



PARADIGM SHIFT IN THE MEDICAL UNDERGRADUATE TEACHING LEARNING METHODS AND ASSESSMENT IN THE COVID 19 PANDEMIC TIME

Gynaecology

Radha Tatapudi	Professor & HOD, Dept. of OBG, GITAM Institute of Medical Sciences and Research (GIMSR), GITAM Deemed to be university, Rushikonda, Visakhapatnam- 530045, Andhra pradesh, India.
Indira Guntoory*	Professor, Dept. of OBG, GITAM Institute of Medical Sciences and Research (GIMSR), GITAM Deemed to be university, Rushikonda, Visakhapatnam- 530045, Andhra pradesh, India.*Corresponding Author
Bhamidipaty Kanaka Durga Prasad	Professor & HOD, Dept of Radio Diagnosis, Dept. of OBG, GITAM Institute of Medical Sciences and Research (GIMSR), GITAM Deemed to be university, Rushikonda, Visakhapatnam- 530045, Andhra pradesh, India.
Sudha Rani Balla	Professor, Dept. of OBG, GITAM Institute of Medical Sciences and Research (GIMSR), GITAM Deemed to be university, Rushikonda, Visakhapatnam- 530045, Andhra pradesh, India.
Nirupam A Palakodeti	Associate Professor, Dept. of OBG, GITAM Institute of Medical Sciences and Research (GIMSR), GITAM Deemed to be university, Rushikonda, Visakhapatnam- 530045, Andhra pradesh, India

ABSTRACT

Background: Medical education has experienced a sea of change in the last decade. Covid- 19 pandemic has catalysed a drastic change in the learning experience from traditional classroom teaching to virtual education. **Methods:** After 4 months of online teaching at our institute, an online survey based research study was conducted on the perceptions of students and faculty of our department about online teaching. **Results:** A total of 215 students consented to participate. 63.72% felt that the clarity of presentation and audibility was good. 25.11% of students faced major problems with net connectivity. However 51.1% felt that their interaction with other students was less and 27.4% felt that their interaction with faculty was less in online classes when compared to traditional class room. 34% were satisfied and 41.8% gave an equivocal response to satisfaction with online teaching. 12 faculty members participated in the survey. 58.33% of the faculty felt confident in meeting the technical demands of online teaching. 41.66% opined that the level of student participation was less in online class. 66.66% experienced difficulty in keeping their students involved in the online class. 83.33% appreciated the institutional support. 91.66% of the faculty enjoyed their new experience of teaching online. **Conclusion:** The students appreciated the efforts of the faculty and management in imparting education virtually as a viable option in the pandemic time. Teachers also echoed the same opinion. Blended learning could be used to enhance and complement the formal face to face teaching in medical education in the years to come.

KEYWORDS

Medical Education, Online Teaching, Under Graduate, Survey, Virtual

INTRODUCTION

Today's teaching is no longer confined to the traditional classroom and black board methods. Teaching learning methods have changed to e-textbooks, educational videos on You tube due to the technological advances and all of these are accessible in the palm of our hand in the form of a mobile phone. The choice of technology should be based on the needs of the learner and the context in which we are working and not by its availability and novelty'. Though web based learning was existent from quite some time, the Covid -19 pandemic necessitated and catalysed the transformation of traditional teaching to virtual methods of education. Today's generation of students belong to the 4G generation. Most of them have good computer knowledge and aptitude to use the latest technology. It is easier to communicate with the students in the language that they best understand. It is imperative for the faculty to acquire and adopt these changes promptly which help not only to continue medical education by virtual methods in the pandemic time but also to handle this generation of students.

