

## Study about the Perceptions of Online Teaching Compared To Traditional Classroom Teaching Among Third Year Medical Students in the State Of Kerala

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### Abstract

**Introduction:** The COVID 19 pandemic has seen a surge in online classes instead of person to person classes and clinical postings among the Medical colleges in our country.

**Methodology:** Responses from 1002 third year medical students were collected maintaining confidentiality via Google poll, from June 2020 to August 2020 and the data was statistically analyzed.

**Results and Conclusion:** Students are fairly satisfied with the quality of class delivered to them, but they are concerned that the online classes are not sufficient to cover up for the clinical and bedside learning lost due to the lockdown. About 10% of students have accessibility problems.

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**Keywords:** Online classes, e-learning, Medical education, COVID 19 lockdown

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### I. Introduction

Over the past few years, the concept of e-learning has been rapidly accepted as an important component of medical education<sup>1</sup>. e-Learning is not seen as a single entity but rather a combination of teaching methods, such as online lectures, tutorials or virtual case studies<sup>2</sup>. The literature has described a number of advantages of e-Learning including; (a) ease of access, (b) increased flexibility of student learning, (c) increased interactivity between educators and students, (d) decreased content review times and (e) opportunity for immediate self-assessment<sup>3,4,5,6</sup>. Furthermore, online E-Learning resources are designed to improve the ease of access of medical knowledge to all medical students, as they are universally available regardless of geographic location or time limitations. There are studies in the literature that discuss the effectiveness of online courses versus traditional classroom instruction. The general consensus is that both can be effective teaching modalities and that students often test at least as well, if not better in the digital environment<sup>7</sup>.

The COVID pandemic has seen a surge in online classes instead of person to person classes and clinical postings among the Medical colleges in our country. The lockdown which was imposed to control the pandemic necessitated that the medical colleges in our country suspend clinical postings and initiate online teaching sessions, since the affiliated hospitals changed to 'essential services only' mode to support the efforts by the authorities.

Kerala is one of the densely populated states in Southern India. First case of COVID 19 was reported in the state on 30<sup>th</sup> January 2020 in Thrissur District. The health care system in the state expected a surge in the number of cases since then and geared up accordingly. The medical colleges in the state suspended classroom teaching, clinical postings of medical students and started online classes as an anticipatory precaution by the month of March 2020.

Most of the published studies are from countries where online classes have already been incorporated in teaching. In contrast, majority of the medical students in India are only exposed to traditional classroom teaching and clinical postings. The introduction of online teaching is essentially a new form of learning for them. Existing literature focuses on comparison of the efficacy of online teaching and traditional classroom teaching by evaluating the performance of students using an examination or OSCE (The objective structured clinical examination). As a preliminary step in exploring the various aspects of this relatively new method of online teaching, we decided to enquire regarding the perceptions about online classes among the third-year

medical students in the state of Kerala. We intended to identify the difficulties and challenges faced by the students in attending online sessions, as well as to find out whether the students perceived these online sessions as beneficial or not.

## **II. Objectives:**

To study the

- a. accessibility to online classes and
  - b. perceptions about online classes
- among third year medical students in Kerala.

## **III. Methodology**

A standardized custom-made questionnaire consisting of 27 questions was circulated among the third-year medical students of (33 medical colleges) Kerala state as a Google form and response was evaluated. The questionnaire contained items pertaining to ease of access to online classes, feedback regarding classes already attended and suggestions from the students regarding any changes required in the current method of online classes. The questionnaire was reviewed and validated by two senior Professors with more than 20 years of teaching experience in Government Medical Colleges. The study was formally approved by the institutional research and ethics committees. Consent was taken at the beginning of the survey and data was collected from only those who were willing to join the study. Anonymity of responses was ensured and no details were collected during the survey which could trace the response to a particular participant in any manner. A total of 1002 responses were obtained and the data was statistically analyzed.

### ***Inclusion criteria:***

- Third year MBBS students in the state of Kerala, who have attended online classes and are willing to join the study.

### ***Exclusion criteria:***

- Students pursuing courses other than MBBS or currently not a third-year student.
- Students who have not attended any online class.
- Students who are not willing to join the study. And,
- Students who did not respond to the questionnaire.

### ***Study Period:***

The study was conducted from May 2020 till August 2020

## **IV. Results**

A total of 1002 students participated in the study out of 1310 students approached (from 33 medical colleges in the state – both Government and Private) - the total response rate was 76.49%. 560 (55.89 %) participants were from Government medical colleges in the state while 442 (44.11 %) were from private medical colleges across the state.

### ***Age and Gender distribution:***

The average age of the participants in the study was 21.86 years, (Range: 21 – 25 years). The majority of the participants in the study were females (700 – 69.86 %) as compared to males (302 – 30.14 %).

