An Analysis of Perception of Different Online Teaching-Learning Methods among Phase-1 Medical Students of Government Medical College, Thrissur, Kerala during Covid-19 Lockdown

Sajeevan Kundil Chandran[1], Shajee Sivasankaran Nair[2], Sajith Vilambil[3], Sajna Mathumkunnath Vijayan[4], Purnima Eliz Thomas[5]

[1]Department of Biochemistry, Government T. D. Medical College, Alappuzha, Kerala, India. [2]Department of Biochemistry, Government Medical College, Thrissur, Kerala, India. [3]Department of Transfusion Medicine, Government Medical College, Trivandrum, Kerala, India. [4]Department of Community Medicine, Government Medical College Thrissur, Kerala, India. [5]Department of Biochemistry, Amritha Institute of Medical Sciences and Research Centre, Kochi, Kerala, India.

ABSTRACT

BACKGROUND

Due to Covid-19 lockdown initiated by the Government, the teaching was transformed to an online sphere. Reflection from students was quite essential for advancement in newer platforms. Thus, perception of various online teaching-learning methods among medical students were assessed.

METHODS

This is a cross-sectional study conducted among phase-1 MBBS students of Government Medical College, Thrissur. This study was done to analyse medical student's perceptions on four methods of online classes which included live online lectures, assignments, sending PowerPoint presentations and pre-recorded videos. All statistical data was analysed using SPSS software version 16. Continuous variables was expressed as mean ± standard deviation. Difference between the groups were analysed by simple ANOVA but the subgroup analysis in each variable was done by post hoc analysis with Bonferroni test. The level of significance was kept at 5%.

RESULTS

When different variables were analysed by anova, it was found out that emphasizing important aspects of topics, describing the contents in a logical sequence and interaction was significantly better in live online lectures. Coverage of learning objectives and description of concepts was significantly better in narrative PowerPoint presentation. Likewise, it significantly helped them to prepare notes for examination. Live online lectures effectively used audio-visual aids and it has aroused interest in the subject. Live online lecture was found to be the best single method as compared to the other three when all ten variables were analysed conjointly.

CONCLUSIONS

The preferred method for online teaching for phase-1 medical students was online lectures when all variables were analysed. Important aspects of topics were emphasized, the contents were discovered in a logical sequence, the audio-visuals were used effectively, and interest was aroused in topics through live online lectures. All the learning objectives were covered and described very clearly and note preparation was easy in PowerPoint presentation.

KEYWORDS

Covid-19 Lockdown, Perception, Live Online Lectures, Pre-Recorded Videos, Assignments, Interaction, Learning Objectives, Audio Visual Aids

BACKGROUND

A plethora of research has been done related to students' satisfaction in an online environment. Powers and Rossman et al emphasized that faculty-student interaction and feelings of intellectual stimulation were the factors affecting student's satisfaction.[1] Sahin et al studied student's perceptions to assess students' satisfaction on online classes they opined that as long as students have the skill to use online tools, online learning is a useful and flexible way of learning. Student's perceptions were important in designing, developing, and delivering online courses.[2] Levin et al emphasized the importance of research for improving online classes.[3] Kim, Kwon and Cho studied the factors influencing online classes in higher education. They found that media integration and instructors' quality of teaching were the significant predictors of student satisfaction.[4] Zhoa, Lei, Chun lai and Thai emphasized that interaction of student and instructor predicts the success of student satisfaction.[5] Reigeluth reported that the instructor should be a facilitator. The student and instructor have to share control of learning.[6] The studies related to medical students' satisfaction regarding various types of teaching-learning methods of online learning were limited.

Objective

To assess the perception of various online teaching-learning methods used for phase-1 medical students of Government Medical College, Thrissur during Covid-19 lockdown.

METHODS

This study was conducted among phase-1 medical students of Government Medical College, Thrissur. This Cross-sectional study was conducted between July and September 2020. All phase-1 MBBS students of Government Medical College, Thrissur were included in the study. The study was approved by the Human Ethic Committee and Institutional Research Board. Study subjects were counselled separately about the study and written consent was procured from them.

