

BRIEF COMMUNICATION**E-LEARNING IN SURGICAL EDUCATION: EXPERIENCE FROM THE DEPARTMENT OF SURGERY, ADDIS ABABA UNIVERSITY**Yonas Ademe*¹, Abebe Bekele ²**ABSTRACT**

Background: E-learning, or electronic learning, is the delivery of learning and training through digital resources. The department of Surgery, School of Medicine, Addis Ababa University, has recently been using digital E-learning strategies to supplement traditional methods of clinical teaching. This study was conducted to assess our clinical medical students' opinions, interests, and access to e-learning strategies.

Methods: This was a cross-sectional study conducted on 171 clinical year 1 and 2 medical students between June 1 and 15, 2021. Data were collected anonymously by an online survey method using a 15-item structured questionnaire. Data were analyzed using nonparametric statistical methods with the help of SPSS software package 26.

Results: Most, 162 (95%) medical students confirmed e-learning methods as very helpful and informative. A significant proportion, 147 (89.1%) of the students participating in the survey own a personal computer and the majority, 142 (83.1%) have basic ICT (Information, Communication, and Technology) skills. However, 57 (33.3%) of the respondents reported not having free Internet access on their personal computers.

Conclusions: The results of our survey showed that most medical students are very interested in E-learning as one modality of teaching and learning. Most students have personal computers at their disposal and have the skill set to use these devices. However, not all of them have access to free and fast Internet service.

Keywords: E-learning, surgical education, Case-Based Collaborative Learning

INTRODUCTION

E-learning is a type of education where students communicate with teachers and other students via e-mail, electronic forum, videoconferencing, chat rooms, bulletin boards, and other computer-based communication. (1) Dichtanz points to the time and space component of E-learning and emphasizes that E-learning is a collection of teaching and information packages in further education that is available at any time and any place and is delivered to learners electronically. (2) For Chang E-learning is an umbrella concept which comprises almost anything related to learning in combination with information and communication technology. (3) Distance learning evolution can be classified into three generations: The first was "textual", based on printed text only and supported by regular correspondence and mail. The process was known as "education at a distance", "correspondence study" or "correspondence education". The second was "analogical". Besides printed texts, the phone, fax, radio-television teaching was used too. Both textual and analogical distance learning models were used mostly in situations when schools were too far away when there were no schools, or simply when adequate teachers couldn't be found.

METHODS

The third generation of distance learning is called "digital". As information technology is rapidly developing, teaching and learning materials are digitized and stored in databases and repositories. Due to the usage of modern ICT, a collaboration of participants involved in the learning process is highly facilitated. The progression of the Internet has set the ground for the rapid development of distance learning based on the Web. (4) In Ethiopia, the first two generations of E-learning have been used for several decades by several institutions. But, with the widespread availability of ICT services in the country and the recent COVID-19 pandemic, the third generation of E-learning is becoming very relevant. (5,6) The following are some of the advantages of E-learning over traditional learning. Digitalization, ICT, and Internet technologies open up new possibilities in creating and implementing the teaching process. Digitalization of teaching and learning materials ensures the availability of vast information, easy manipulation of contents, offers the possibility of real-time update and exchange,

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and it also allows for recording of lessons for possible repetition in the future. Additionally, E-learning allows easy communication between the teacher and students that overcome distance in space. This is especially an important advantage in the current era of COVID-19 where we have to maintain social distancing. The Internet is offering new forms of communication most similar to face-to-face communication such as communication via multipoint videoconference. (1) E-learning has gained increased momentum during the COVID-19 era where traditional classroom teaching was universally interrupted in fear of the spread of the virus. A few weeks after the first case was reported in Ethiopia, most schools, including medical schools, resorted to E-learning strategies to help continue the teaching-learning process where students could attend lectures, seminars, and case discussions from distance. In this regard, the Addis Ababa University, College of Health Sciences adopted the "Lecturio" and "ScholarRx" digital comprehensive E-learning resources. Some departments in the school have also taken the initiative to provide internet-based lectures and discussion sessions to supplement the traditional form of teaching during this pandemic using interactive software such as "Zoom" and "Google Meet".

Our department of Surgery has been using digital E-learning strategies to supplement traditional courses (i.e., traditional classroom lectures and face-to-face patient-based practical clinical teaching) for both undergraduate and postgraduate programs over the one year after COVID-19. Honorary and full-time faculty members from abroad also took this opportunity to help in the teaching-learning process by preparing CBCLs sessions (Case-Based Collaborative Learning) and lectures. And we've observed that the students have been benefiting a lot from these sessions and lectures. However, it was also observed that students did not benefit to the best of what the E-learning can offer. Our first hypothesis was built on information gathered from informal conversations with students. We've hypothesized that some of the challenges were from the teaching stuff but most appear to originate from the lack of enough digital equipment for the students. Lack of access to a fast and reliable Internet service has also been identified as another potential obstacle. To this end, we've prepared an online survey and collected data from the students to assess if the students own ICT equipment necessary for E-learning or have access to it and more importantly if the students accept E-learning as a new form of learning. We hoped this would provide us with some information on how to expand the E-learning service in our department particularly and our school in general.

OBJECTIVES

- To see how interested the students are in E-learning as a possible form of learning.
- To assess if students own personal computers and have free internet access necessary for E-learning.
- To examine students' opinions on the current E-learning strategies being utilized at our department.

