

E-Learning In Undergraduates: New Insights In Medical Education

Haritha G¹, Benjamin M Sagayaraj², Nidhi Sharma³

¹⁻²Department of pediatrics, Saveetha Institute of Medical and Technical Sciences

³Department of Obstetrics and Gynaecology, Saveetha Institute of Medical and Technical Sciences

¹ Harithageekay@gmail.com²getdrben@yahoo.com,³drbonuramkumar@yahoo.co.in

Abstract: Aims & objectives: Covid-19 pandemic lead to the close of many real university campuses and initiation of online classes in MBBS curricula. The primary objective of the study is to analyze the conceptual flow and efficacy of online lectures in clinical disciplines and also to assess the medical undergraduate student satisfaction after 6 months of Online Clinical Phase III e-Campus. The secondary objective is to detect the student perspective and difficulties faced by final year medical students while attending online teaching in MBBS. **Materials and methods** Phase III MBBS Students underwent Online Curricular activities like PPT lectures, QUIZ, buzz sessions, Case Based Discussions and Short Answer type assignments, on line Video presentation for Six months from April 2020-September 2020. Post test and Feedback was collected after six months as Google forms.

Results: Students felt that there was a longer screen time and there was an inability to focus due to the eyestrain. There were concerns in times of poor Internet accessibility too.

Conclusion: In Medical schools Online –learning is the necessity of the hour during this COVID pandemic especially with teaching hospitals having a high load of COVID -19 cases. Although it is user easy and freely accessible, E–learning cannot completely be used in lieu of in-campus learning. There are numerous effects on student life like eyestrain, easy tiredness due to more screen time and inability to concentrate

Keywords: COVID-19, Curriculum, Medical undergraduates, and Medical education

1. INTRODUCTION:

Most medical schools are conducting online classes due to high number of COVID cases in all wards of teaching hospitals. Social distancing norms, economic crisis, and pressure from student and parent groups and other stakeholders have put an immense pressure on academic council and medical education units to revamp the curricula in favor of online lectures, case presentations, MCQs and online assignment. The curriculum instillation support program was initiated and training for faculty and medical students was done. Meticulous online academic calendar planning, staff induction is being done in all medical colleges. Hence this study was done to find the feasibility and acceptability of online medical education.

The most effective and preventive strategy in controlling the spread of COVID-19 is social distancing. This precludes students from gathering in learning studios, lecture halls or small group rooms [1].

During this pandemic, medical education had been uninterrupted to continue medical services, which is the need of the hour. Social distancing which has led to the disruption of regular classes not only in medical education has led to the implementation of E-learning classes so that the students can complete the curriculum even in this pandemic situation. However this has major impact on the student's mental as well as physical wellbeing.

2. MATERIALS & METHODS

This study was conducted in the Department of Pediatrics, Saveetha Medical College from April 2020-September 2020. A valid questionnaire including all the dimensions was formed under the guidance of professors from the Department of Pediatrics. Google form was created and the questionnaire was shared to all the eighth semester students of Saveetha Medical College and hospital in Phase 3 MBBS willing to give verbal consent. Confidentiality was maintained during data collection by using anonymous Google forms (<https://docs.google.com/forms/d/1kppx2iHMa4zwmZcdZOiKTOqI4EvX4bJ8wLuBwOOrh0/edit>)

We are currently in level 7 of web-based curriculum in MBBS. We thank our management for providing a central resource base in form of suite accounts for all departments. On 1st May 2020, online classes were started with prior training to both faculty and students. Students got easily adapted to the online classes. After 6 months of online classes, questionnaire was shared in Google forms (7MCQ and 1 open ended questionnaire) covering the various dimensions like integrated blended learning, accessibility of online education, student perception and satisfaction. Students who were interested took part in the study.

3. STATISTICAL ANALYSIS

Descriptive and inferential statistics were used to analyze the data. Statistical analysis was performed using automated pie charts. This is a qualitative research with an exploratory sequential design with last question in the questionnaire as an open-ended questionnaire so that the truth or reality is not masked by constructivist paradigm.

