

MEDICAL EDUCATION

e-Learning: Practices Among Undergraduates of a Medical College of Khyber Pakhtunkhwa

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ABSTRACT

Background: Information technology (IT) is a new way of teaching and learning. One of the promising media of information technology is e-Learning, which is used to enhance knowledge and skills among users. A student gains better and deep knowledge through a useful tool. This survey aimed to determine practices among medical students for e-Learning.

Methods: This cross-sectional survey was conducted on 184 students amongst the 500 students currently enrolled in medical college. Data was collected using questionnaires and were analyzed through SPSS version 22. Chi-square was used for qualitative values.

Results: Majority 90.80% (n=167) students were aware of e-Learning and were statistically high in first year students (p -value: 0.018). The student did not show statistically significant results for content learned through e-Learning with a p -value of 0.063. Different resources were used for e-Learning in which videos had the highest percentage (87.60%) and audios were used as the least resource for e-Learning (29.20%). Daily, 56% of the students use e-Learning for 1 hour or less and only 3% of the students used it for more than 4 hours.

Conclusion: Majority of undergraduate medical students were aware of the use of e-Learning and most of them preferred e-Learning for their course work and studies showing a significant increase in understanding and use, compared to studies conducted earlier. Participants found e-Learning useful and effective tool in increasing knowledge and understanding of their subject.

Keywords: e-Learning; Practices; Students.

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INTRODUCTION

With the advent of computers and internet, the concept of learning changed vastly. In the last few years, frequent use of mobile and laptop have further enhanced the learning opportunities. Easy availability of these modern learning tools has made medical education easy and lesser expensive¹⁻³. Lectures on blackboards and overheads have been replaced by power point and easily available e-Learning software⁴. Information technology is a new way of teaching and learning to achieve fast and successful development of knowl-

edge and skills among users⁵.

Advantages of e-Learning are vast because of its flexibility and self-directed learning⁶. It has been observed through several researches that students are no longer bound or constrained to options, which has paved its way for virtual education⁷. Globally several studies have been carried out to access the significance and usage of e-Learning in different setups of medical education⁸. Due to students' interest and awareness, they are using this technology⁹. The US National Center for Educational Statistics reported that 30% of the students with

bachelor's degrees were enrolled in distance education courses in 2011 and 75% of students took their entire post-graduate program online¹⁰⁻¹².

Studies on e-Learning show different results about the knowledge, attitude, and practice among medical students^{13,14}. A study conducted in Wales, United Kingdom, on medical students showed that 70% of the students were using online learning tools consisting of videos, problem-based learning cases, tutorials, and quizzes¹⁵. A survey conducted in Illinois on medical students in their final two years of medical school found them using online tools including Google docs, YouTube, Twitter, Facebook, and Wikipedia for study purposes¹⁶.

According to Yaseen et al.¹⁰ images from the Google and use of Wikipedia were the top electronic resources used for learning. Amongst other educational resources, YouTube, Kaplan and Najeeb lectures were used most frequently. In this IT era, proper setting and guidance can prepare grounds for up to date data, which can enhance learning¹¹. Knowledge about the computer has a key role in educational research when these were used in the classroom for learning¹⁷. Another study from King Edward medical college Lahore showed that 75% of the respondent spend only 1/4th part of their daily study time on e-Learning with the effectiveness of more than 90% which shows that even though students spent less time on web-based lectures, still they rated it as highly effective¹⁸. This survey aimed to determine practices among medical students for e-Learning.

METHODS

This was a cross-sectional survey, which had been conducted on 184 students amongst the 500 students currently enrolled in Rehman Medical College from December 1st, 2018-May 31st, 2019 after taking permission from the college ethical committee. First year to final year, students were selected for the questionnaires through simple random sampling, technique. The questions given to students were self-administered, verbal consent was taken while giving the questionnaires and the confidentiality was maintained. Before conducting

the study, a pilot study was conducted on the students randomly to check for errors in the questionnaires. The questionnaire had three parts, 1st part forming the demographic data (name, gender, age, current MBBS year, whether a day scholar/student residence) 2nd part including questions on the use of e-Learning and the final part comprising the questions regarding the effectiveness of e-Learning. All 184 students returned the questionnaires; hence, there were no missing questionnaires. The data collected from all the years of MBBS students was SPSS version 22. The collected data were analyzed for descriptive statistics, frequency, and percentages were calculated for the questions. Chi-square was used for qualitative values. Charts and graphs were made through Excel.