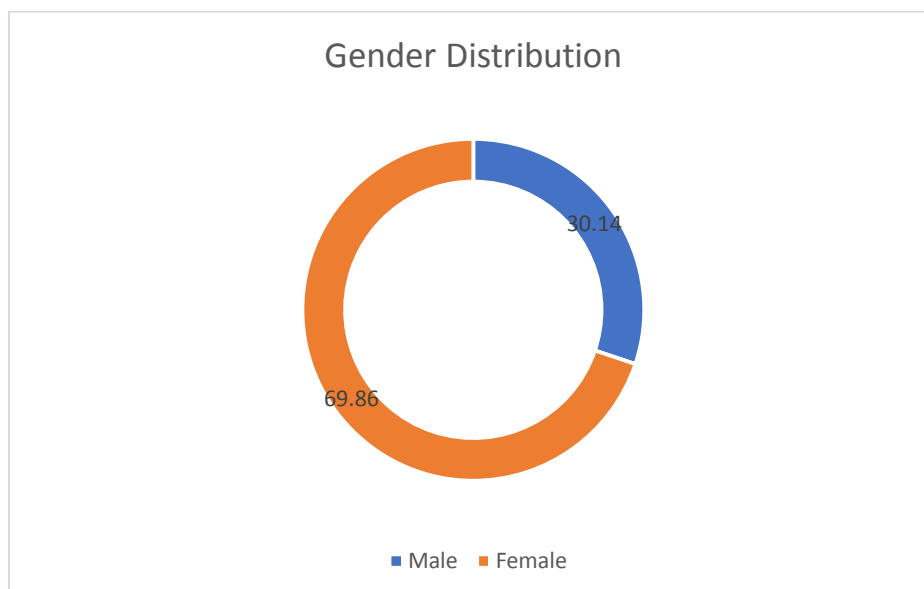


Figure 1: Gender distribution among the study participants

**Accessibility to internet and classes:**

895 (89.32%) participants said that they can attend the internet with ease, while the rest (10.68%) opined they are finding it difficult to do so.

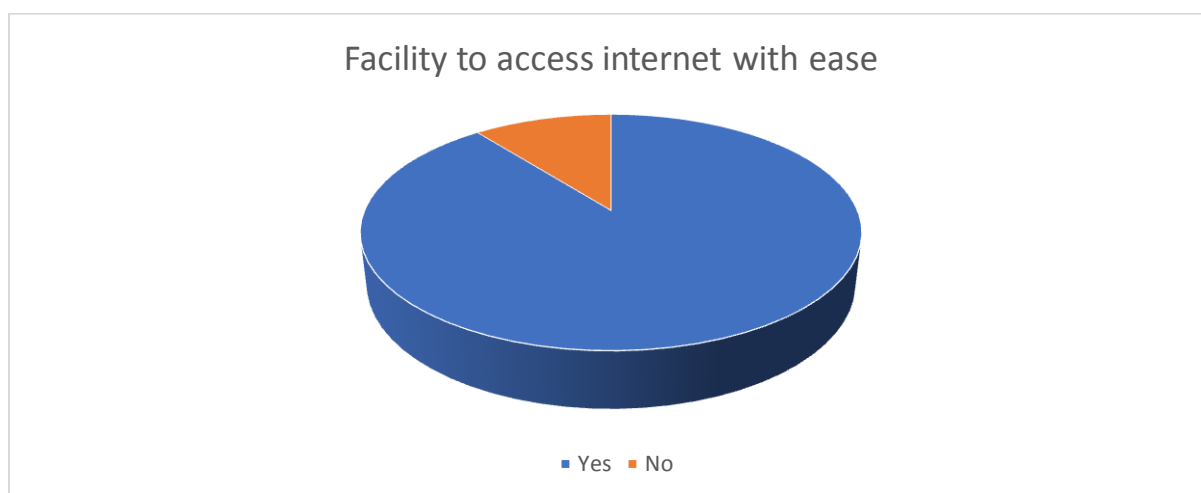
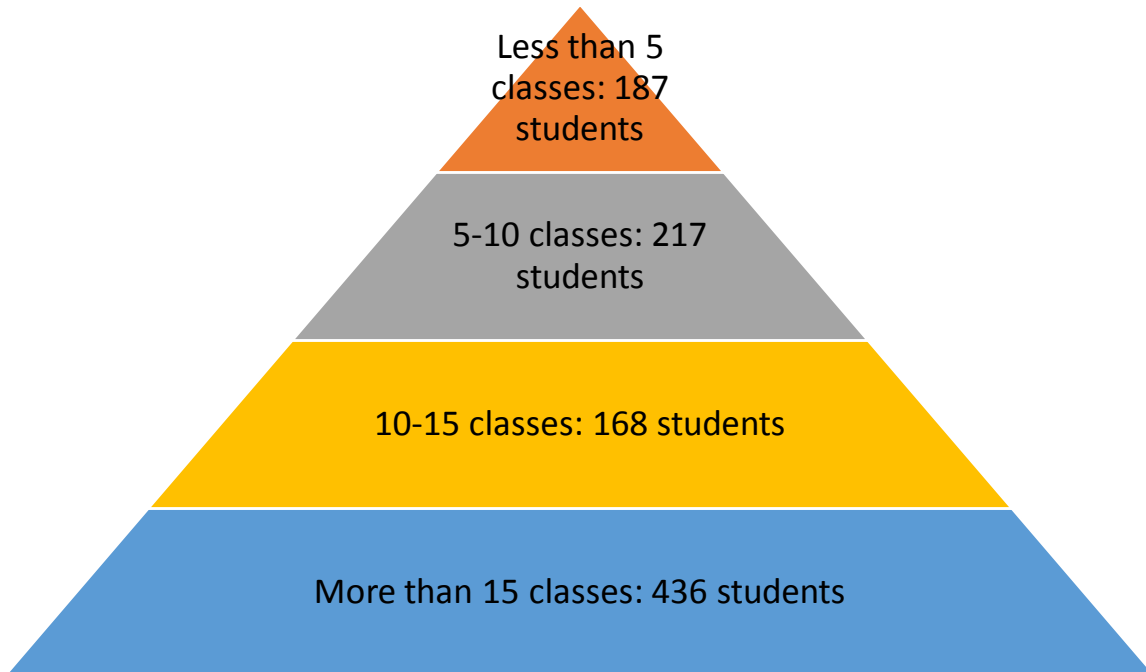


Figure 2: Facility to access internet with ease

Majority (967 = 96.5%) attended the classes from home, while the rest attended classes from friends or relatives house (20 = 1.99%). 15 students (1.5%) says that they are not being able to attend the classes.