4. RESULTS

Student characteristics

115 students took part in the study and an average of 96 responses were there. The attendance of e-online classes was mandatory. However the option of filling this goggle questionnaire was on voluntary basis. There were 64/115(55.65%) boys and 51/115(44.34%)girls.

Respondents

Out of 115 students 96 responses were giving a response at the rate of 84%. Most students responded to the study questionnaire. On Kirkpatrick level one 32% of students felt that the online classes were good and 43% felt it was an average class.

Topic coverage

40% felt that the topics were completely covered in content and context and 46% were neutral.

Scope of online learning

41% were neutral and 33% agreed when asked about the scope for active hands on participation. 33% agreed to have similar classes in future and 37% were neutral.

Interaction among peer groups

The students did use the chat options for comments, questions and suggestions. However, 53% felt that this type of teaching did not result in any inter-personnel change among the peer groups with private chat options. So the peer interaction and comradeship was clearly missing.

Pro's and Con's

Students felt that the online lectures were most useful in this program. 27% felt that online lectures were useful, 23% power point presentations, 21% quiz assignments. 49% of students felt that the drawback of this e learning was eyestrain due to increased screen time, 20% felt that they were not able to focus, 15% felt that the attention span is less during online classes.

Open question

In an open questionnaire about how online teaching can be improved many students felt that the duration of online classes can be reduced so that they can concentrate more. It was difficult to focus for more than 6 hours online daily. Other inputs were poor local network connection and odd timings (midnight) in overseas students.

Students also complained of low motivation, eyestrain and reduced attentiveness and easy distractibility.

5. DISCUSSION

The purpose of e-learning classes is to compensate the regular academic classes that are disrupted due to the COVID-19 pandemic. We have been practicing the traditional "Learner Doctor Programmed". In this classical longitudinal immersive method the Phase 2 and 3 MBBS students work as part of units in Rotational postings in Clinical Departments of Medicine, Surgery, Obstetrics and Pediatrics [2,3,4,and 5]. They collect history and physically examine the ward cases to reach a differential diagnosis and thereby develop analytical skills [Table 1]. Blended learning is defined as the combination of conventional face-to-face learning and asynchronous or synchronous e-learning earlier. This had grown quickly and is now extensively used in medical education [6,7]. Although these additions have enhanced the general culture of medical education, it has become increasingly difficult for academic programs to ensure that all the students receive a broad exposure to their curriculum [8,9,10]

The Covid pandemic situation has also led to the transition of the medical education to online forums. As described by Howlett et al, "Electronic (e) or online learning can be defined as the use of electronic technology and media to deliver, support and enhance both learning and teaching. It involves communication between learners and teachers utilizing online content" [11].

Online learning can provide students with easier and more effective access to a wider variety and greater quantity of information [12,13]. However, the students face various issues when online courses are implemented. Anything done online suffers from attention span because students' multi-task, check mails, message to friends and surf the web while attending online

lectures [14]. In a survey conducted by Marcus et al, there were various disadvantages of online learning.

There is no firm framework which results in a “laid back” attitude. Online education mandates a high level of self-discipline. A “learning atmosphere” is missed by both teachers and students alike. The distance-learning minimizes the level of contact which is reduced to correspondence. The brain storming and buzz sessions are not well discussed.

The students are unable to interpret meaningful and important key points of consequence. There is no interpersonal, direct (non-verbal) teacher student interaction. The teacher is mostly unaware of the students who have stopped paying attention and hence the solemnity, seriousness and discipline of the lecture class is not adequate.

While responding to his or her medical students’ queries and comments and suggestions, the teacher’s ability to widen the scope of his or her answer is limited [15].

Figure 1: Student response to query-“How do you find online classes conducted by the faculty in the past 4 months?”

