Original article

A comparative account using student feedback on diverse modules of e-learning used during COVID-19 lockdown for undergraduate medical teaching

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Article history

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Abstract

Need has been the mother of innovation and with the global pandemic of the highly infectious disease COVID 19, there has been a paradigm shift from conventional teaching to digital mode of virtual teaching methods. This task has been achieved by using various platforms available on the digital network, the internet. This work describes the change in medical education, using student feed-back on various modules used in teaching during that period. The feedback survey was conducted online by using the available platforms. The Google forms were used as a survey tool for conducting this survey. The responses were collected from all implied consenting students attending the various teaching sessions across different years of training, belonging to our medical institution. All the participants were adult students attending a medical college. The response rate among the participants was 54%. The respondents were majority 184 (76%) female gender. Nearly 90% opted for Google Meet/classroom as a preferred online module. The choice of selecting this module among the students was found to be statistically significant as compared to other options. The selection was based on the virtue of attributes such as user-friendly application, user satisfaction, beneficial, appealing, less technically challenging, convenient and cost-effective nature. Hence to conclude we may imply to say that this study was unique in assessing the mind of the medical students against this novel e-learning based online mode of education which has taken them by surprise. Though the method is good, there is a lacking that it has; as compared to the conventional means of teaching. This may be used to revise and consolidate the teaching process but not as to replace the classical method rather it should complement it.

Key words: COVID-19, Medical Education, Online e-learning technology platform, Student feedback

The use of Information and technology in education has been very relevant in the past, present and shall be so in the future as well. Education is the backbone to a socialized society as said by Locke in 1965 in his quote "Of all the men we meet with, nine parts of ten are what they are, good or evil, useful or not, by their education"[1]. The conventional education methods along with the social interaction fabric woven across close proximity, socializing by handshakes, etc. have been challenged by the Corona virus disease or COVID 19 which is a newly detected disease from a novel virus strain. This age-old teaching practice has threatened the students and educators both with the risk of spread of infection among them. The infectious nature of the virus and uncertainty of available treatment has caused people to resort to the only available means of prevention that is social distancing. This virtuous method has been successfully enforced by lockdown from the government and self-quarantine carried out at an individuals' level. This practice of social distancing and isolation has led to disruption of educational institutional practices, which has refrained them from using conventional teaching learning methods which require maintaining close contact and proximity between individuals. Given the backdrop of these odd times; and need being the mother of innovation there has been an extensive use of virtual modes in educational teaching learning methodology as compared to conventional teaching methods during these testing times[2-6]. This paradigm shift in the global pursuit of affairs due to such challenging norms has led to a search for various online digital modes of virtual educational tools over the internet to maintain the continuum of teaching learning process. This concept in the practice of teaching learning methodology has been addressed by free internet-based tools which have come in handy, facilitating both the learner and the teacher in the reception and delivery of content respectively[4,5,7]. These free online platforms have come to the rescue of both the students and the teachers from various educational institutions amidst this pandemic and have led to easy sustainability of some of the teaching learning methods[8]. The success of all such modes has been dependent on the usage and the adaptability of the user inclusive of the feedback. This feedback is the backbone of all teaching learning methods evaluation process which has been in vogue for long[9,10]. This work compares the preferences using feedback of medical students on various modules of e-learning used in teaching during the pandemic period. The concept of online teaching had been there for some time. However, our experience had been limited for this means of teaching. Online classes were already in use at our institution for teaching rare cases in Medicine, flipped class room in Microbiology and using recorded classes in Physiology. The sudden, extensive use of online mode on a large scale, encouraged us to conduct this piece of work. The aim of the study was to determine the student feedback on use of online teaching methods and to compare the feasibility of various e-modules used based on their virtues of conduciveness and applicability.