METHODS

Being Obstetricians it is naturally ingrained in us not only to be extremely patient at times of normal labour but also have quick reflexes in case an unforeseen complication arises. We were quick to adapt to the new normal of virtual teaching in pandemic time. We wish to discuss our experience of the learning process in the pandemic time at our institute under two headings 1. Teaching learning methods 2. Assessment

Teaching Learning Methods: A WhatsApp group of all the students of the batch was created and the time table of the topics was shared. A series of synchronous lecture classes were conducted online using a video conferencing (zoom) app as per the schedule. The faculty felt

that virtual classes had the following advantages over traditional classes. 1. We can learn in the comfort and safety of home. 2. Learner can focus on the subject without any distraction from the peers. 3. Can take a screen shot of the contents of the power point presentation for memorizing later on. 4. The same can be saved. 5. A recording of the class can be viewed later on for any deficiencies in the content of the subject. 6. There is increased clarity of the contents of the power point presentation with a option of magnifying the contents as well unlike a traditional class. 7. Can login without disturbing the peers or the facilitator. 8. Recording of synchronous classes creates asynchronous classes which can be used later on to memorize the topic any number of times at their own time, pace and place. 9. Those who are apprehensive to participate in a face to face class may feel confident to interact in a virtual classroom.

However the faculty experienced the following difficulties in teaching online. They are: 1.Minor connectivity problems. 2. Learners may not be punctual in logging in, encouraging indiscipline in the learners. 3. There can be a time lag between the video and audio depending on connectivity. 4. There is no face to face interaction with the learners.

Assessment:

It was done in the form of an online exam. It consisted of 40 MCQ's with one mark each. They were objectively structured and analytical in nature. Question paper was set in Google forms. Time allotted was 40 minutes for answering the questions. Additional 10 minutes was allotted to the students to submit their answers. This leeway of 10 minutes was given to overcome any network problems they might face. Special attention was taken to avoid ambiguity in the question and options given. A clinical case scenario was given and first 10 questions were based on the clinical scenario and the problem solving

ability of the students was assessed. Jumbling of the options was done. A link was created. A whats App group of all the students of that batch was created. Instructions were given to the students regarding the online examination. A mock test was conducted 3 days prior to the scheduled exam so as to enable both the facilitator and the learner to become acquainted with this type of examination. The students were instructed to log in 15 minutes prior to the examination. They were asked to use two devices either two mobiles or a laptop and mobile. They were asked to switch on the video in one device and asked to open the link in another device. This is to prevent any malpractices in the examination. All the students were displayed on a big screen in the lecture gallery so as to have a vigil on them while answering the questions. The portal for submission of answers was closed after the stipulated time. There were no hitches in the conduct of the exam. The performance of the students was almost instantaneously known with the Google forms. We perceived that this type of online assessment has its own advantages. They are 1. A small clinical video or picture or a graph can be incorporated in the questionnaire easily and relevant questions can be asked. 2. The traditional tedious method of manual correction could be circumvented. We automatically get the score of every student. 3. We get the percentage of students who have given the correct responses to each question. This helps us to get an insight to the extent of student's understanding of the topic. Remedial measures can be taken to redo or reinforce those topics at a later date in which the performance of the students is suboptimal. 4. No hard copy. So, no wastage of paper.

Case discussion and viva voce was also conducted online. The students were divided into small whatsapp groups. Each group was allotted to a faculty member. One Obstetric and one Gynec case sheet was shared with each student one hour prior to the scheduled time of examination. Case discussion and questions relevant to the case were asked using a whatsapp video call in the allotted time. Instruments, specimens, pelvis and fetal skull were shown to them online and they were assessed with relevant questions.

Feedback is crucial to provide input for improvisation and innovation in any programme. So, a descriptive study was carried out at our institute. Online questionnaire based survey was conducted to know the perceptions of the students and faculty after 4 months of online teaching. Survey included students of 6th and 8th semesters and the faculty of our department. A convenient sampling was used. 215 students and 12 faculty members participated in the study. After obtaining an informed consent, the link with survey questionnaire in Google forms was shared with the students (Table-1) and faculty (Table-2). They were asked to rate their perceptions on a scale of 1-3. Rating of 1 was considered as bad, 2 as equivocal and 3 as good. About 20% of participants of both the groups were randomly selected and their opinions were recorded over telephone. Their responses were recorded in Ms excel sheet and represented as percentages.