Inclusion Criteria

All 175 phase-1 MBBS students of Government Medical College, Thrissur were included in the study.

Exclusion Criteria

Those who were unwilling or unavailable to participate in the study. This cross-sectional study was done to analyse perceptions of medical students on four methods of online classes. The online platform included live online lectures, assignments, sending PowerPoint presentations and pre-recorded videos.

Live Online Lecture

We used a web conference tool to take lectures at Government Medical College, Thrissur. The topics were informed to the students before the classes through the students' social media group. PowerPoint Presentations was used during the interactive lectures.

Assignment

We specifically uploaded the learning objectives of every topic and questions related to the topics through the social media group. All the students of phase-1 was divided into small groups. Each group contained 17 - 18 students and a faculty in-charge. Students uploaded their assignments to respective faculty in-charge through social media groups. Later assignments was valued and graded by faculty.

Pre-Recorded Videos

Pre-recorded videos with a narration of theory and practical topics were uploaded in the social media batch group.

Power Point Presentation

PowerPoint Presentations with instructor's voice over was uploaded in the social media batch group.

Data Collection

Data was collected from 161 students through a questionnaire. 14 students were excluded as per the above-mentioned criteria. Study was designed to assess the students' perceptions regarding all four types of methods through a Likert scale. The rating was from 0 - 10, with 0 being the least favourable and 10 being the most. The ten statements of the survey were analysed to address the research questions.

Statistical Analysis

All statistical data was analysed using SPSS software version 16. Continuous variables were expressed as mean ± standard deviation. Difference between the groups were analysed by simple ANOVA but the subgroup analysis in each variable was done by post hoc analysis with Bonferroni test. The level of significance was kept at 5 %

RESULTS

When different variables were analysed by anova, it was found out that emphasizing important aspects of topics, describing the contents in a logical sequence and interaction was significantly better in live online lectures. Coverage of learning objectives and description of concepts was significantly better in narrative PowerPoint presentation. Likewise, it significantly helped them to prepare notes for examination. Live online lectures effectively used audio-visual aids and it has aroused interest in the subject. Live online lecture was found to be the best single method as

compared to the other three when all ten variables were analysed conjointly.

Post hoc analysis with Bonferroni test was used to analyse variables between categories. Regarding coverage of learning objectives, clarity in description of concepts, description of contents in a logical sequence, emphasizing important aspects of topics and arousal of interest in the subject, live online lectures were not significantly better than power point presentations or pre-recorded videos, while all these three modes were significantly better than assignments. There was no significant difference between

pre-recorded videos and PowerPoint presentation for these five variables.

Regarding motivation of students for further reference of the topics and developing critical thinking, no method was significantly better than the other one. Preparation of notes for examination was significantly better with PowerPoint presentation as compared to live online lecture, pre-recorded videos, or assignments. Interaction was significantly better in live online lectures and audio-visual aids were effectively used in all methods as compared to assignments.

Sl. No.	Variable	Live Online Lecture	Power Point Presentation	Pre-Recorded Videos	Online Assignment	Anova p Value
		Mean ± Standard Deviation (Range)				
1	Covered all the learning objectives of the topics.	7.63±1.58 (3-10)	7.84±1.65 (3-10)	7.58±1.75 (0-10)	6.58±2.08 (0-10)	.000
2	Described the concept very clearly.	7.71±1.68 (2-10)	7.84±1.58 (2-10)	7.68±1.83 (0-10)	5.80±2.13 (0-10)	.000
3	Emphasized important aspects of topics.	7.96±1.46 (1-10)	7.84±1.53 (2-10)	7.69±1.73 (0-10)	6.49±2.29 (0-10)	.000
4	Described the contents in a logical sequence.	7.83±1.51 (3-10)	7.79±1.57 (3-10)	7.51±1.78 (1-10)	5.93±2.18 (0-10)	.000
5	Helped the students to prepare notes for examination.	7.38±1.95 (2-10)	8.22±1.79 (3-10)	7.26±1.99 (1-10)	7.35±2.23 (0-10)	.000
6	Interactive	7.50±1.73 (2-10)	4.44±3.05 (0-10)	4.91±2.96 (0-10)	4.37±2.79 (0-10)	.000
7	Motivated the students for further reference of the topics	6.61±1.86 (1-10)	6.91±2.15 (0-10)	6.88±1.88 (2-10)	6.48±2.53 (0-10)	.187
8	Provided the students to develop critical thinking	6.50±1.79 (1-10)	6.61±1.99 (1-10)	6.69±1.98 (1-10)	6.39±2.46 (0-10)	.596
9	Aroused interest in the subject	7.17±1.83 (0-10)	7.01±2.01 (1-10)	7.13±2.03 (0-10)	6.09±2.41 (0-10)	.000
10	Used audio-visual aids effectively	8.00±1.61 (2-10)	7.52±1.83 (1-10)	7.38±1.98 (1-10)	4.61±2.93 (0-10)	.000

