e-ISSN: 0975-1556, p-ISSN:2820-2643

Available online on www.ijpcr.com

International Journal of Pharmaceutical and Clinical Research 2023; 15(2); 116-122

Original Research Article

Student Opinion on Use of Information Technology (IT) in Medical Education: A Cross Sectional Study

Anitha P[1], Narayana Krishnappa[2], Ruchi Dhar[3]

[1]Associate Professor, Department of Pharmacology, Sri Siddhartha Institute of Medical Sciences and Research Centre, T Begur, Bangalore, India

[2]Professor, Department of Pharmacology, Sri Siddhartha Institute of Medical Sciences and Research Centre, T Begur, Bangalore, India

[3]Associate Professor, Department of Community Medicine, Sri Siddhartha Institute of Medical Sciences and Research Centre, T Begur, Bangalore, India

Received: 26-11-2022 / Revised: 30-12-2022 / Accepted: 20-01-2023

Corresponding author: Dr. Anitha P

Conflict of interest: Nil

Abstract

Introduction: Computer assisted learning is more relevant than ever in this era of information technology boom for pursuers of professional courses. E-learning has been introduced as part of competency-based curriculum for Indian medical graduates by the Medical Council of India in 2019. Studies assessing readiness in computer skills of students and attitudes towards use of information technology in medical education will help better implement the e-curriculum. This study is an attempt to extract the opinions of students for including computer knowledge as part of foundation course.

Materials and Methods: In this cross sectional, descriptive analytical study, 150 1st year MBBS students from a tertiary care teaching medical hospital, answered a carefully structured questionnaire assessing 3 aspects: Attitude towards use of IT in medical learning, level of computer skills and preferred e-learning modalities. Analysis of data collected was by inferential statistics.

Results: 64% students used some sort of gadget regularly and 97.7% students had access to internet. 52.3% students preferred Flipped classrooms over traditional chalk and talk methods. Most users had basic and intermediate level of computer software application knowledge (45.5% each). 92% students felt a need for computer lab for acquisition of preliminary training skills with 62.6% favouring inclusion of learning management software (LMS) in new curriculum. 90% students used social media for more than an hour every day and 86.4% insisted on having a structured learning application in line with Facebook or WhatsApp.

Conclusion: This study reveals that there is a need to modify the conventional teaching methods and efficiently use computer for academic purpose in medical students. Though majority of the students have knowledge and awareness about the internet usage it is not being utilized properly as an educational tool. This can be achieved by effectively implementing a program to create awareness of uses of internet and social media for e-learning in undergraduate programme.

Keywords: Information Technology (IT), Medical Education, E-curriculum, E-learning, Computer assisted learning, 1st Year MBBS students.

Introduction

As practitioners of evidence based medicine, computer literacy is mandatory not just for being up to date with current medical breakthroughs and treatment protocols but also in being an active researcher- a doctor in all true sense. In spite of improving accessibility to internet services in our developing country, more and more students from varied demographics and socio-cultural backgrounds are yet to be sensitized to basic computer skills and applying it to academics. Medical Council of India enlists 'Enhancement of Language and Computer Skills Module' as part of foundation course 2019. Numerous studies have been conducted by institutes around the globe on attitudes of medical students towards e-learning. However there is palpable void of similar studies from the Indian subcontinent offering around 76000 MBBS seats per year [1].

Changes in health care delivery and styles of learning in medical education have forced a need to use and critically evaluate a variety of new teaching tools, including the computer. While the computer is unlikely to ever replace the patient as the primary focus of learning, it does have the ability to reproduce a highly interactive environment and can mimic many situations in Medicine. Apart from virtual reality and simulation, which is still in its infancy in medical education, the computer and appropriate software can be used to generate extremely effective case scenarios. Increasingly large amounts of material are being delivered in electronic format and medical schools place greater emphasis on computer-based instruction in their curricula. The computer has often been touted as the answer to diminishing conventional resources, particularly in the area of medical education [2].

The direction of the future of e-learning in medical education is heavily influenced by three major trends: (1) the rapid adoption of emerging communication, simulation, and information technology in undergraduate, graduate, and continuing medical education; (2) a national call for competency-based, patient outcome-oriented training across the continuum of education; and (3) the rapidly changing health care environment including advances in the biomedical sciences as well as in the diagnoses and management of diseases, organization, financing, and delivery of health care services, and changes in the societal expectations [3].

Main findings from the systematic reviews of studies involving e-learning show many gaps in the way the effectiveness of e-learning is being examined, and a review of emerging technologies that have potentials for meeting new requirements for competency-based training. Without an evolving knowledge base on how best to design e-learning applications, the gap between what we know about technology use and how we deploy e-learning in training settings will continue to widen [4].

