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Research Article

A Comparative Study of Perception of Online Teaching Versus Traditional Teaching among MBBS Students during COVID Crisis

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A B S T R A C T

Background: COVID-19 pandemic has created thelargest disruption in education systems in history. Numerous medical institutions have shifted to online teaching with the hope to reduce viral transmission.

Objectives: To compare the effectiveness of online teaching and traditional teaching in the domains of collaborative learning, critical thinking skills and social interaction and to describe the advantages and difficulties faced in online learning by MBBS students.

Materials and Methods: Anonline-based cross-sectional study was conducted fromMay 2021 to August 2021 in a private medical college in Salem district of Tamil Nadu, India. Among the 600 MBBS students attending online classes from the first year to final year MBBS, 574 students consented tothe study through mail and were studied using a semi-structured questionnaire prepared in Google form and sent through mail. Descriptive analysis was done and the association between the categorical variables were tested using chi-square test.

Results: Traditional way of teaching was perceived to improve the critical thinking skills ($p < 0.0006$), social interaction skills ($p < 0.044$) and collaborative learning ($p < 0.01$) more than online teaching. Advantages of online teaching identified were comfortable learning environment (38%) easier for slow learners (19%), learning at their own pace (18%) etc. Difficulties faced in online teaching were technical difficulties (62%), lack of self-motivation (61%), time management (56%) etc.

Conclusion: Challenges faced by the students need to be identified earlier and Governments/educational institutions can focus more on removing the barriers to connectivity.

Keywords: Online Teaching, Traditional Teaching, Critical Thinking Skills, Social Interaction

Introduction

Education is a fundamental human right. It has a direct impact on the progress of all 17 Sustainable Development Goals. During the COVID-19 pandemic, closures of schools, institutions, universities have impacted the education of 94% of the students population globally and 99% of them were from low and lower-middle income countries.[1] Numerous medical institutions have shifted from traditional forms of 'in-person' lecture teaching to other modes of online teaching with the hope to reduce viral transmission. Online teaching and learning become indispensable during this critical period to impart education to the students. But the COVID-19 pandemic has aggravatedthe already existing discrepancies in accessibility and availability to education among students from lower socio-economic status, students living in remote areas without proper internet connectivity.

Even though most medical universities have started teaching through online mode, its effectiveness in imparting learning is still questionable in India. Early identification of the challenges or difficulties faced by students is essential to alleviate themand to provide effective learning for students. So this study was conducted to compare the effectiveness of online teaching versus traditional classroom-based teaching and to identify and describe the difficulties faced in online teaching by MBBS students during this COVID-19 crisis.

Materials and Methods

This was an online-based cross-sectional study conducted fromMay 2021 to August 2021in a private medical college in Salem district of Tamil Nadu, South India. The college admits 150 MBBS students every year. During the study period, four batches of MBBS students were attending online classes starting from first year to final year of MBBS. Inclusion and exclusion criteria: All the 600 students currently pursuing MBBS in the selected medical college are eligible for participation in the study. Institute ethical committee approval was obtained all the 600 students were informed regarding the objectives of the study through mail and confidentiality was assured. Those who did not give consent through mail were excluded from the study. Among the 600 MBBS students, 574 students consented to the study through mail.

A semi-structured questionnaire was prepared in Google form and mailed to the students. Parameters studied through the questionnaire were:

- Students' perception towards online teaching versus traditional teaching in terms of improving collaborative learning, critical thinking skills, and social interaction.
- Advantages and difficulties of online mode of learning
- Preferred methods of teaching in online versus traditional classroom teaching

The identity of the students such as name, roll number, email address were not collected as this helps the students to post their response without any fear to avoid bias. Demographic information such as age, gender, year of MBBS was recorded.

The responses collected were analysed using IBM SPSS version 23. Descriptive analysis was done.

Results

The demographic characteristics of the participants were shown in Table 1.

Table 1.Demographic Characteristics of Study Participants (n=574)

Variables	Categories	N	%
Age in years	18	29	5.1
	19	142	24.7
	20	206	35.9
	21	121	21.1
	22	52	9.1
	23	24	4.2
	Total	574	100.0
Gender	Female	348	60.6
	Male	226	39.4
	Total	574	100.0
Year of study	First year	146	25
	Second year	147	26
	Pre-finalyear	143	25
	Final year	138	24
	Total	574	100.0

Table 2.Advantages and Difficulties of Online Mode of Teaching as perceived by Students (n=574)

Advantages of Online Teaching compared to Traditional Classroom Teaching	Responses	
	N	%
Comfortable learning environment	220	38
Easier for slow learners	109	19
Learning at your own pace	102	18
Greater flexibility	35	6
No physical presence	55	10
Multimedia options	53	9
Difficulties with online mode of learning	N	%
Technical difficulties	354	62
Lack of self-motivation	61	11