Table 1: Survey questionnaire to students

S. No	Questionnaire
1	How do you rate the clarity and audibility of the presentations ?
2	How do you rate the network connectivity with electronic devices or technical problems?
3	How do you rate your interaction with other students in online classes?
4	How do you rate your interaction with the faculty in online classes?
5	On the whole, how do you rate your satisfaction with the online classes?
6	On the whole, how do you rate your satisfaction with the online exams?

Table 2: Survey questionnaire to the faculty

S.NO	Questions
1.	How do you rate your confidence in meeting the technical demands of online teaching?
2.	How do you rate the level of student participation in online class discussions or student learning activities ?
3.	How do rate your ability in keeping your students involved throughout the class?
4.	On the whole, how do you rate your satisfaction levels with the online classes?

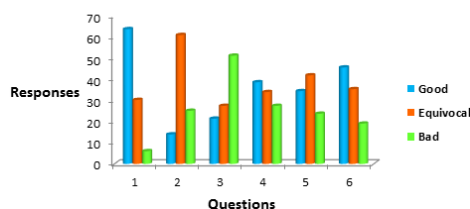
5.	How do you rate your satisfaction with the online assessment of students?
6.	How do you rate the support provided by the institution in the use of new and emerging technologies for online teaching ?
7.	How do you rate your enjoyment of the new experience of online teaching?

RESULTS

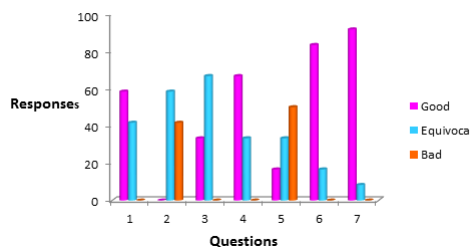
Student's responses to questionnaire on online teaching: A total of 215 students consented to participate in the survey, of which 117(54%) were female and 98(46%) were male. To 192 (89.3%) students this was their first experience of online education. 137 (63.72%) students felt that the clarity of the power point presentation and audibility was much better when compared to the large group teaching in lecture gallery (graph -1). However, 25.11% of students residing in remote areas and hilly areas faced major problems with net connectivity. 51% felt that student to student interaction was poor. 27.4% felt their interaction with faculty was poor. While 34.4% of students were satisfied, 41.86% were equivocal, 23.7% of students were not satisfied with online teaching. 45.58% of students felt satisfactory, 35.3% were equivocal, 19% did not want the online method of assessment.

Faculty responses to questionnaire on online teaching: 12 faculty members participated in the survey. Of which, 50% were aged more than 40 years and 50 % less than 40 years of age with 40% of faculty having more than 10 years of teaching experience. For almost all of them it was a new experience of teaching online. 70% of the faculty were comfortable using the laptop. None of them had any major problems related to visibility, audibility or internet connectivity. 41.66% of the faculty especially the senior faculty members felt less confident in meeting the technical demands of online teaching (graph -2). 41.66% of them felt that the student participation was less in online teaching. 66.66% of them experienced difficulty in keeping their students involved in their class. 66.66% expressed satisfaction with virtual teaching. 50 % of the faculty were less satisfied with the online assessment methods. 83.33% appreciated institutional support. 91.66% enjoyed their new experience of online teaching. The response to the question as to how faculty would like to utilise the online teaching is shown in graph-3 where 60% wanted to use it for completion of the course within semester time. 50% felt that it could also be used for academic improvement of poor performers.