1. How do you find the online classes conducted by faculty in past previous 4 months?

97 responses

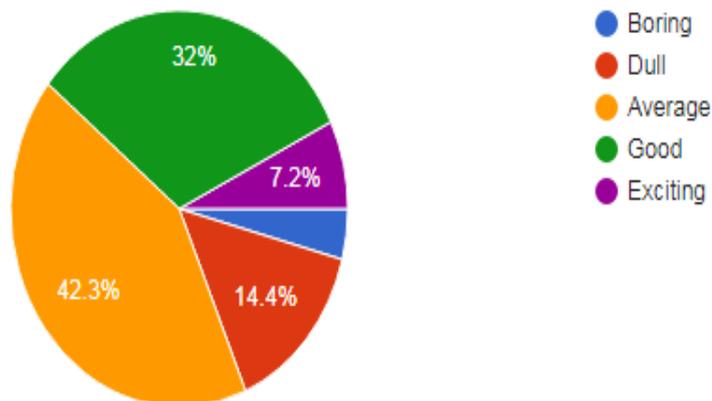


Figure 2: Students response to query-“Were the topics covered completely in content & context?”

2. Were the topics covered completely in content and context?

97 responses

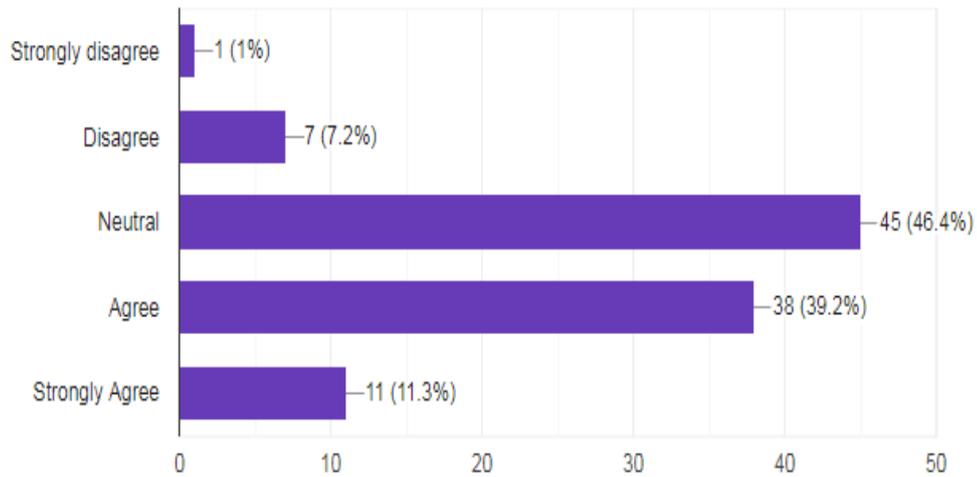


Figure 3: Students response to query-“Was there scope for active hands on participation?”

3. Was there scope for active hands on participation?

97 responses

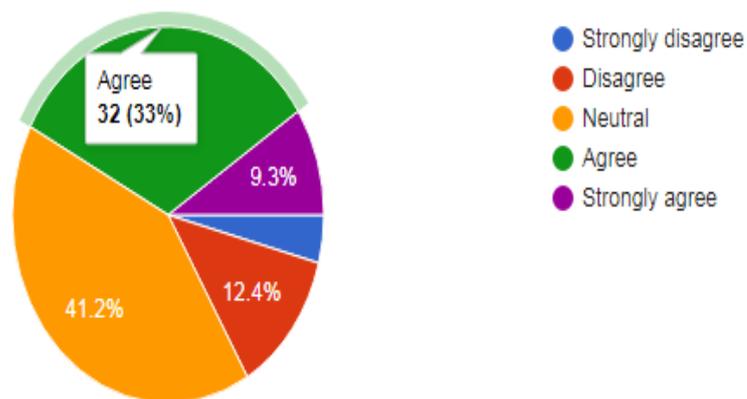


Figure 4: Students response to query-“Do you want similar teaching in forthcoming classes?”