**Number of classes attended:**

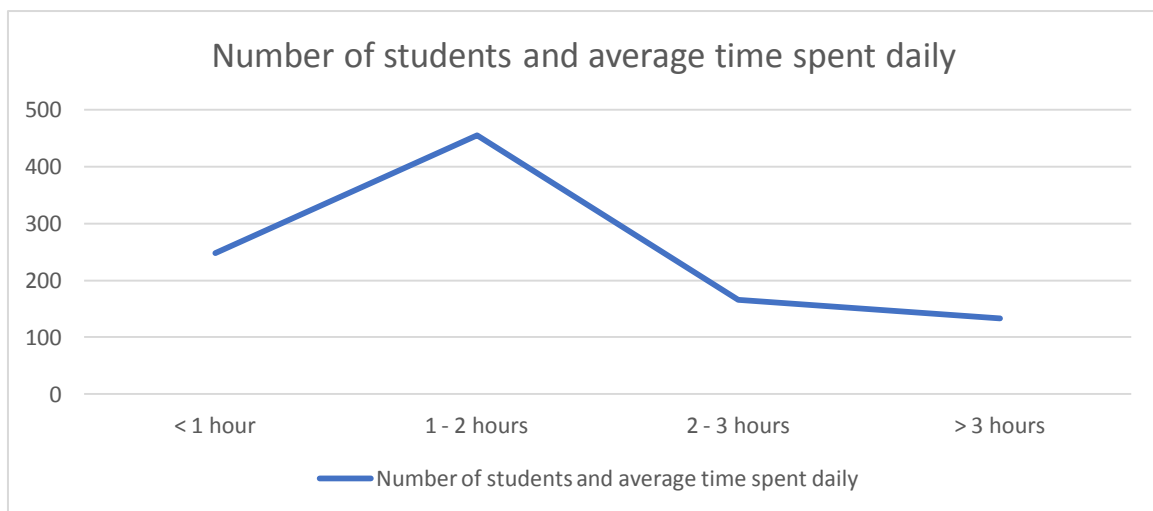
436 (43.51%) students had attended more than 15 classes, 168 (16.77%) students attended between 10 to 15 classes, 217 (21.66%) students attended between 5 to 10 classes, while 181 (18.06%) students had attended only less than 5 online classes at the time of the study.



**Figure 3:** Number of online classes attended

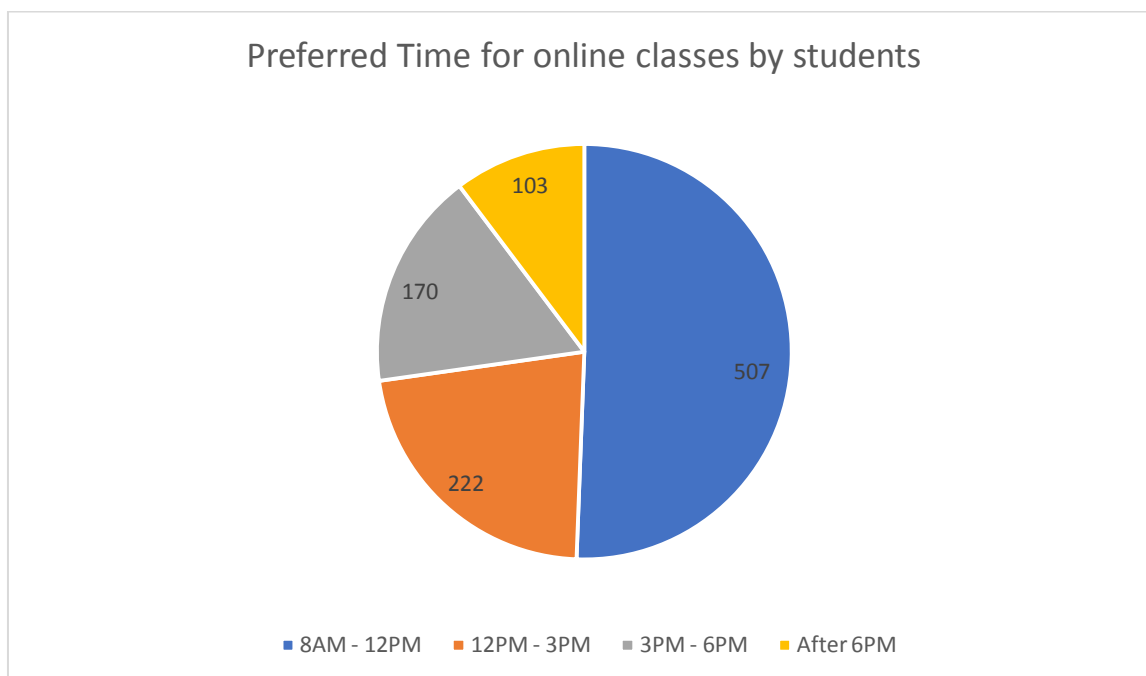
***Preferred time for the session by the students and average time spent daily for the classes;***

455 (45.41%) students spent 1-2 hours daily for online classes, while 248 (24.75%) students spent less than one hour daily, 166 (16.57%) students spent 2-3 hours daily for online classes and 133 (13.27%) students attend more than 3 hours per day.



**Figure 4:** Average time spent daily by students for attending online classes

507 (50.6%) students prefer online classes between 8AM to 12PM, while 222 (22.15%) students prefer classes between 12PM – 3PM, 170 (16.97%) students prefer classes between 3PM to 6PM and 103 (10.28%) students preferred classes after 6PM.