Materials and methods

The study was conducted in a medical college in Hyderabad on undergraduate MBBS students of various semesters from first to final year using a cross-sectional study design. The teaching for the batches of students (2017, 2018 & 2019) was done on diverse platforms supported by Google, Zoom, Moodle and Webex by various teachers of various subjects. At the end of the teaching sessions, the students were made aware of the feedback survey and were motivated to take part in the survey. A questionnaire as seen in figure 1 was prepared and distributed among the students using Google forms on the various social media platforms via a Google form link. A timeline of one month was provided for answering the feedback questionnaire. A convenience type sampling was performed and included all students taught online using diverse online platforms. Those students not enrolled for teaching and the students who did not opt to answer for any reason were excluded from the study. The survey was blinded and no personal identity of the participants was disclosed. Consent was deemed as accorded for taking the survey. Multiple entries from respondents were blocked at the completion of the survey itself. The filled feedback forms in real-time were then generated in the system for later analysis. The results were tabulated and shown as numbers and percentages in parenthesis. The test of significance used was a non-parametric tool-Chi square test which was done

manually and Yates correction was applied in relevant context.

Fig 1. Questionnaire used in the study

Results

All the participants were in the age group 18 years and above. The annual intake of the institution was 150 hence the cumulative prospective participants to answer was 450 out of which 244 filled the feedback form on online teaching. Among those who attempted, two did not complete the survey completely, hence were excluded from the final analysis. This brings us to only 242 participants who successfully responded, with a responder rate of 54%. The overall student population comprised of a female majority. The respondents also were majority female (76%), with a female to male ratio of 3:1.

Google Meet/Classroom was the module of choice followed by Zoom. This finding was statistically significant (p<0.05). Male as well as female students showed a similar preference pattern, however gender diversity did not have a statistically significant impact. The other attributes that have been considered most user friendly and beneficial to students had appealing audiovisual impact and were most comprehensive in terms of language assessment. Preferred learning time for effective learning activity was 45 minutes. Time management, convenience and affordability were noted significantly high among users who were using Google Meet/ Classroom module.

Satisfaction of learning and interactivity did not yield a statistically significant value. This meant that the students did not really have a feel of the conventional class in online mode of teaching.

Discussion

Medical professionals need to be agile and resilient in adapting to the situations that may be striking us such as COVID-19[10,11]. Preparedness is the first step in disaster management. Field activities, practical demonstration classes, seminars and other forms of interactive educational activities all have seen a setback. The one wonder remedy of online panacea does not satisfy all these needs of Undergraduate curriculum. The trend of online teaching has long been construed, however not very popular among the medicos though. Strengths' of such activities are time, audience, flexibility and feedback. Weaknesses include lack of attention, technicalities, distractions and time management[12]. The lack of contact classes and availability of online means have paved the way for use of these learning modules in these difficult times. Medicine being a scientific and social stream has been most affected. This study has been carried out on medical graduates from a single institution. The respondents were predominantly female as compared to in the study conducted by Shehzad et al[13]. The findings from his study showed that majority (67%) were females. There was a predominant female enrollment at these institutions similar to the present study. However, this gender distribution did not have any statistically significant impact on choice of the module. The respondent rate in our study was 54% as compared to Radha et al[7], who analyzed response in other specialty students and recorded 82% responder rate. This shows the reluctance for e-learning in this stream of specialty. This is a unique specialty that is different from other science streams and has a social flavor to its teaching methodology which is taught mostly at the

bed side using different domains of learning including cognitive, affective and psychomotor domains. In our study, the most popular platform was found to be Google Meet/ Classroom (82%) as compared to only 4% as seen in the study by Reddy MM[14]. The time for adaptation/ duration of class was 45 minutes selected by 47% which is in contrast to less than 2 hrs as seen in the study by Reddy MM[14]. Also in our study, we saw enhanced audio visual impact, interactivity and language as significant factors in the popularity of Google Meet/ Classroom module. The other significantly positive findings of this module have been Time adequacy or time management, in terms of learning the procedure of handling the learning module and the cost incurred for setting up the devices at home. Our study saw satisfaction as not very consistent where it was contrary to the finding of Khalil R, in his study among Saudi students who were satisfied with online learning methods[15].