4. Do you want similar teaching in forthcoming classes?

97 responses

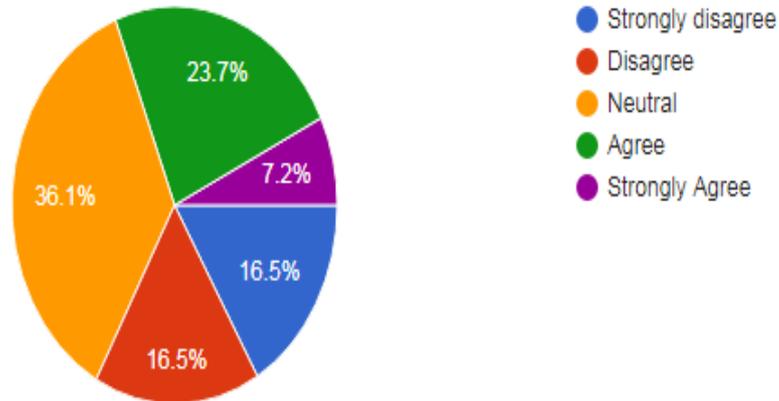


Figure 5: Students response to query-“Did the teaching result in any interpersonal change among the peer groups with private chat options?”

5. Did the teaching result in any inter personnel change among the peer groups with private chat options?

96 responses

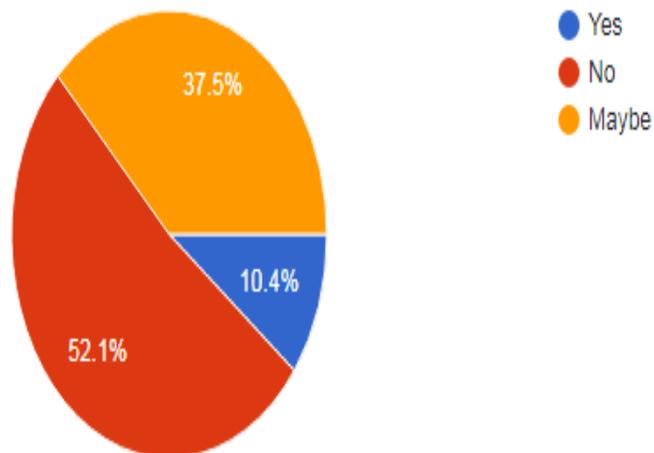


Figure 6: Students response to query-“Which part of the programme was most useful?”

6. Which part of the programme was most useful?

94 responses

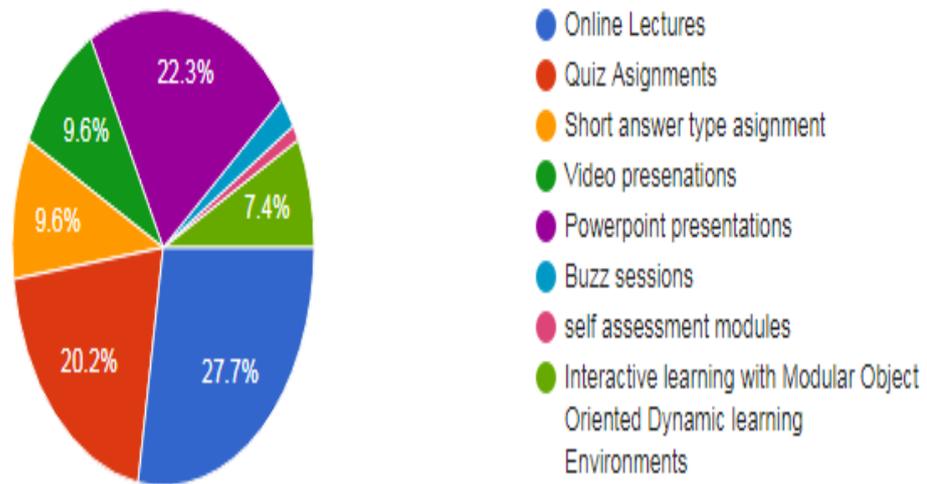
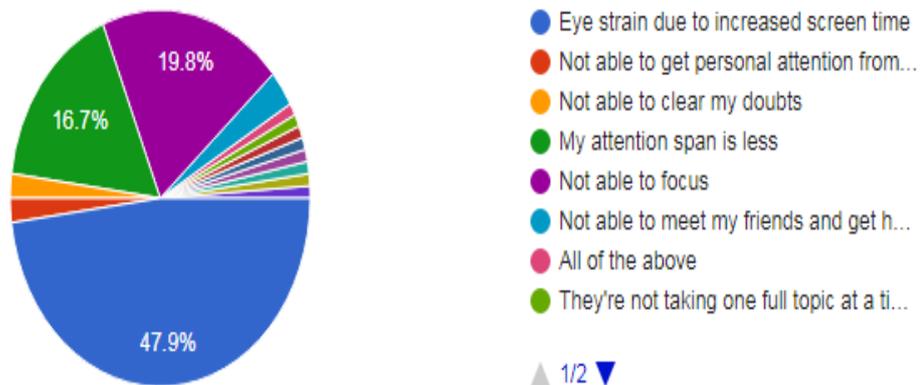