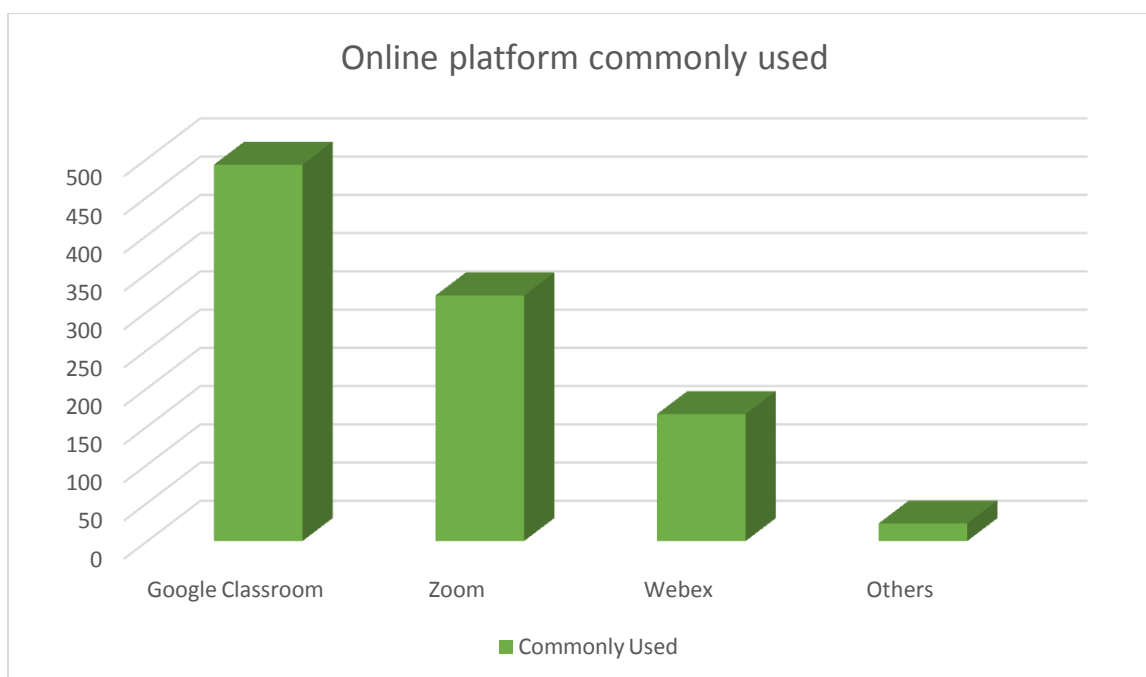
**Figure 5:** Preferred time for online classes by students

**Access and mode of access:**

967 (96.5%) students can access the class from their home, while 2.6% (26 students) access from their friends or relative house, and 0.9 % (9 students) of the study population are not able to attend online classes.

**Online platform commonly used:**

49.12% (492 students) use Google classroom, 32.04 % (321 students) use Zoom, 16.57% (166 students) use Webex, while 2.3 % (23 students) use other platforms namely Skype, Moodle, YouTube, Microsoft teams, Big market webinar, Google duo and WhatsApp.



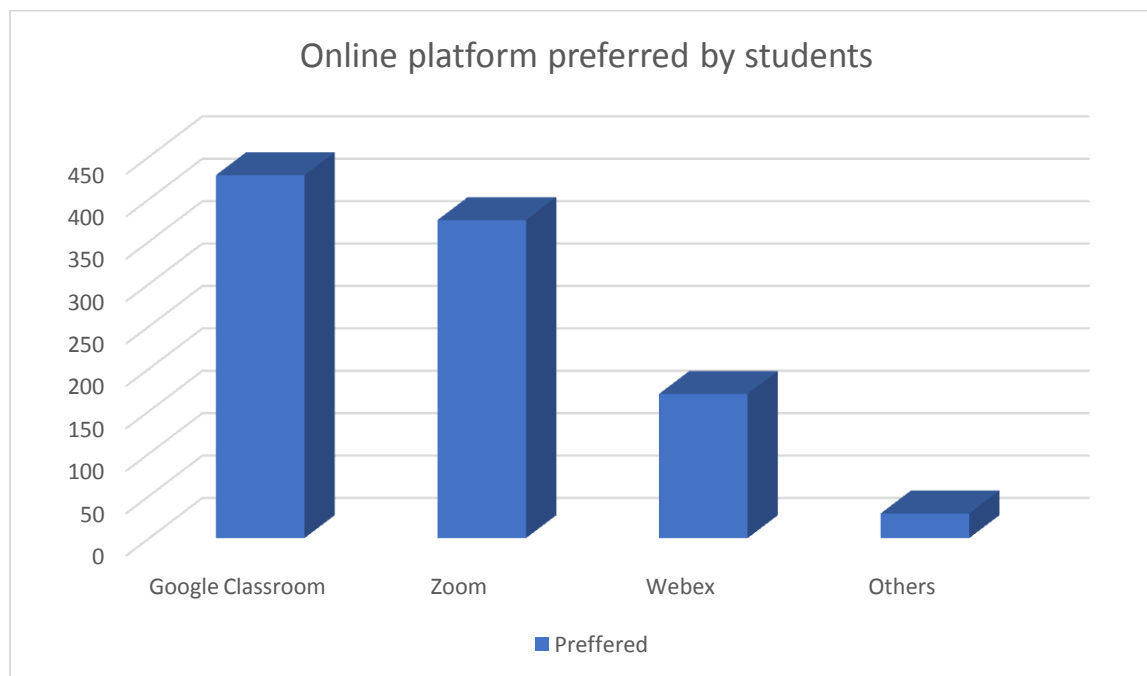
**Figure 6:** Online platform commonly used

**Online platform preferred by students:**

42.71% (428 students) prefer Google classroom, 37.43 % (375 students) prefer Zoom, 16.97% (170 students) prefer Webex, while 2.9 % (29 students) prefer other platforms namely Skype, Moodle, YouTube, Microsoft teams, Big market webinar, Google duo and WhatsApp.