Table 1: Comparison of various e learning modules against student feedback

Variable		Zoom N=38 (%)	Webex N=1 (%)	Google Meet/ Classroom N=198 (%)	Moodle N=5 (%)	Total N=242 (%)	Chi Square
Gender distribution	Male	12 (21)	0 (0)	44 (76)	2 (3)	58 (24)	2.51, $p>0.05$
	Female	26 (13)	1 (1)	154 (84)	3 (2)	184 (76)	
Batch of students	2017	16 (18)	1 (1)	73 (80)	1 (1)	91 (37)	40.45, $p<0.05$*
	2018	19 (23)	0 (0)	64 (77)	0 (0)	83 (35)	
	2019	03 (04)	0 (0)	61 (90)	4 (6)	68 (28)	
Utility of module	User friendly	36 (16)	1 (1)	185 (81)	4 (2)	226 (65)	9.43, $p<0.05$*
	Not user friendly	2 (13)	0 (0)	13 (81)	1 (6)	16 (35)	
Objectives of learning	Satisfied	22 (14)	0 (0)	134 (85)	2 (1)	158 (65)	4.71, $p>0.05$
	Not satisfied	16 (19)	1 (1)	64 (76)	3 (4)	84 (35)	
Benefit to students	Beneficial	28 (15)	0 (0)	150 (83)	3 (2)	181 (75)	12.7, $p<0.05$*
	Not beneficial	10 (16)	1 (2)	48 (79)	2 (3)	61 (25)	
Interactivity in class	Adequate	26 (16)	0 (0)	132 (83)	2 (1)	160 (66)	3.6, $p>0.05$
	Inadequate	12 (15)	1 (1)	66 (80)	3 (4)	82 (34)	
Audio visual impact	Appealing	25 (14)	0 (0)	148 (85)	2 (1)	175 (72)	11.2, $p<0.05$*
	Not appealing	13 (19)	1 (1)	50 (75)	3 (4)	67 (28)	
Language assessment	Comprehensive	30 (13)	1 (1)	186 (84)	5 (2)	222 (92)	78.3, $p<0.05$*
	Irrelevant	8 (40)	0 (0)	12 (60)	0 (0)	20 (8)	
Time adequacy/ management	Easy	28 (17)	0 (0)	137 (83)	1 (1)	166 (69)	8.92, $p<0.05$*
	Tough	10 (13)	1 (1)	61 (80)	5 (4)	76 (31)	
Preferred teaching session time	30 min	8 (10)	1 (1)	67 (84)	4 (5)	80 (33)	33.14, $p<0.05$*
	45 min	29 (25)	0 (0)	83 (74)	1 (1)	113 (47)	
	60 min	1 (2)	0 (0)	48 (98)	0 (0)	49(20)	
Convenience	Yes	26 (13)	0 (0)	178 (86)	4 (2)	208 (86)	55.43, $p<0.05$*
	No	12 (35)	1(1)	20 (59)	1 (3)	34 (14)	
Cost incurred	Affordable	35 (15)	1 (1)	186 (83)	1 (1)	223 (92)	88.3, $p<0.05$*
	Expensive	03 (16)	00 (0)	12 (63)	4 (21)	19 (8)	

Statistically significant at $p<0.05$

This study included only undergraduate students of a medical college not considering the post graduates which when compared to Singh RP, study in other graduate and postgraduate students of non-medical background seeing more enthusiasm in males as compared to females. Post-graduate students were more open in terms of online classes as compared to undergraduate students[16]. Mental health also seems a likely factor which decides the participation as seen by other studies[17,18], however this was not the prime focus of this study. This concept of mental health is to be taken into account when one is studying the online modules as sitting in a closed room in front of a laptop, mobile or any such devices is a challenging job amidst the isolation necessitated by the pandemic[19,20].

Conclusion

Hence to conclude we can say that this study was unique in assessing the mind of the students towards this novel mode of education which has taken them by surprise. Though the internet-based method of teaching is good, it is lacking from the conventional means of teaching. This form of e-learning may be used to revise, supplement and consolidate the teaching process but not as a replacement for the classical method of classroom teaching.

Acknowledgement

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