (49.6%) students prefer live

interactive session, 17 (14.5%) students prefer live one-way lectures, while 42 (35.9%) students prefer recorded classes. 88 (75.2%) students preferred an ideal number of students per e-learning session, less than or equal to 100 students per session, 13 (11.1%) students preferred 101 to 200 students per session, and 16 (13.7%) Students preferred more than 200 students per session. Most students used smartphones (84.6%), followed by laptops and computers (15.4%).

Table 7. Student's perception of E- learning

Questions and responses	No.	%
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Do you regularly attend classes based on E-learning?	All classes	24	20.5
	Most of the classes	66	56.4
	Some classes	27	23.1
Do you listen to the classes from start to end?	Attends complete class	19	16.2
	Attends most of class	62	53.0
	Attends parts of class	34	29.1
	Opens and skips off the class	2	1.7
What type of E-learning sessions do you prefer?	Live interactive sessions	58	49.6
	Live one-way teaching	17	14.5
	Pre-recorded content	42	35.9
How many students do you prefer per session?	<100	88	75.2
	100-200	13	11.1
	>200	16	13.7

The most common barrier to E-learning in the study is the poor home environment (53.0%), followed by lack of interest (49.6%), poor network connection

(45.3%), poor monitoring (29.9%), lack of hands-on training (25.6%), difficulty (10.3%) and non-availability of smart phones and computers (6%)

Table -8 : Barriers to E-learning

Barrier to E-learning	Students	
	No.	%
Poor home environment (disturbances)	62	53.0
Poor monitoring	35	29.9
Lack of interest	58	49.6
Lack of hands-on training	30	25.6
Poor network connection	53	45.3
Difficulty	12	10.3
Non-availability of Smart phones and computers	7	5.9

Discussion

The result of this study indicates that students are aware of various e-learning methods, but the attitude towards learning is low. In a study³ conducted in Libya, the knowledge of

e-learning among students is only 57.5%, which is lower compared to the current study where it is 91.5%. Compared to the study conducted in Jordan⁴ where only 35.4% of students used smartphones, in the current study 84.6% of students used smartphones.

In a study⁵ conducted in Nigeria on motivation to learn through e-learning, the mean value of 3.6 is closer to agreement, while in the current study it is 3 (neutral).

Limitations

The study used no-probability samples, and the sample may not represent the sample universe.

Conclusion and Recommendations

The study found different barriers of e-learning and it is recommended to find and consider these barriers for effective e-learning. Appropriate training of e-learning facilities should be provided for both students and teachers. Many students prefer e-learning in a small group of less than 100 students to be effective.

Reference

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