RESULTS

A total of 184 participants were enrolled. Among them, first year students were 45, 2nd year students were 35, third year students were 34, fourth year students were 32 while final year MBBS students were 38. Out of these 109 (59.2%) were males and 75(40.8%) were females with 21.53 ± 1.67 years of mean age. Among the 184 students, 167(90.8%) of the students had understanding of the concept of e-Learning compared to 17 (9.2%) of the students who did not.

Among 180 students, 14(7.8%) students agreed that e-Learning improves the quality of work than the use of course books alone. All of the 29 (85.3%) of 3rd year students strongly agreed that e-Learning improves their work.

The sources used for e-Learning (Table 1) which clearly showed that laptop was the commonest used gadget for e-Learning as 101(54.9%) students among the 180 selected, laptops as their choice. The least used gadget among these was Computer. When compared among the years, the First year showed variations in use of mobile phone for e-Learning compared to other years who used laptops more for learning purposes. Therefore, it was noticed that the use of the laptop, computer, and Mobile phone was statistically significant (Table 1) among MBBS students with a p-value of 0.018.

Table 1: Sources used for e-Learning by undergraduate medical students.

MBBS Year of the Participants	Source used for e-Learning				p-Value
	Computer n (%)	Laptop n (%)	Mobile phone n (%)	Other n (%)	
First year	1 (2.2%)	20 (44. 4%)	23 (51.1%)	1 (2.2%)	0.018
Second year	9 (25.7%)	19 (54.3%)	7 (20.0%)	0	
Third year	3 (8.8%)	19 (55.9%)	12 (35.3)	0	
Fourth year	2 (6.3%)	21 (65.6%)	9 (28.1%)	0	
Fifth year	4 (11.8%)	22 (64.7%)	7 (20.6%)	1 (2.9%)	

In addition to this, 167 (92.8%) people agreed that e-Learning has improved their knowledge from previous years (Table 2), whereas, on 13(7.2%) found no change in their knowledge through e-Learning. From final year and 3rd Year MBBS, 33

students (97.1%) found increase in their knowledge and only one disagreed 1(2.9%). Hence, the content learned through e-Learning improved knowledge, however, the results were not significant (p-value of 0.063).

Table 2: Thoughts on improvement through e-Learning prior to knowledge.

MBBS Year of the Participants	Positive Improvement n (%)	Insufficient Improvement n (%)	p-Value
First year	43 (95.6%)	2 (4.4%)	0.063
Second year	34 (97.1%)	1 (2.9%)	
Third year	31 (91.2%)	3 (8.8%)	
Fourth year	26 (81.3%)	6 (18.8%)	
Fifth year	33 (97.1%)	1 (2.9%)	

These figures showed the output of e-Learning based on the different methods used by undergraduate medical students. Most of the students (Figure 1), (87.6%) use videos as a learning modality followed by online courses (86.50%), websites

(51.10%), quizzes (30.9%), and audio with the percentage of (29.2%). Majority of the students (Figure 2), 56% spend <1 hour, 25% spend 2 hours, 14% spend 3 hours, 2% spend 4 hours and about 3% use internet daily for more than 4 hours.