Figure 7: Students response to query-“What do you feel is the major drawback of virtual campus?”

What do you feel is the major drawback of Virtual Campus?

96 responses



E-learning teaching methodology employs web-based technologies to enhance the understanding and performance, offering medical students control over content, sequence and pace of learning [16, 17, 18]. Most studies intervening the use of e-learning are based on learning management systems, such as Blackboard and MOODLE (Modular Object Oriented

Dynamic Learning Environment). Social media platforms like Twitter and Facebook, have become a mainstream form of interaction, spanning almost all age groups and career. Such forums are being utilized for all purposes ranging from philanthropic activities to raising healthcare awareness [19]. Facebook pages concerning various medical conditions, including forms of cancer, hypertension, and diabetes, already exist, with a large number of users, including patients and their families, researchers, and clinicians. Social media use in medical education is an emerging field of scholarship that needs to be further looked into. Faculty face challenges in adapting new technologies, but they also have opportunities for innovation [16,20]. Establishing the use of social networking websites in medical education is yet to flicker in the minds of our medical education curriculum and it is a long way to go.

In our study the students felt that the online lectures, power point presentations and quiz assignments were very useful but they also faced issues which were the major drawbacks of e-learning like eye strain due to increased screen-time, lack of concentration and not able to get personal attention during online classes. E-learning has both advantages and disadvantages. Enforcing online education has become the need of the hour in this pandemic situation and as this becomes our routine the disadvantages may outweigh advantages sooner. Preparing the body mentally and physically for a different future is the only way to adapt.

Limitations of the study

We assume constant behavior and response from medical students. The students may be reflective and alter their opinions. Additionally, there is an emerging role of new digital teaching learning interactive methods (interactive atlas, MOODLES) and assessment and evaluation tools in medical education, which have not been studied.

6. CONCLUSION

This is a preliminary experience of students analyzed by faculty in medical education. Most of the students felt that the online classes were good and the topics were covered completely in content and context. However, they were not able to focus due to increased screen time. This is a new teaching learning method for both the faculty and the students in medical education, it will take its own time as we settle down into this routine. To overcome the drawbacks of online education, blended education can be introduced which will allow the students to meet their peers which can improve their mental well-being while creating interest and breaking the monotony.

ACKNOWLEDGMENT

The authors are thankful to the Department of Medical Education, for providing the infrastructure and support for conduct of study

CONSENT

As per international standard or university standard, student's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard, written approval of Ethics committee has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