Aims & Objectives

Aim of present study was to evaluate level of computer knowledge and application amongst medical students after implementation of the new curriculum and assess their attitude towards e-learning based on current level of usage of smart gadgets and laptops for academic purposes.

Materials and Methods

A total of 150 1st year MBBS students of a teaching medical hospital serving as a tertiary care centre willing to participate were included in this cross sectional study. Institutional Ethics Committee clearance was obtained prior to conduction of study, and the study was conducted as per World Medical Association Declaration of Helsinki of 1975, as revised in 2000. Participation was on voluntary basis with students submitting their email ids. After obtaining the written

informed consent, a carefully structured questionnaire using Google forms with 18 relevant questions was mailed to each and responses collected. All the data were entered in Microsoft excel sheet, analysed and expressed in percentage.

Key objectives of questionnaire were to gauge the following:

a) Attitude towards mandatory training in acquiring basic computer skills for academic benefit.
b) Level of computer skill among students using smart gadgets and computers.
c) Modalities that students feel are more beneficial in e-learning and time spent online.

For better assessment of above aspects, the questionnaire was administered after completion of orientation programs and foundation course, while students continued to attend regular lectures on first year subjects.

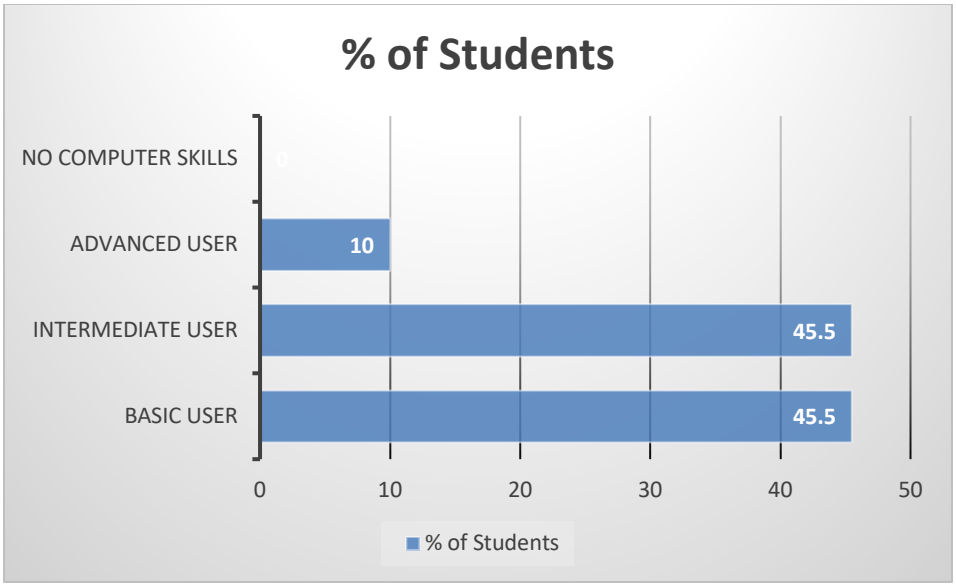
Results

Of the 150 participants, a staggering 36% (54 students) admitted to not using any form of gadget/computer on regular basis. Out of 96, who were using, 48 were using at college, 20 at Home, 18 in all places, 10 were using commonly in hostel. Out of 54 who were not using any gadget/ computer, 24 students felt that it's a distraction from studies. 83% used computers for less than 2 hr a day, only 17% used it more than 2 hrs a day.

About 57% could use the computers better than basic users. 92 % felt that computer lab is a must for acquiring some e-learning skills. 52.3% of students opined on a preference for flipped classroom while remaining 47.7% preferred more of traditional chalk and talk method. 92% also felt that virtual patient simulation solutions will help in learning about disease conditions better. 62.6% felt that some kind of learning management software (LMS) will make learning better, out of 18, only one disagreed rest were not aware of the software. 69% felt virtual reporting will be better than manual reporting for giving feedbacks in the new curriculum.