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Time management	56	10
Distraction/ lack of concentration	42	7
Increased screen time/ eye strain	37	6
Stress	24	4

Table 3.Preferred Methods of Teaching in Online versus Traditional Classroom Teaching

Preferred Methods in Traditional Classroom Teaching	N	%
Blackboard method	178	31
Powerpoint method	44	7.6
Both blackboard method and Powerpoint method	66	11.5
Simulation-based learning	120	21
Problem-based learning	166	28.9
Total	574	100
Preferred methods in online mode of teaching		
Live interactive online sessions	244	42.5
Posting recorded videos	80	14
Problem-based interactive learning	144	25
Live sessions with MCQs or short assessment in between the session	106	18.5
Total	574	100

206 (35.9%) of students were in the age group of 20 years followed by 142 (24.7%) in the age group of 19 years. Majority of the study participants 348 (60.6%) were females.

Table 2 describes the advantages and disadvantages of online teaching compared to traditional teaching. Although online teaching has advantages like comfortable learning environment, easier for slow learners, learning at own pace with greater flexibility and multimedia options, there remain a few disadvantages like technical difficulties such as poor network connectivity, lack of self-motivation, difficulty in time management, distraction, lack of concentration, eye strain and stress.

The various methods of online teaching used in the COVID crisis were taught through various software applications like in zoom/ google meet in various forms such as through live interactive online classes, posting recorded videos/ power points in Google classroom, problem-based learning, etc. The various methods of traditional teaching used were lectures using blackboard, powerpoint presentation based teaching, small group discussions, demonstrations, simulation-based learning, problem-based learning, etc. Table 3 describes the preferred methods of teaching in traditional way of teaching and online-based teaching among MBBS students. Blackboard based teaching was the most preferred way of learning in traditional way of classroom teaching 178(31%) and 244 students (42.5%) preferred live interactive online sessions in online-based teaching.

Online teaching and traditional teaching were compared in domains of promoting Critical thinking skills, social interaction skills and collaborative learning and the results showed are showed in Table 4. It was found that there was a statistically significant difference between online teaching and traditional teaching in improving these skills among students. Traditional way of teaching was perceived to improve these skills more than online teaching.

Students were asked regarding their perception towards helpfulness of supplementing regular on-site sessions with online teaching sessions and the results are showed in table 5. Majority perceived it will be helpful. Students were also asked whether posting assignments in online mode will help to improve the learning after the initiation of regular on-site sessions. Students perceived it may help them in attaining better learning.

Table 4.Online Teaching versus Traditional Way of Teaching in improving Critical Thinking skills, Social Interaction Skills and Promoting Collaborative Learning among Students

Year of Study	Critical Thinking Skills				X^2 P value	Social Interaction Skills				X^2 P value	Promoting Collaborative Learning				X^2 P value
	Online way of teaching		Traditional way of teaching			Online way of teaching		Traditional way of teaching			Online way of teaching		Traditional way of teaching		
	n	%*	n	%*		n	%*	n	%*		n	%*	n	%*	
First year	40	27	106	73	17.1; 0.0006	37	25	109	75	8.08; 0.044	52	36	94	64	10.67; 0.01
Second	69	47	78	53		45	31	102	69		63	43	84	57	
Third	42	29	101	71		24	17	119	83		47	33	96	67	
Final	58	42	80	58		38	28	100	72		61	44	77	56	

*Row percentages; P value less than 0.05 were considered to be statistically significant.

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Table 5.Perception of Students regarding Supplementing Regular On-site Sessions with Online Teaching Sessions

Year of study	Perception regarding Supplementing Regular on-site Sessions with Online Teaching Sessions						Perception regarding whether Posting Assignments in Online Mode help to improve the Learning Process after initiation of Regular On-site Sessions					
	Will be helpful		Will not be helpful		X^2 value	P value	Yes		No		X^2 value	P value
	N	%*	N	%*			N	%*	N	%*		
First year	121	83	25	17	20.29	0.0001	88	60	58	40	17.74	0.0004
Second	87	59	60	41			101	69	46	31		
Third	99	69	44	31			104	73	39	27		
Final	100	72	38	28			114	83	24	17		

*Row percentages; P value less than 0.05 were considered to be statistically significant.