SOURCE OF FUNDING: NIL

7. REFERENCES

- [1] Rose S. Medical student education in the time of COVID-19. *Jama*. 2020 Mar 31.
- [2] Claridge A. What is the educational value of ward rounds? A learner and teacher perspective. *Clin Med (Lond)*. 2011 Dec;11(6):558-62. doi: 10.7861/clinmedicine.11-6-558. PMID: 22268309; PMCID: PMC4952336.
- [3] Laskaratos FM, Parry D, El-Mileik H. The Educational Value Of Post-Take Ward Rounds For Senior Trainees. *Ulster Med J*. 2016 May;85(2):113-7. PMID: 27601766; PMCID: PMC4920498.
- [4] Walton V, Hogden A, Johnson J, Greenfield D. Ward rounds, participants, roles and perceptions: literature review. *Int J Health Care Qual Assur*. 2016 May 9; 29(4): 364-79. doi: 10.1108/IJHCQA-04-2015-0053. PMID: 27142947.
- [5] Liu W, Manias E, Gerdtz M. Medication communication during ward rounds on medical wards: Power relations and spatial practices. *Health (London)*. 2013 Mar;17(2):113-34. doi: 10.1177/1363459312447257. Epub 2012 Jun 6. PMID: 22674748.
- [6] Vodovar D, Ricard JD, Zafrani L, Weiss E, Desrentes E, Roux D. Assessment of a newly-implemented blended teaching of intensive care and emergency medicine at Paris-Diderot University. *La Revue de Médecine Interne*. 2020 Jan 31.
- [7] Moszkowicz D, Duboc H, Dubertret C, Roux D, Bretagnol F. Daily medical education for confined students during COVID-19 pandemic: A simple videoconference solution. *Clinical Anatomy*. 2020 Apr 6.
- [8] Thomas WE. Teaching and assessing surgical competence. *The Annals of The Royal College of Surgeons of England*. 2006 Sep;88(5):429-32.
- [9] Dimitris KD, Taylor BC, Fankhauser RA. Resident work-week regulations: historical review and modern perspectives. *Journal of surgical education*. 2008;65(4):290.
- [10] Selden NR, Anderson VC, McCartney S, Origitano TC, Burchiel KJ, Barbaro NM. Society of Neurological Surgeons boot camp courses: knowledge retention and relevance of hands-on learning after 6 months of postgraduate year 1 training. *Journal of neurosurgery*. 2013 Sep 1;119(3):796-802.
- [11] Howlett D, Vincent T, Gainsborough N, Fairclough J, Taylor N, Cohen J, Vincent R. Integration of a Case-Based Online Module into an Undergraduate Curriculum: what is involved and is it effective?. *E-Learning and Digital Media*. 2009 Dec;6(4):372-84.
- [12] Mooney GA, Bligh JG. Information technology in medical education: current and future applications. *Postgraduate medical journal*. 1997 Nov 1;73(865):701-4.
- [13] O'Doherty D, Dromey M, Loughheed J, Hannigan A, Last J, McGrath D. Barriers and solutions to online learning in medical education—an integrative review. *BMC medical education*. 2018 Dec;18(1):130.
- [14] Govindarajan V, Srivastava A. What the shift to virtual learning could mean for the future of higher ed. *Harvard Bus. Rev.*. 2020 Mar 31.
- [15] Marcus T. Communication, technology, and education: The role of the discussion group in asynchronous distance learning courses as a beneficial factor in the learning process. Unpublished master's thesis). Bar-Ilan University, Ramat Gan, Israel. 2003.
- [16] CC C, Flickinger TE, Chisolm MS. Social media use in medical education: a systematic review. *Acad Med*. 2013;88:893-901.

- [17] Eagleton S. Designing blended learning interventions for the 21st century student. *Advances in Physiology Education*. 2017 Jun 1;41(2):203-11.
- [18] Jaffar AA. Exploring the use of a Facebook page in anatomy education. *Anatomical sciences education*. 2014 May;7(3):199-208.
- [19] Jain SH. Practicing medicine in the age of Facebook. *New England Journal of Medicine*. 2009 Aug 13;361(7):649-51.
- [20] Kurtz G. Integrating a Facebook group and a course website: The effect on participation and perceptions on learning. *American Journal of Distance Education*. 2014 Oct 2;28(4):253-63.

Table 1: Traditional Learner Doctor Programme

Learning planned	Activity
Data gathering arranging in a meaningful fashion as integral patient care	Obtaining detailed history and physical examination and documenting in case sheets or shadow case sheet in a prescribed format
Critical thinking and analysis	Recording the analysis of patient problem and arriving at a likely diagnosis from a list of differential diagnosis
Decision making Cost-effectiveness Care of the patient	Developing a management plan, choosing and ordering and interpreting appropriate laboratory and imaging tests
Decision making System based practice	Choosing appropriate therapy, multidisciplinary ward rounds. Reconciliation of medication , drug interactions, social support groups, use of electronic media records