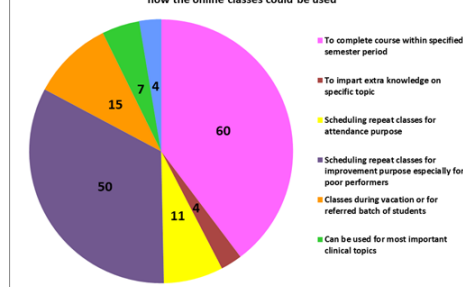
Graph 1: Students responses to survey questionnaire



Graph 2: Faculty responses to survey questionnaire



Graph 3: Pie diagram showing faculty responses to the question as to how the online classes could be used



DISCUSSION

The students perception of online learning is influenced by several factors like the number of students, length of the course, subject, delivery by synchronous or asynchronous method² and adequacy of interaction³. 51% felt that student interaction was poor. 27% felt their interaction with faculty was poor. Learner to learner and learner to instructor interaction which form an important component of interaction framework help in creating an ideal learning environment³. This emphasizes the fact that maximising student engagement is essential not only to achieve the intended learning outcome but also contributes significantly to their satisfaction rates in an online teaching programme^{4,5}. 23.7% did not want continuation of online teaching. This can be explained by their poor satisfaction rates. Students satisfaction and faculty satisfaction are two of the five pillars of quality in online education⁶. They complained that the number of classes have to be reduced as long hours of sitting in front of the system was resulting in eye strain, headache and backache. They expressed concern that they were missing the clinical touch and bedside teaching which the core of medical education was. They also complained that they did not have all the text books and other reading material as they left to their hometowns in a hurry before the lockdown and were not prepared for a long duration of time away from the college. Also, some of them were depressed due to the loss of their family members, while some were convalescing from the Covid infection; some were under a lot of psychological stress due to the prevailing pandemic situation. 19% did not want the online method of assessment for fear of malpractice and felt that it did not reflect the pattern of summative assessment. Students' enthusiasm, motivation, discipline and time management are essential to effectively perform in an online learning environment. Overall, the students appreciated the efforts of the faculty and the management in this endeavour and felt that this was the only reasonable option in the prevailing circumstances within the resources available.

Susan KO and Stene Rossen⁷ explain that techies don't necessarily make the best online instructors. An interest in teaching should come first, technology second. Faculty needs to be more creative in online teaching. The material used in online teaching is different from face to face teaching. Playing the dual role of being the frontline Covid 19 warriors and online teachers, 40% of the faculty felt that online teaching increased their workload by more than 25%. 66.66% were not confident in keeping their students involved. Student engagement is essential for creating a positive learning environment. Inability of the faculty to keep the students engaged in their class may be due to lack of technological knowhow. 60% of them felt that about 25% of the topics need to be covered again in face to face teaching. Faculty members who have experience with online teaching are more likely to have a positive view, while the overall student learning remains the same or increases in online teaching⁷. Faculty satisfaction and student outcomes are highly correlative⁹.

Online teaching may be challenging due to lack of technological competence among teachers. Faculty who had technological and technical problems were less satisfied with online teaching¹⁰. Hence, faculty training and institutional support are essential for effective online teaching¹¹. All the faculty of our university were given free access to coursera courses and it was made mandatory to do the courses related to use of new emerging technologies in online education and were also given the choice of laptop scheme. 83.33% of faculty felt that we were well supported by our management for the effective implementation of online teaching. 80% of the faculty felt that 25% of the topics of this subject could be covered by online teaching in the blended learning approach. Thus online teaching could be used to supplement face to face teaching and not as a substitute in the medical education^{12,13}.

With these inputs from the students, clinical classes were also introduced from the month of August which included case presentations by the students online, discussion of case scenarios making the sessions more interactive maximising the student participation. It took a Herculean effort to create a virtual bedside environment. As practice makes man perfect, faculty have also improved their skills and became well versed and confident with the technology of online teaching. Despite the chaotic environment due to the Covid pandemic all over the world, the ball of medical education was kept rolling, albeit at a slower pace.