The major reasons for their preference include low data usage, able to attend live classes, easy access, chance of interaction with the teacher, and good audio clarity.

53% wanted attendance for online classes to be considered, while the rest 47% were of the opinion that attendance need not be taken for the online sessions.



**Figure 7:** Online platform preferred by students

**Opinions regarding the presentation:**

The following questions were given to the study population to understand their perceptions regarding the presentations / online classes already attended. The data obtained is as described in the following table. (Table 1, Table 2, Figure 8, Figure 9). One of the major drawbacks pointed out was that the time available for taking down notes during the session was limited. 89% of the study subjects preferred to see the presenter live during the sessions while the rest 11% did not consider seeing the presenter live as a major requirement.

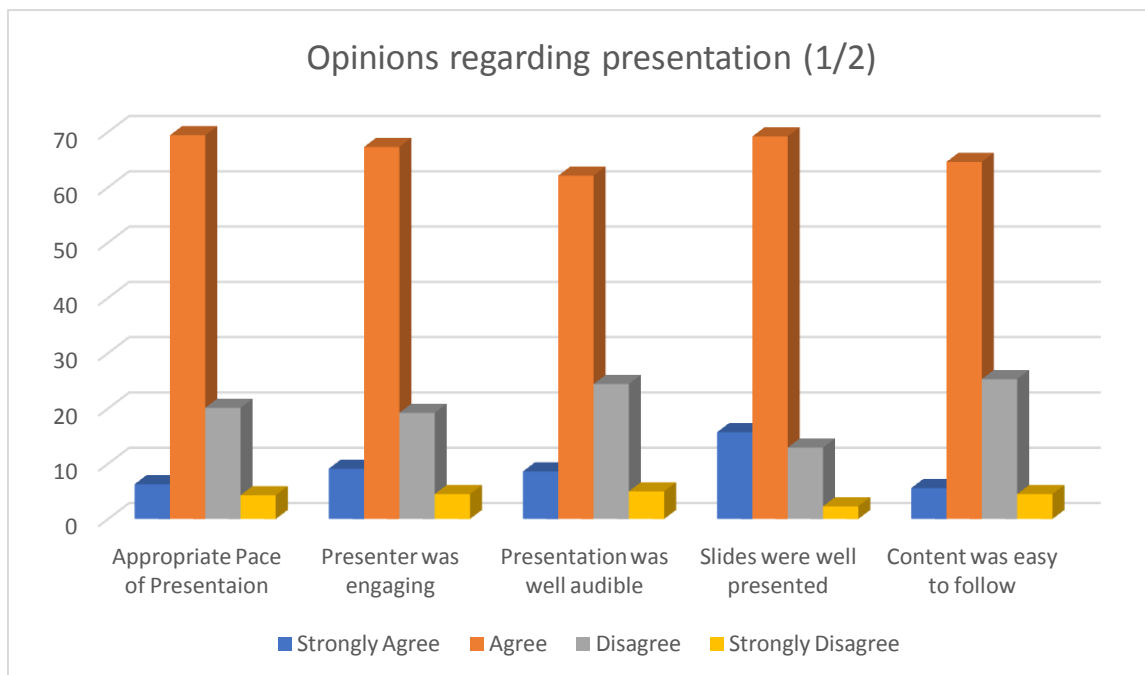
Questions	Strongly Agree	Agree	Disagree	Strongly disagree
The pace of the presentation was appropriate	63	695	201	43
The presenter was engaging	91	674	192	45
Presentation was well audible	86	622	244	50
Slides were well presented	157	693	129	23
Content of the presentation was easy to follow	56	647	254	45
Planned topics were covered during each session	132	724	118	28
There was ample time to take down notes	60	384	446	112
Presenter was well prepared and was able to answer queries	161	717	94	30
There was ample time for doubt clearance	108	597	230	67