METHODOLOGY

This was a cross-sectional study conducted between June 1 and 15, 2021 on clinical year 1 and 2 medical students enrolled at Addis Ababa University, College of Health Sciences, School of Medicine. The respondents were a subset of clinical medical students who received supplementary E-learning-based lectures and practical clinical sessions during their surgical rotations. The survey was conveniently sent online to 200 students and a total of 171 respondents completed and submitted the online survey, yielding an 85.5 percent response rate. Incomplete questionnaires with missing data were discarded. All data from participants were kept confidential by maintaining the study subjects' anonymity and written informed consent was collected before administering the data collection tool. Written ethical clearance letters were obtained from the departmental research and ethics committee.

Google forms (Google's web-based software) was used to collect data anonymously, using a 15-items structured questionnaire. The data collection tool was pretested on an initial sample of ten medical students. The findings and observations obtained were used to modify the initial questionnaire and the data collection process accordingly. Data were analyzed using SPSS software package 26. Descriptive statistics formed the mainstay of the statistical analysis. Accordingly, frequencies of variables were analyzed using counts and percentages.

RESULTS

We had a total of 171 respondents, age range from 21 to 27 years, and 87 (50.9%) were males. Results of the survey regarding the questions Do you own a computer? (yes/no) showed that 147 (89.1%) of the students participating in the survey own a computer and among those 114 (77%) have free Internet access on their PC.

Sixty-five (57.1%) of them have access to the internet at the school of medicine premises only, 12 (10.5%) only at their home, and only 36 (32.3%) have access to the internet both at the school of medicine and at their home. The majority (56.3%) of students admit they have difficulties with streaming online videos with the speed of the Internet that they get.

We then asked if the students have basic ICT skills such as browsing through the web confidently. One hundred forty-two (83.1%) students reported they have these basic skills. We found that 167 (97.9%) students have attended at least one E-learning session during their medical training. In addition, 162 (95%) of them confirmed they're very interested to pursue more E-learning sessions since they are very helpful and informative. We also wanted to know which form of E-learning they were more interested in (E-learning as a substitute to a traditional course or as a supplement to a traditional course). The majority 122 (75.8%) would prefer E-learning as a supplement to the traditional form of learning (see table 1).

Table 1: Students' interest in E-learning, medical students of Addis Ababa University, 2021

Form of E-learning	Number	Percentage
Supplement to the traditional form	122	75.8
Substitute to the traditional form	40	24.2
Total	162	100

When asked about the presumed benefits of E-learning, the following were reported: ease of access to information, the possibility of repetition of lessons when necessary, and E-learning as a means of preventing the spread of COVID-19 were reported by the students to be the top three advantages of E-learning.

Many recognized E-learning as an advantage for people with restricted mobility (see table 2).

Table 2: Advantages of E-learning, medical students of Addis Ababa University, 2021

Advantages of E-learning	Number of students	Percentage
Learning from own home	130	76
Everything in the same place	87	50.9
Easy access to information	150	87.7
Freedom in choosing teaching materials	118	69
Possibility of repetition if necessary	147	86
Favorable for people with restricted mobility	107	62.6
Means of preventing COVID-19	131	76.6
Other advantages	3	1.8

The biggest drawback of E-learning was identified to be the cost of the internet followed by a lack of physical interaction with teachers. Students also have concerns about the side effects of working long hours on computers (see table 3).

Table 3: Disadvantages of E-learning, medical students of Addis Ababa University, 2021

Disadvantages of E-learning	Number of students	Percentage
No compulsion for learning	62	36.5
No physical interaction with teachers	96	57.6
No physical interaction with fellow students	36	21.2
Side effects of working long hours on computers	80	47.1
Cost of internet	102	60
Other disadvantages	16	9.4

As a prototype model, the department of surgery has been conducting a series of case-based collaborative learning (CBCL) for its clinical students on a one-session per week basis for the past 5 months.

.Ninety-nine out of 171 of our respondents reported they have participated in at least one of these sessions, of which seventy (70.7%) reported that the sessions were very helpful to them, 12 (12%) students reported they would rather have a traditional session with the teacher, and 17 (17.3%) students had no opinion about the sessions. Eighty-four (85.2%) said they would recommend such sessions to be continued to their fellow students.

DISCUSSION

The results of our survey showed that most medical students are very interested in E-learning as one modality of teaching and learning. Most students have personal computers at their disposal and have the skill set to use these devices. However, not all of them have access to free and fast Internet service. Our students are very aware of the many advantages of E-learning but identified the cost of the Internet as a major disadvantage. Most of the students who attended CBCL interactive sessions were very happy with the sessions and recommend similar sessions to their fellow students. Based on our experience, we strongly recommend that the department of surgery and the school of medicine integrate E-learning into its pedagogical strategy. Free/cheap and strong internet should be made universally accessible to all students to support advanced learning. Continuous skills development training should also be provided to students.

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We believe this study will be of significant importance in providing basic information regarding the utilization of E-learning as a supplementary, if not an alternative, teaching method in clinical medical education. However, the study does not provide an in-depth analysis on the issue and there is also a possibility of a lack of genuine data from respondents on the account of fear of breach in confidentiality. With these limitations in mind, we recommend further, larger-scale studies on the subject matter.

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Competing interests

The authors declare that they have no conflicts of interest.

Abbreviations

PC: Personal Computer
ICT: Information Communications Technology
CBCL: Case-Based Collaborative Learning