CONCLUSION

The importance of self-directed learning has already been emphasized in Graduate Medical Education 2019¹⁴. The student is the

driving force in the current Competence Based Medical Education rolled out by Medical Council of India. So is the case with online learning. Virtual teaching can supplement traditional talk and chalk classes though it cannot substitute it in medical curriculum. According to the cognitive theory of multimedia learning¹⁵ where meaningful learning with long term memory occurs with a well-designed multimedia presentation, further research is needed in developing appropriate design and structure of teaching learning methods with a perfect blend of both face to face and online teaching. These will be of great help not only in such times of pandemic to prevent the medical education process from coming to a standstill but also to enhance the student's clinical performance.

To conclude, it is not the strongest of the species that survives, nor the most intelligent that survives, it is the one that is most adaptable to change that lives within the means available and works cooperatively against common threats. This quote of Charles Darwin¹⁶ applies to both the facilitator as well as the learner with respect to medical education in the context of Covid 19 pandemic

Acknowledgements:

We thank our management, members of medical education unit and all the department faculty members of OBG and GYN, GIMSIR for their guidance and cooperation.

Source of support: The work was not supported by any grants and funds

REFERENCES

1. A.W. Bates and G.Poole, (2003) Effective Teaching with Technology in Higher Education :Foundation for success. San Francisco: Jossey Bass Publishers , Chapter 4-A framework for selecting and using technology pp 77-105.
2. Means, B, Toyama, Y, Murphy, R, Bakia, M, Jones K. (2010). Evaluation of evidence based practices in online learning: A meta-analysis and review of online learning studies. US Department of Education. Office of Planning, Evaluation, and Policy Development. Policy and Program Studies Service. ED-04-CO-0040
3. Moore, M. J. (1993). Three types of interaction. In K. Harry, M. John, & D. Keegan (Eds.), Distance education theory (pp. 19–24). New York: Routledge
4. Bolliger,D., Martindale, T (2004). Key factors influencing student satisfaction with online courses. International Journal on e-Learning, 3(1), 61–67.
5. Martin, F, Bolliger,D.U.(2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. Online Learning 22(1), 205–222. doi:10.24059/olj.v22i1.1092
6. Needham, MA- Sloan Consortium. (2002). Quick guide: Pillar reference manual.
7. Susan KO, Stene Rossen. Teaching online – A practical guide 3 rd edition, Chapter 1, Teaching online : An overview page 18
8. Felege, C, Olson, M -Online education:Faculty perceptions and recommendations Focus on colleges, universities, and schools volume 9, number 1, 2015
9. Hartman,J, Dziuban, C., Moskal, P (2000). Faculty satisfaction in ALNs: A dependent or independent variable? Journal of Asynchronous Learning Networks, 4(3), 155–177. Retrieved August 28, 2008. http://www.sloan.org/publications/jaln/v4n3/v4n3_hartma n.asp
10. Bolliger, D and Wasilik, O.(2009) Factors influencing faculty satisfaction with online teaching and learning in higher education. Distance education 103-116, doi-30(1),103-116.doi:10.1080/01587910902845949.
11. Betts, K (2009) Online human touch (OHT) Training & Support: A Conceptual Framework to Increase Faculty Engagement, Connectivity, and Retention in Online Education, Part 2 MERLOT Journal of Online Learning and Teaching Vol. 5, No. 1, March 2009
12. Taylor F.A, Nelson E, Delfino,K, Han, H- A Blended Approach to Learning in an Obstetrics and Gynecology Residency Program: Proof of Concept. Journal of Medical Education and Curricular. Development 2015;2:53–62 doi: 10.4137/JMECD.S32063.
13. Shaffer K, Small J.E (2004)- Blended learning in medical education: Use of an integrated approach with web based small group modules and didactic instruction for teachingradiologic anatomy. AcademicRadiology.11(9),10591070.https://doi.org/10.1016/j.acra.2004.05.018.
14. Graduate Medical Education Regulation 2019, Medical Council of India.
15. Kassab S, Al-Shafei, AI, Salem, A. H, Ootom, S. - Relationships between the quality of blended learning experience, self-regulated learning, and academic achievement of medical students: a path analysis Advances in Medical Education and Practice 2015;6 27–34.
16. Charles Darwin - he Origin of Species (1859).