**Table 1:** Opinions regarding the presentation (Data in number of students)

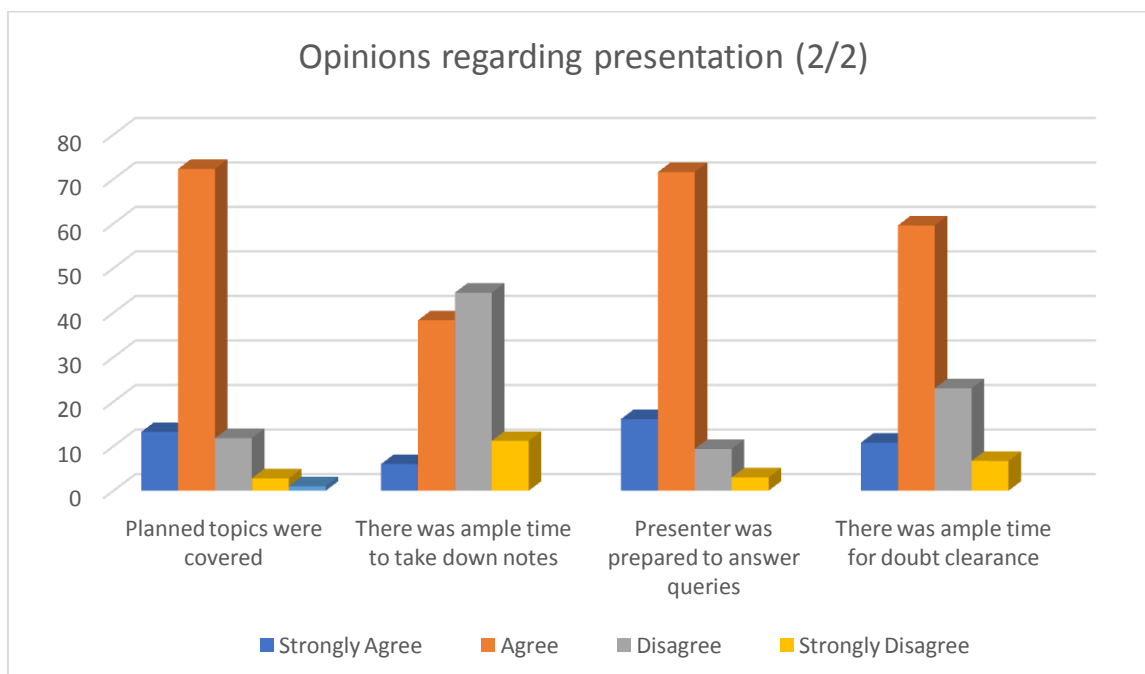
Questions	Strongly Agree	Agree	Disagree	Strongly disagree
The pace of the presentation was appropriate	6.3%	69.4%	20.1%	4.3%
The presenter was engaging	9.1%	67.3%	19.2%	4.5%
Presentation was well audible	8.6%	62.1%	24.4%	5%
Slides were well presented	15.7%	69.2%	12.9%	2.3%
Content of the presentation was easy to follow	5.6%	64.6%	25.3%	4.5%
Planned topics were covered during each session	13.2%	72.3%	11.8%	2.8%
There was ample time to take down notes	6%	38.3%	44.5%	11.2%
Presenter was well prepared and was able to answer queries	16.1%	71.6%	9.4%	3%

There was ample time for doubt clearance	10.8%	59.6%	23%	6.7%
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**Table 2:** Opinions regarding the presentation (Data in percentage)



**Figure 8:** Opinions regarding presentation (1/2)



**Figure 9:** Opinions regarding presentation (2/2)

**Session length and attention span:**

78% (9.5% strongly agree, 68.5% agree) of the study subjects were of the opinion that the session length was appropriate, while 22% (18.2% disagree, 3.9% strongly disagree) did not agree to that.

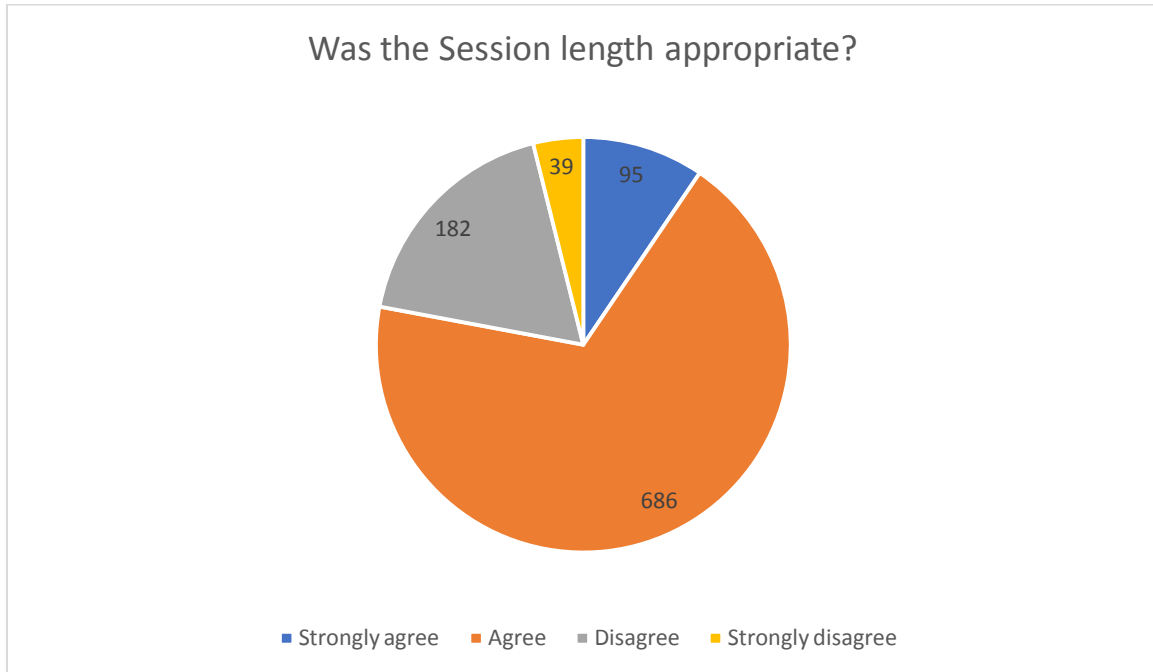


Figure 10: Opinion regarding session length

4.9% (49 students) were able to keep good attention span for beyond one hour for each classes while 43.9% (440 students) were able to concentrate fully for 40 minutes to one hour, 35.3% (354 students) were able to concentrate fully for 20 minutes to 40 minutes and 15.9% (159 students) were able to concentrate fully for only less than the initial 20 minutes of the classes. 57.2% (573 students) prefer session length between 40 minutes to one hour, while 42.2% (423 students) prefer session length between 20 minutes to 40 minutes, 3.9% (39 students) preferred session length less than 20 minutes and 2.7% (27 students) preferred session lengths beyond one hour.