Table 1. Comparative Analysis of Teaching-Learning Methods within Groups

Points of Perception / Variable and group	Covered all the Learning Objectives of the Topics Mean ± Std. Dev.	P Value	Described the Concept Very Clearly. Mean ± Std. Dev.	P Value	Emphasized Important Aspects of Topics Mean ± Std Dev.	P Value	Described the Contents in a Logical Sequence Mean ± Std. Dev.	P Value	Helped the Students to Prepare Notes for Examination Mean ± Std. Dev.	P Value
Live online lecture / PowerPoint presentation	7.63±1.58 7.84±1.65	1.000	7.71±1.68 7.84±1.58	1.000	7.96±1.46 7.84±1.53	1.000	7.83±1.51 7.79±1.57	1.000	7.38±1.95 8.22±1.79	.001
Live online lecture / Pre-recorded videos	7.63±1.58 7.58±1.75	1.000	7.71±1.68 7.68±1.83	1.000	7.96±1.46 7.69±1.73	1.000	7.83±1.51 7.51±1.78	.621	7.38±1.95 7.26±1.99	1.000
Live online lecture / Online assignment	7.63±1.58 6.58±2.08	.000	7.71±1.68 5.80±2.13	.000	7.96±1.46 6.49±2.29	.000	7.83±1.51 5.93±2.18	.000	7.38±1.95 7.35±2.23	1.000
PowerPoint presentation / Pre-recorded videos	7.84±1.65 7.58±1.75	1.000	7.84±1.58 7.68±1.83	1.000	7.84±1.53 7.69±1.73	1.000	7.79±1.57 7.51±1.78	.952	8.22±1.79 7.26±1.99	.000
PowerPoint presentation / Online assignment	7.84±1.65 6.58±2.08	.000	7.84±1.58 5.80±2.13	.000	7.84±1.53 6.49±2.29	.000	7.79±1.57 5.93±2.18	.000	8.22±1.79 7.35±2.23	.001
Pre-recorded videos / Online assignment	7.58±1.75 6.58±2.08	.000	7.68±1.83 5.80±2.13	.000	7.69±1.73 6.49±2.29	.000	7.51±1.78 5.93±2.18	.000	7.26±1.99 7.35±2.23	1.000

Table 2. Comparative Analysis of Teaching-Learning Methods in between Groups-Learning Objective, Concepts, Important Aspects, Logical Sequence and Note Preparation