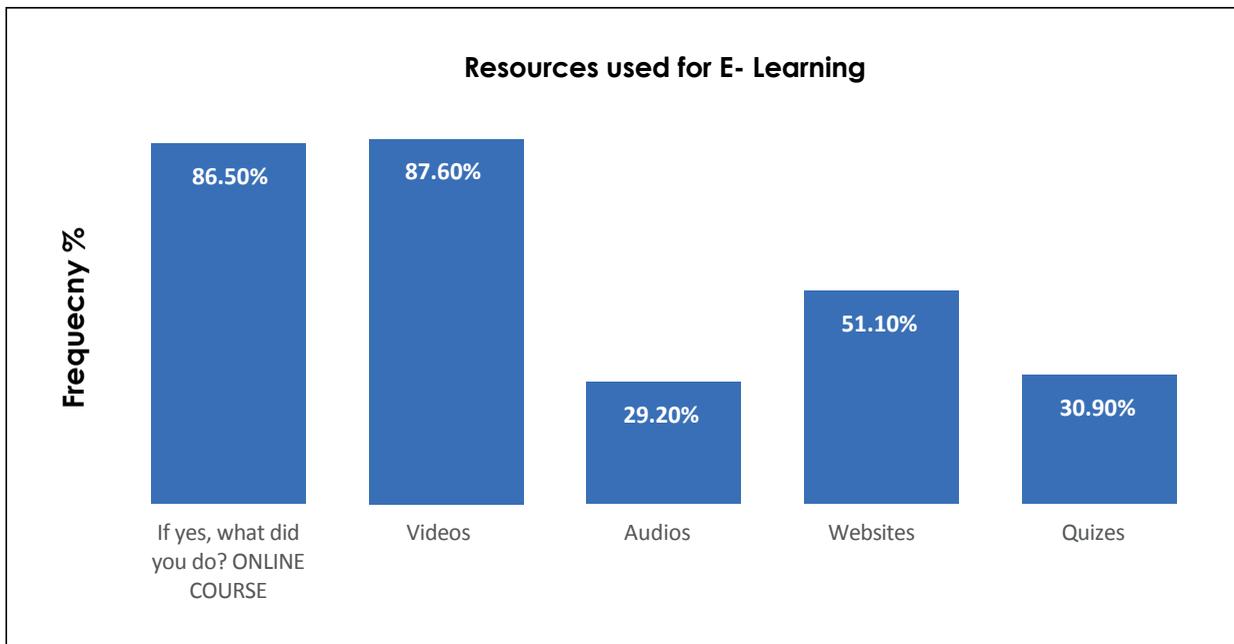


Figure 1: Resources used for e-Learning.

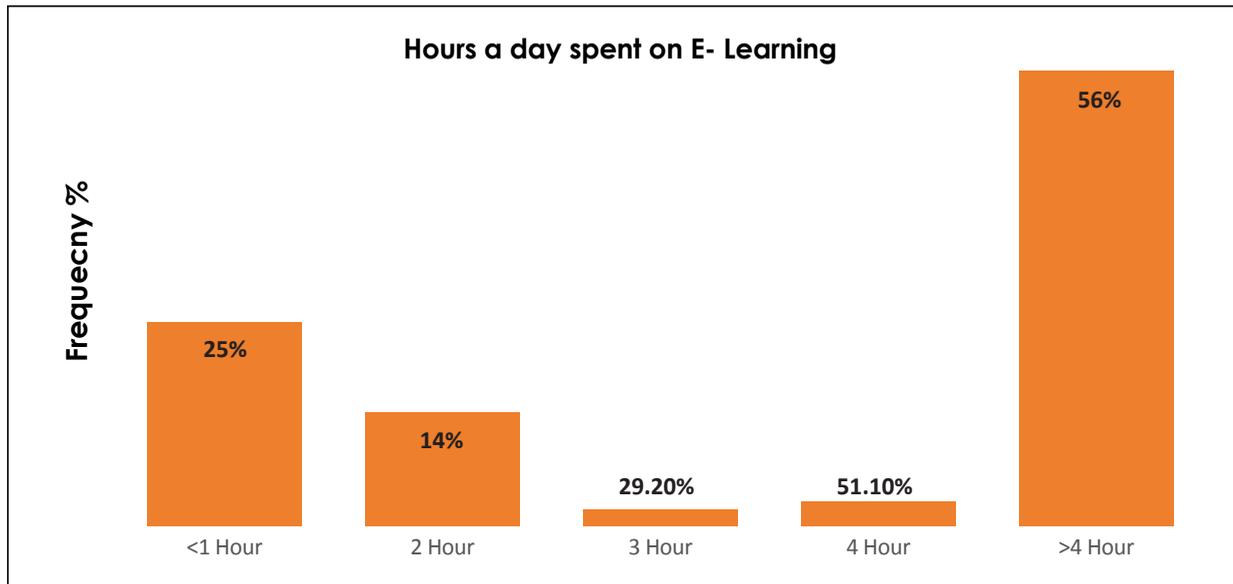


Figure 2: Time spent on e-Learning daily.