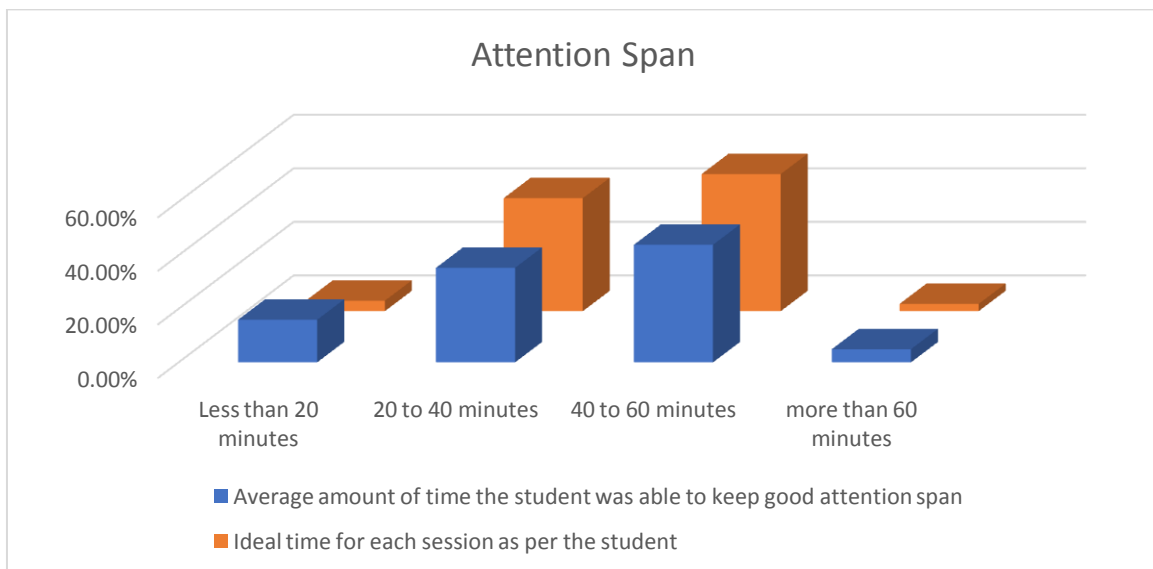


Figure 11: Attention span

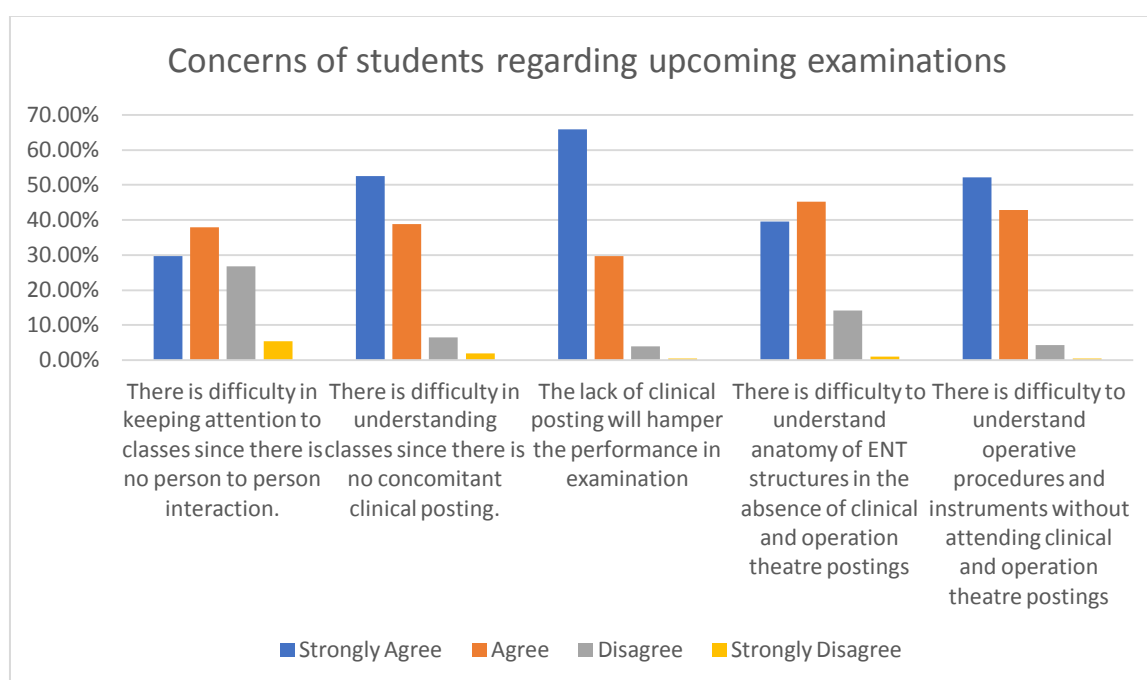
**Concerns of students regarding their performances in the upcoming examinations after attending online classes:**

The following questions were given to the study population to understand their perceptions regarding their performance capability in the upcoming examinations after attending online classes. The data obtained is as described in the following table and figure. (Table 3, Figure 12).