Points of Perception	Interactive		Motivated the Students for Further Reference of the Topics		Provided the Students to Develop Critical Thinking		Aroused Interest in the Subject		Used Audio-Visual Aids Effectively	
Variable and Group	Mean ± Std. Dev.	P Value	Mean ± Std. Dev.	P Value	Mean ± Std. Dev.	P Value	Mean ± Std. Dev.	P Value	Mean ± Std. Dev.	P Value
Live online lecture PowerPoint presentation	7.50±1.73 4.44±3.05	.000	6.61±1.86 6.91±2.15	1.000	6.50±1.79 6.61±1.99	1.000	7.17±1.83 7.01±2.01	1.000	8.00±1.61 7.52±1.83	.260
Live online lecture Pre-recorded videos	7.50±1.73 4.91±2.96	.000	6.61±1.86 6.88±1.88	1.000	6.50±1.79 6.69±1.98	1.000	7.17±1.83 7.13±2.03	1.000	8.00±1.61 7.38±1.98	.058
Live online lecture Online assignment	7.50±1.73 4.37±2.79	.000	6.61±1.86 6.48±2.53	1.000	6.50±1.79 6.39±2.46	1.000	7.17±1.83 6.09±2.41	.000	8.00±1.61 4.61±2.93	.000
PowerPoint presentation Pre-recorded videos	4.44±3.05 4.91±2.96	.720	6.91±2.15 6.88±1.88	1.000	6.61±1.99 6.69±1.98	1.000	7.01±2.01 7.13±2.03	1.000	7.52±1.83 7.38±1.98	1.000
PowerPoint presentation Online assignment	4.44±3.05 4.37±2.79	1.000	6.91±2.15 6.48±2.53	.397	6.61±1.99 6.39±2.46	1.000	7.01±2.01 6.09±2.41	.000	7.52±1.83 4.61±2.93	.000
Pre-recorded videos Online assignment	4.91±2.96 4.37±2.79	.448	6.88±1.88 6.48±2.53	.528	6.69±1.98 6.39±2.46	1.000	7.13±2.03 6.09±2.41	.000	7.38±1.98 4.61±2.93	.000

Table 3. Comparative Analysis of Teaching-Learning Methods in between Group-Interaction, Motivation, Critical Thinking, Interest and Audio-Visual Aids

DISCUSSION

2020 was marked with a paradigm shift in style of teaching due to covid-19 and lockdown. Almost all medical schools converted their way of teaching to online platforms. Online classes still carry different modes for communication of academic stuff. It included live lectures, podcasts, sending notes or PowerPoint, videos etc.

Government Medical College, Thrissur too was compled to convert the teaching-learning to an online sphere. According to different topics, four different teaching methods were tried in our institution. It included live online lecture, power Point presentation, pre-recorded videos, and online assignment. Since this was a new situation, it was mandatory to know the feedback from the students. Thus, this study to assess the perception of various online teaching-learning methods used for phase-1 medical students of Government Medical College, Thrissur during Covid-19 lockdown was undertaken.

Parsazadeh et al has opined that the success of online learning process lies in the access for both students and teachers, satisfaction of students in learning and the capacity of the provider in rendering different online tools.[7] Oliver et al has found out that students readiness, quality of online teaching contents and design of teaching methodologies are key for a successful online learning program.[8] Furthermore, Alshare et al has concluded that the political, cultural and economic factors will certainly influence the learning programs.[9] Mean while Pahinis et al has pointed out that Student's appraisal and their attitudes are important factors for success any online learning system.[10] Thus to know the reflections from students of Government Medical College Thrissur this study was performed. A 10-pointed questionnaire for assessing four teaching learning methods was provided to students and scores were obtained. Later it was analysed by simple ANOVA and post hoc analysis with Bonferroni test.

Peslak et al have opined that online tutorial should clearly cover the intended learning objectives of the content and facilitate the students to achieve learning goals.[11] When Coverage of all the learning objectives of the topics were compared in our study, power point presentation with narration was significantly better than all other platforms. In t-test, it was found out that online assignments were significantly inferior to all other three methods. A longitudinal study by Caruso and Kvavik, has concluded that students feels that technology can facilitate organization, control of learning ad access to resources. However, they added that the poor use of technology can detract from the learning experience.[12]

Similar to the above-mentioned point, in our study, the best clarity in description of the concept was with power point with narration. Likewise in the post hoc analysis with Bonferroni test, it was found out that online assignments were significantly inferior to all other three methods. Similarly in a study by Moshabab et al, it was found out that, most of students were not satisfied with the quality of flash lectures and procedural videos.[13] But Anastasiadis and Retalis opined that online learning, regardless of the delivery method, can transform the concept of teaching and deliver content properly. They added that a more constructive web-based approach can render authentic self-directed learning experience.[14]