Regarding comparison with books, 14(78.3%) students out of 180 students agreed that e-Learning improves the quality of your work than the use of course books. This showed that most of the students believe that e-Learning improves their quality of work. Among the MBBS years, 3rd year has a strong opinion that e-Learning improves their work as they answered Yes to the question (29, 85.3%). Subjects were asked about the effects of e-Learning on distraction from study, (Yes 60.5%, No 39.5%) improvements in the quality of their work (Yes 78.3%, No 21.7%), medical knowledge improvement (Yes 91.6%, No 8.3%) and application of their learned skills in daily professional activities (Yes 81.6%, No 18.3%). This clearly showed that most of the students agreed that e-Learning is an effective way of obtaining knowledge and gaining skills.

DISCUSSION

This study enabled us to know the current trend of using online learning modalities by students, the main resources they used for e-Learning purposes, and for how e-Learning adds up to their previous knowledge and its effectiveness among the students. It also shows that even if e-Learning is beneficial for many students, they also get distracted quickly by e-Learning.

The use of e-Learning has now been integrated into the life of most university students. Many students are now using e-Learning as a method of improving and enhancing their learning capabilities. In our research, 90.8% of the students were aware of the concept of e-Learning compared to the 9.2% of the students who were not. When compared to a study conducted in Iran where 30.7% were aware of e-Learning showed a significant increase in awareness¹².

According to our study, the laptop was the most frequently (54.9%) used gadget for e-Learning followed by mobile (31.5%) and desktop computers (10.3%). In concordance to our findings, a study from Army Medical College Rawalpindi also observed that the most utilized gadget by the students was a laptop (47.6%) followed by mobile phones (37.7%) and desktop (6.6%)¹⁹.

Amongst the different modalities used by the medical students to determine preferred modes of information technology, majority (87.6%) of the students used videos as a learning modality followed by online course (86.50%), websites (51.10%), quizzes (30.9%) and audio (29.20%) only. Many students opted for more than one option, which means that the students had a balanced set of preferences to learn information in a variety of modes. Comparing our research with a survey from Australia, this reported that most of the students used videos (92%) and online question bank (90.6%) which is in accordance to our study^{20, 21}.

About the time spent on the daily use of e-Learning, 56% of the students spent less than 1 hour that is more than half of the study group involved, 25% spent 2 hours, 14% spent 3 hours, 2% spent 4 hours about 3% use it daily for more than 4 hours. Comparing this with the study done in 2011 from Masaryk University Brno, Czechia result showed that 62% of the medical students spent less than 2 hours a week, 33% spent 3-4 hours a week and only 5% spent 5 or more hours a week so according to this our results are more significant²².

Most students can learn effectively if they are provided a blend of visual-auditory reading writing and kinesthetic activities²³. According to our survey,

91.6% students believed that the medical knowledge has been enhanced and improved in many ways by the means of e-Learning compared to a study from Australia²⁴. That also showed that 95% of the students found e-Learning useful; 75% perceived it to be effective in increasing their performance and 91% of the students believed that the knowledge gained through e-Learning helps them in enhancing their professional skills and improving their daily professional performance²⁴. Another survey from Indonesia also showed that most of the students (60%) agreed on the usefulness of e-Learning and 46% agreed that it plays a very effective role in their learning²⁰. Because of the all mentioned reasons, active learning strategies are superior to the traditional lectures in promoting thinking, reasoning, problem solving and decision-making skills^{23,25,26}.

CONCLUSION

Most undergraduate medical students have the knowledge and concept of e-Learning and majority of them prefer the use of e-Learning in their studies showing a significant increase in awareness compared to studies conducted earlier. Few of them mentioned that getting distracted from the studies is greater in e-Learning rather than traditional sources. Participants found the e-Learning package to be useful and effective in increasing knowledge and improving their quality of work. Thus, e-Learning may be further utilized to enhance their professional skills and improve their daily professional performance.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ETHICS APPROVAL

The college ethics committee approved the study (reference number: 1122018).

PARTICIPANTS CONSENT

All study participants have given the consent.

AUTHORS' CONTRIBUTION

MI, WA conceived the idea, designed the study, planned for data collection, and analyzed the result as well as the final manuscript. WA helped in data collection, performed the bench work, and studied the design for review. MI, BO, AK helped in the data collection and literature review. MI, EN, SR helped in data entry, compilation, and analyzed the results.

MI, HY, EN helped in manuscript writing and bibliography.

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