More than 86% preferred to have some kind of social based platforms to aid learning. 91% felt that digital games based learning activity will help them to understand the concepts better. 77% felt that google classes will help in knowledge acquisition in medical course. Most felt that learning computer skills like using internet, Word Processing (Microsoft word), Database applications(Microsoft access), Presentation software(Microsoft PowerPoint presentation) will go a long way in applying the knowledge gained for better learning. Most students wanted a combination of traditional and modern teaching methods like lecture handouts, soft copy of presentation, an application to view video, lecture, and tutorial notes for better learning. Students were categorized into 3 major groups based on their level of Computer software application knowledge with respect to medical schooling curriculum. The categories were as follows: (Graph 1)

1) Basic User (45.5%)- able to do basic word processing and use Internet
2) Intermediate User (45.5%) - mastered basic skills with better Microsoft office usage
3) Advanced User (10%) - Advanced skills with problem solving and teaching skills in computer applications
4) No Computer Skills (nil)



Graph 1: Students level of Computer software application knowledge

This corresponded with 145 (96.6%) students comfortably browsing on Internet, with only 88 (58.6%) students akin with using Word Processing (Microsoft word) and 81 (54%) students using Presentation software (Microsoft PowerPoint). 46 (30.6%) students used Database applications like Microsoft access. For the feedbacks on almost daily basis during the foundation course as required by the new medical curriculum, 68.2% vs. 31.8 % students preferred virtual method over traditional writing on a paper.

Majority of students i.e 92% felt computer lab as a must for preliminary training of skills in Medical Institutions. This corresponded with the same amount of students feeling that virtual patient simulations would help them learn about disease conditions better. 8% students felt no need for a computer skills lab or virtual patient simulators.

All students were already sensitized to concept of learning management software (LMS) during their foundation course and 62.6% of students felt that the new curriculum requires a LMS for better learning and documentation of their activities (46.8% agreed, 31.9% strongly agreed). However 21.3% students were unsure of its benefits. If a structured computer aided learning program were to be introduced, 72.6% i.e. 109 students felt they would benefit most from live lectures with an opportunity to ask doubts and 70% i.e. 105 students felt a mobile based application would be useful to view relevant educational videos. 52%(78 students) felt a video of a lecture would help. 66 students(44%) felt a need for having soft copy of every lecture presentation done and 51 students(34%) felt ability to access lecture handouts would be of use.

Approximate time spent on smart phone for looking into social media was analyzed(Graph 2). Only 10% students used screen time for social media less than ½ hr daily. 90% of students used social media platforms more than an hour (40% browsed for about an hour, 13% browsed 1 ½ hr daily, 18% browsed 2hrs daily and 19% browsed more than 2 hr daily). On the same lines, 86.4% of students felt that a learning application similar to social media platforms like Whatsapp or Facebook would help them learn better.

While 48% students felt technology helped them become proactive learners, 52% students still felt neutral about being an active

part of the 'Classroom' even though technology is used to deliver video lectures, Powerpoint presentations, handouts, etc, when compared to traditional chalk and talk classes.

Discussion

The objective of the present study was to assess the attitude of students towards mandatory training in acquiring basic computer skills for academic benefit, level of computer skill among students using smart gadgets and computers and modalities that students feel are more beneficial in e-learning and time spent online in 1st year MBBS students.

36% of the students did not use any form of gadget/computer on regular basis. Of these, 24 of non-regular users felt that computer usage was rather a distraction than benefit. However, none of the participants felt cost was a factor for non-usage. Hence it seems reasonable to assume that considerable percentage of students even now use conventional method of learning i.e books for academic purposes.

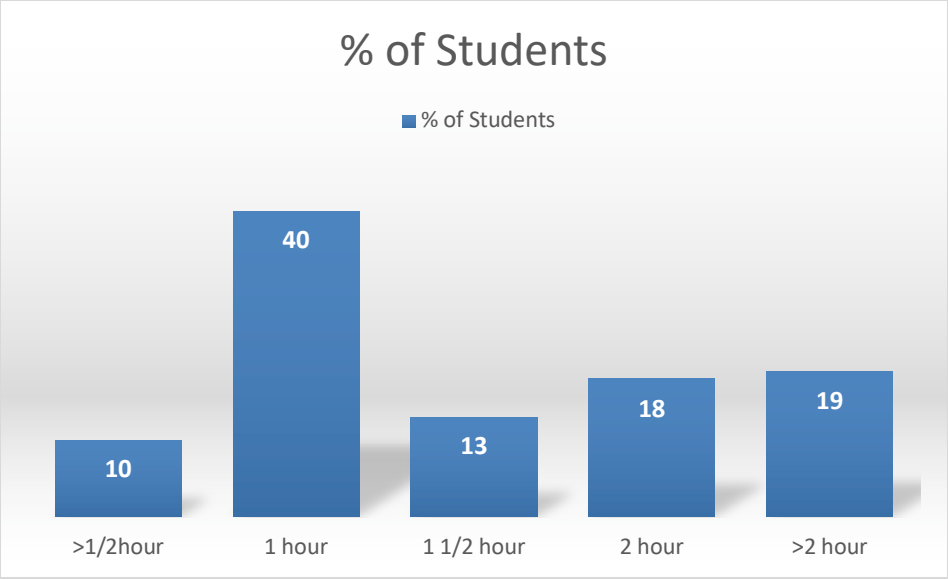
52.3 % of students preferred flipped classrooms while remaining 47.7% preferred more of traditional chalk and talk method. A flipped classroom is an instructional strategy and a type of blended learning that reverses the traditional learning environment by delivering instructional content, often online, outside of the classroom.