In our study, emphasis on important aspects of topics and description of contents in a logical sequence was best with live online lectures. Again, assignments failed to emphasize various important points or to follow logical sequence, when compared to other three platforms. Fitzpatrick opined that one of the critical factors for successful online learning was pedagogy, attitude, and communication.[15] This points out the importance of live

online sessions during teaching. However, in another research by Moshabab et al, majority of students was comfortable in exploring online tutorials through web links.[13]

In our study, uploaded power points significantly helped the students to prepare notes for examination. Rajab et al has concluded that the students preferred to use Voice Thread for preparing notes similar to the classroom discussion of presentation content.[16] Nchindo opined that a cloud-based practice record is easy and more useful as compared to a traditional paper record.[17]

When interaction between students and teachers were analysed in this study, live online lectures were significantly better as compared to others. Moshabab et al has opined that only few students preferred online flash lectures and procedural videos over traditional face to face lectures and laboratory live demonstrations, respectively. This finding signified the importance of interaction in classrooms. Additionally in their study, many of the students preferred a combination of these teaching methods.[13]

In our study, no platform significantly motivated the students for further reference of the topics as compared to others. According to Rapanta et al. self-reflection and self-regulation is quite an essential tool in the online learning arena. By self-regulation, students get organized themselves to the new learning condition. Self-reflection helps to express what student has learned through the sessions.[18] Likewise in an analysis by Xiaozhe Yang, teachers opined that students faced new challenges such as autonomous learning and self-management during online learning.[19]

Similar to the motivation, in this study, no platform significantly developed critical thinking among students. Xiaozhe Yang has identified that main difficulties of online teaching were inability of students to apply self-study skills, difficulty in controlling the progress of the course and limited interaction.[19] Likewise Kurdistan Salih Mohammed has found out that students in the department do not like to have online sessions and online exams. Besides, they want to do good projects and publish these projects in international journals.[20]

In our study, live online lectures have aroused interest in the subject as compared to other three platforms. Similarly, during t test, assignment failed to arouse interest among students when compared to other three teaching methods.

Hrastinski has opined that the way of developing and delivering online courses should encourage the students to build their confidentiality in learning. He added that to reduce the negative effect of online education, it is important to provide suitable network environment, and students' perspective about online education.[21] Other way round, Kandies and Stern have opined that online courses offers numerous pedagogical benefits for learners and they become more active and self-directed learners.[22] Similarly Buzzetto-More and Sweat-Guy, concluded that web-learning stimulated students desire to learn, and they were contented with both the quantity and quality of their online learning experiences.[23]

In this study, online lectures have effectively used audio-visual aids. Nchindo et al has concluded that higher quality of online tutorials was an important success factor for effective online learning systems. That quality might influence learning style preferences, multimedia design, quality of image and audio, internet speed, or delivery method. They have added that online platform showed a variance on balancing online activities and academic preparation, and distracted students from completing their assignments.[17]

In our study, when all the objectives were collectively analysed, it was found out that live online lectures were significantly better that other three modes of online learning. It is very obvious that online teaching has enabled the continuation of medical education during this unprecedented time. Samiullah Dost et al has opined that even after this pandemic, for team-based / problem-based learning, online teaching platforms can be constructively used. They added that incorporation of online teaching methods within traditional medical education can accompany virtual consultations.[24] Likewise Buzzetto-More and Sweat-Guy has concluded that students' want to see traditional learning supported by e-learning strategies.[23]

This current study has a limitation. This study has investigated the subjective outcome measures, which was limited to students' perception and satisfaction with online learning. Therefore, more studies are needed to investigate success of online learning in relation to knowledge gain, student's performance, teacher attitude, technological-related factors.

CONCLUSIONS

The preferred method for online teaching for phase-1 medical students was online lectures when all variables were analyzed. Important aspects of topics were emphasized, the contents were discovered in a logical sequence, and the audio-visuals were used effectively in live online lectures. Live online lectures aroused interest in the topics and were interactive. All the learning objectives were covered and described very clearly in Power Point presentation with narrations it also helped the students to prepare notes.

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