Questions	Strongly Agree	Agree	Disagree	Strongly disagree
There is difficulty in keeping attention to classes since there is no person to person interaction.	298 (29.7%)	381 (38%)	269 (26.8%)	54 (5.4%)
There is difficulty in understanding classes since there is no concomitant clinical posting.	526 (52.5%)	390 (38.9%)	66 (6.6%)	20 (2%)
The lack of clinical posting will hamper the performance in examination	660 (65.9%)	298 (29.7%)	39 (3.9%)	5 (0.5%)
There is difficulty to understand anatomy of ENT structures in the absence of clinical and operation theatre postings	396 (39.5%)	453 (45.2%)	142 (14.2%)	11 (1.1%)
There is difficulty to understand operative procedures and instruments without attending clinical and operation theatre postings	523 (52.2%)	430 (42.9%)	44 (4.4%)	5 (0.5%)

**Table3:** Questions regarding concerns of students with respect to their upcoming examinations



**Figure 12:** Questions regarding concerns of students with respect to their upcoming examinations

## V. Discussion

The COVID 19 pandemic has, among other things, raised a major challenge to the medical education system – to teach the vast number of medical students while keeping safe social distance and preventing spread of infection.

Online teaching for medical students is a novel concept in the Kerala with lots of potential for improvement. Neither the students nor their teachers have much experience in online teaching. In this study, the majority participants were females (69.86 %) with almost comparable participation from students belonging to both government and private medical college in the state (55.89% and 44.11% respectively).

10.68% of the study participants find it difficult to attend these online classes due to technical difficulties. Considering the number of medical students in the state (approximately 15200 students), it projects to a large number of students. Majority of the students (45.41%) spent 1-2 hours daily for online classes. 50.60% participants prefer classes between 8AM to 12PM. The most common online platform used and preferred by the participants of the study was “Google classroom”. The major reasons for their preference include low data usage, able to attend live classes, easy access, chance of interaction with the teacher, and good audio clarity.

Students are fairly satisfied with the quality of classes delivered to them via online albeit for the fact that they find it little more difficult to take down notes during the online sessions. A study by Buch et al.<sup>8</sup> compared video and illustrated text-based e-Learning in the teaching of Dix-Hallpike maneuver, where students who watched the examination video performed better than those who read the online illustrated textbook for

both the primary and follow-up assessments. Shippey et al.<sup>9</sup> found that students had improved knowledge retention when a training video was used to supplement face-to face teaching in subcuticular suturing.

Online classes offer the advantage of repeated access to the classes by students whenever required. Steedman et al. compared student education on acute eye conditions through video or textbook-based learning, and found that both groups performed equally well on multiple choice assessment despite less time spent studying from the video compared to textbook reading<sup>10</sup>.

In this study, 70.36% students have opined that there was ample time for doubt clearance during the online classes. A study by Ravindran et. al.<sup>11</sup> found that students felt more comfortable asking questions in the forum (online class) than in the wards / rounds. 43.90% of students reported that they were able to pay attention to the class for about 40 minutes to one hour and 57.20% of the participants prefer session length between 40 minutes to one hour. In a study done by Stuart et. al.<sup>12</sup>, the attention span of a medical student was found to be optimal for the first 20 minutes, beyond which it rapidly declined.

Modern medicine training involves bedside clinics and small group discussion apart from lecture classes. It is not easy to deliver such sessions via online teaching alone. The participants in the study are fairly concerned that the lack of clinical posting will hamper their performance in upcoming examinations. Brockfeld et.al.<sup>13</sup>, in his study on comparative evaluation of lecture types observed that, video and live lectures are equally effective in preparation for the clinical part of the medical exams. Video lectures offer many benefits for the students and for the faculties, and may complement and partly replace conventional live events.

One of the major disadvantages of online learning is that it requires a major motivation from the student side. Internet connectivity and data usage is the other major concern. Brady et al.<sup>14</sup> compared the skill acquisition for FEES (Functional endoscopic evaluation of swallowing) after e-learning and traditional classroom learning. The study observed that while both course delivery methods yielded similar gains, the online course offered some additional advantage over the face to face course. First, the online course participants could select a learning time that was convenient to their schedule as multiple training times were offered and the learner could select a time convenient to his or her schedule. Learner readiness is an important component of the learning process. Second, the online participants could also control the media in the course and control the pace of the course versus having to ask the instructor to replay the video clip.

One of the suggestions we would like to propose is that more and more teaching videos may be prepared by expert faculty and be made available to the students. The Government / University may consider putting up a study platform for the students. Proper planning of the assessment by the institution would be very helpful. The use of blended classroom strategies is another suggested option<sup>15</sup>.

The value of a proper medical education cannot be over emphasized, previous experiences due to negative patient-doctor interactions, should be included in the curriculum to promote dialectic learning and there by providing scaffolding to the medical student to learn from observation and then to practice it in real life with colleagues and seniors<sup>16</sup>.

## **VI. Limitations**

The present study has taken into account only the opinions reported by the students regarding the classes already attended by them. No attempts were made to objectively evaluate impact of online learning on their performance in examinations. The data collected is limited to the third year MBBS students.

## **VII. Conclusion**

The COVID-19 pandemic is posing challenges to our health care system. Ensuring effective training to medical students in the present scenario is one such challenge for medical teachers. The conventional teaching methods like lecture classes or bedside clinics are practically impossible in view of need for safe social distancing, a significant decrease in the number of patients attending medical college hospitals at present and the fact that students have been sent back to their home in view of closing down of hostels. Online teaching, a relatively novel concept in the context of medical education in Kerala, can take care of theory classes for medical students despite challenges posed by logistical issues like internet connectivity. Sufficient modifications are however necessary in providing bedside clinical teaching to medical students using online platforms alone. This has to be taken up as a challenge by the medical teachers and appropriate support from the Health University and Medical Colleges would be a great help to students and teachers alike.

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