It moves activities, including those that may have traditionally been considered homework, into the classroom [5]. This shows that more than half of the students would prefer using technology rather than the traditional chalk and talk method [6].

Majority (96.6%) of students comfortably browsed on Internet, with only 88 (58.6%) students akin with using Word Processing (Microsoft word) and 81 (54%) students using Presentation software (Microsoft PowerPoint). 46 (30.6%) students used Database applications like Microsoft access. This shows that most of the students had basic internet knowledge. This was consistent with the observations in other studies [7]. This is an encouraging sign and shows that these medical students have a strong base to utilize information technology for medical profession.

Most of the students (92%) felt computer lab or virtual patient simulators as a must for preliminary training of skills in Medical Institutions. This was consistent with the observations in other studies [8]. Virtual Patients Simulations ranked highest with 92% wanting the modality introduced. However 72.6% (109) students felt they would benefit most from live lectures with an opportunity to ask doubts and 70% (105) students felt a mobile based application would be useful to view relevant educational videos.

Graph 2 shows approximate time spent on smart phone for browsing social media. Most of the students (90%) used social media platforms for more than an hour which was higher than observations seen in other studies [9]. Almost half of the students (48%) students felt technology helped them become proactive learners when compared to traditional chalk and talk classes.



Graph 2: Time spent on smart phone for browsing social media

Limitations

The study was conducted at only one centre with very few participants, so the results may not be indicative of the entire population. It was a questionnaire based study, the results depends on the recall ability of the respondents.

Conclusion

This study reveals that there is a need to modify the conventional teaching methods and efficiently use computer for academic purpose in medical students. Inclusion of technology will make the learning process more interesting and helps in better engagement of the students in the class. Though majority of the students have knowledge and awareness about the internet usage it is not being utilized properly as an educational tool. This can be achieved by introducing a computer training module for the students in undergraduate programme. The curriculum should incorporate topics such as Microsoft office, Powerpoint presentations, Microsoft access, statistical software, and retrieval of information from the right website. This will help the students in learning the competency based curriculum for Indian medical graduates by the National Medical Council more efficiently.

Acknowledgement

We would like to thank all the participants, Principal Dr Sudhakar, Deputy Registrar, Dr Sudeep & Medical Education Unit of Sri Siddhartha Institute of Medical Sciences and Research Centre for their support in carrying out the study.

References

1. Medical Council of India. Available from: https://www.mciindia.org/CMS/information-desk/for-students-to-study-in-india/list-of-college-teaching-mbbs. Accessed on 18/11/2022
2. Devitt, Peter; Palmer, Edward. The role of Computers in Medical Education. Educ Med Super, Havana City,Apr 2001; 15(1): 76-84. Available at <http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-21412001000100009&lng=en&nrm=iso>.Accessed on 18/11/2022
3. The Ad Hoc Committee of Deans. "Educating doctors to provide high quality medical care: a vision for medical

education in the United States". Washington, DC: Association of American Medical College. Available from: https://services. aamc.org /Publications/ showfile.cfm? file=version27.pdf&prd_id=115&prv_id =130&pdf_id=27. Accessed on 18/11/2022

4. Kim, Sara. The future of E-Learning in medical education: current trend and future opportunity. Journal of educational evaluation for health professions. 2006;(3):3.
5. Kadam SS, Wani P, Akhade S. E learning for Medical Education in India: A Review. Journal of Forensic Medicine, Science andLaw.Jan-Jun-2015;(24),1:0-6
6. Flipped classroom. Availabe on https://en.wikipedia.org/wiki/Flipped_classroom. Accessed on 4/7/2022
7. Maroof KA, Parashar P, Bansal R. How are our medical students using the computer and internet? A study from a medical college of north India. Niger Med J. 2012;53(2):89–93.
8. Banjan DS. Effective Use of Technology While Teaching General Medicine to MBBS Undergraduates. International Journal of Scientific Research. March-2019;(8) 3:1-2
9. Kumar SB, Veena CN, Vastrad BC, Nandan TM. Awareness and use of internet services among first MBBS students. Int J Res Med Sci. 2016;4:5261-4.