Discussion

COVID-19 crisis has disrupted the learning of most of the children worldwide. Some institutions have postponed the teaching and learning until further notice, due to lack of accessibility or affordability of information technology facilities for both the students and teachers. Most of the educational institutions have shifted to online learning. The various applications used for online teaching are Zoom, Google Classroom, Google Docs etc. Although online mode of teaching and learning helps to continue the learning among students, it is not without limitations. Learners may miss a stimulating, enriching environment, social interaction etc. Moreover, in the medical field, communication and clinical examination of patients necessary for learning and building a diagnostic thought process weremissed in online learning. William Osler once said 'He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all'.

Learning through online platforms needs a better availability to the internet. The Internet being a public worldwide network provides access to various communication services including World Wide Web carries e-mail, entertainment, news, data files etc. Access to it can be fixed or through a mobile network using various devices like mobiles, computers, tablets, notebooks etc. NSS 75th round of survey on Household Social Consumption on Education in India reported that only around 24 percent of households in India had access to internet in the survey year of 2017-18. Among them, 15% were rural households and 42% were urban households. As per the survey, among the 15-29 years only 30.4% had the ability to use internet and it was around 63.2% in urban.The survey showed a very less percentage of students in rural India where 66% of the population lives, are accessible to internet and very few percentages had the ability to use internet.[2,3] In such a crisis situation, this study had assessed the effectiveness of online teaching in imparting medical education to MBBS students in a private institution in Tamil Nadu.

The parameters assessed in our study shows online teaching has a few advantages such as learning at own pace, greater flexibility, helpful for slow learners etc. But online teaching is not without difficulties. Many students faced technical difficulties in online way of learning. Lack of availability and poor internet connectivity in many of the rural areas hampers their learning to a great extent and the same may have created stress among those students. Lack of concentration and easy distractibility were perceived by few students due to lack of physical presence in the teaching happening place. Students have left the classrooms explicitly designed to support learning, to living rooms or bedrooms where distractions were plentiful. In online teaching and learning process, students feel disconnected from their educators and peers. Lack of live social interaction and communication was perceived as a major difficulty in online teaching. Difficulty in time management was another difficulty stated by students. It could be because of poor internet connectivity for both teachers and students. Further increased screen time has led to eye strain in a few students. Similar to this finding, astudy by Dost S et al, found flexibility as the advantage and issues in internet connectivity and distraction due to family members as the disadvantages of online teaching. The greatest perceived benefits of online teaching platforms included their flexibility.[4]

This study assessed the effectiveness of online teaching versus traditional way of teaching in the following domains: critical thinking skills, social interaction skills and promoting collaborative learning. *Critical thinking* can be defined as the ability to think in an organized, rational manner to understand the connections between ideas or facts. Social skills are the skills that we use to interact and communicate with others. It can be in several ways like nonverbal (through

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our gestures, eye contact, and body language), verbal (through language) visual, written etc. Social interaction skills are essential for medical students as theycan help a person to communicate effectively, build and maintain successful relationships with peers, patients etc.

Collaborative learning involves students working in pairs or in small groups or in larger groups to plan and develop activities, solve a problem, and understand difficult concepts. Students work together, collaborate with each other, and learn from each other and this educational approach wasfound to improve the self-confidence among students. Experts have also found that it helps students to elucidate misconceptions and address misapprehensions.[5] This study has found that traditional way of teaching was perceived to be better than online mode of teaching in improving all these domains.

Similar findingswere observed in various studies. A study by Ni AY et al. Showed that communicative interaction between the teacher and student plays an important role in traditional classroom teaching.[6] Few studies have mentioned that the level of student interaction with the faculty is less with online teaching as compared to traditional teaching.[7,8] Hence online teaching is not perceived to be superior to traditional teaching, especially among medical students. This is comparable with the study by Subramanian A et al.[9]

According to NaliniGK et al. learning can be improved by web-based learning.[10] Few studies also reported that inculcating online curriculum and sharing online modules along with traditional teaching can enhance the learning experience ofthe students.[11-13] This is similar to the current study. The hybrid method of combining the advantage of online teaching along with traditional teaching is called blended learning as supported by a few studies.[14,15]Besides all this, the effectiveness of the study could also be influenced by student characteristics such as gender, attitude, learning style and satisfaction as in other studies.[16-18] More innovation in this hybrid model may help to overcome many difficulties.[19,20]

Conclusion

The study concluded that even though online teaching poses a different set of challenges for students, collaboration and communication may make it easier to stay connected and may provide a better learning experience. Challenges faced by the students need to be identified earlier and Governments/ educational institutions can focus more on removing the barriers to connectivity. Continuous monitoring and evaluations are essential to identify whether these online programs and online resources are performing as expected and to identify areas for improvement. As online mode of teaching is unavoidable for the continuation of education among medical students, medical educators need to update themselves with regard to innovations in medical education that were available on afew online sites.

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