

Perception of MBBS students of online teaching learning modalities in undergraduate medical education during COVID-19 pandemic

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Abstract.

Background: The current COVID-19 pandemic has created the largest disruption of education systems in history. The entire educational system has suffered a drastic setback during the COVID-19 pandemic, not only in India but across the globe. The pandemic situation has paved the way for the education system to evolve, with the distinctive rise of e-learning. **Methods:** This Questionnaire based Cross-sectional Perception survey was executed through Google Forms on a 5-point Likert scale involving 100 Final year MBBS students who had been subjected to a minimum of 3-4 months of online teaching. A pre-validated semi-structured self-administered questionnaire with 12 items was shared with study participants to assess perceptions towards online teaching. **Results:** 70% of students found online teaching enjoyable but half of the students felt more distracted due to lack of interactivity and personal attention in the online sessions. One-third of students felt that online modalities can be used as effective learning tools in terms of better understanding, and 46% felt that their use can improve academic performance. More than 40% believe that the online teaching was a temporary arrangement during the Pandemic situations and could never be a substitute for the conventional teaching. **Conclusion:** Online teaching which was incorporated into medical education as a temporary arrangement during the COVID era despite several challenges has succeeded to some extent in imparting the requisite knowledge. Though e-learning may not replace conventional teaching modalities like didactic Lectures but can play a significant role as an adjuvant learning tool.

Keywords: COVID-19 Pandemic, Perception survey, Medical Education, Likert scale, Online teaching, Questionnaire.

Abstract: Antecedentes: La actual pandemia de COVID-19 ha creado la mayor disrupción de los sistemas educativos en la historia. Todo el sistema educativo ha sufrido un revés drástico durante la pandemia de COVID-19, no solo en la India sino en todo el mundo. La situación de pandemia ha allanado el camino para que el sistema educativo evolucione, con el distintivo auge del aprendizaje electrónico. Métodos: Esta encuesta de percepción transversal basada en cuestionarios se ejecutó a través de Formularios de Google en una escala Likert de 5 puntos en la que participaron 100 estudiantes de MBBS de último año que habían estado sujetos a un mínimo de 3-4 meses de enseñanza en línea. Se compartió con los participantes del estudio un cuestionario autoadministrado semiestructurado prevalidado con 12 ítems para evaluar las percepciones hacia la enseñanza en línea. Resultados: El 70% de los estudiantes encontró agradable la enseñanza en línea, pero la mitad de los estudiantes se sintieron más distraídos debido a la falta de interactividad y atención personal en las sesiones en línea. Un tercio de los estudiantes sintió que las modalidades en línea se pueden utilizar como herramientas de aprendizaje efectivas en términos de una mejor comprensión, y el 46% sintió que su uso puede mejorar el rendimiento académico. Más del 40% cree que la enseñanza en línea fue una medida temporal durante las situaciones de pandemia y nunca podría sustituir a la enseñanza convencional. Conclusión: La enseñanza en línea, que se incorporó a la educación médica como una medida temporal durante la era de COVID a pesar de varios desafíos, ha logrado hasta cierto punto impartir el conocimiento

necesario. Aunque el aprendizaje electrónico puede no reemplazar las modalidades de enseñanza convencionales como las conferencias didácticas, puede desempeñar un papel importante como herramienta de aprendizaje complementaria.

Keywords: Pandemia COVID-19, Encuesta de percepción, Educación médica, Escala Likert, Enseñanza en línea, Cuestionario.

1. Introduction

The COVID-19 pandemic has disrupted the education systems, drastically affecting about 1.5 billion students in 200 countries. The entire educational system from primary to quaternary level including higher professional studies has suffered a drastic setback during the COVID-19 pandemic, not only in India but across the globe (1). The pandemic situation has paved the way or rather forced the education system to evolve, with the distinctive rise of e-learning, whereby online teaching is undertaken using digital platforms/tools. But, the aftermath of COVID-19 crisis, online education became a pedagogical shift from traditional method to the modern approach of teaching-learning from classroom to Zoom, from personal to virtual and from seminars to webinars (1-3).

The experiences gathered during the pandemic crisis have led educationists to make sincere and aggressive efforts to re-examine, revamp, and rebuild our education system to function at its maximal potential during unfavorable situations. These adverse circumstances have led to almost collapse of the educational system and adopting an online mode for teaching was the only survival strategy. Having seen the fearsome monster of Coronavirus, it can be anticipated that in the upcoming time, students will face multiple challenges of educational hardships. Hence, the tentative solution is to maintain the equilibrium of online and offline learning classes (hybrid mode). This situation crisis has opened newer opportunities to dive into the unexplored areas of technology-based medical education. After the COVID-19 era, transformative changes are expected in medical education through the use of emergent technology (1,4-5).

There is a need to evaluate various aspects of e-learning in medical education especially the perceptions of the students who are one of the most important impacted stakeholders. Since no such studies have been conducted in the medical institutes of Central India during the COVID-19 pandemic and in the post-COVID phase, such studies are the need of the hour to formulate educational policies and strategies, especially in the current scenario. So, this survey was planned and conducted to analyze the perceptions and opinions of medical students toward online teaching. The objectives are to determine perceptions and opinions of MBBS students regarding online teaching-learning modalities, and to identify the challenges in adapting the online teaching-learning modes during the COVID-19 pandemic.

2. Methods

Study design: A non interventional Questionnaire Cross-sectional Perception survey executed through Google Forms on a 5-point Likert scale. **Sampling & sample size:** 100 Final year MBBS students who had been subjected to 3-4 months of online teaching were recruited for the study through purposive sampling. (Sample size is determined by a sample-to-item ratio based on the number of items in a study. The ratio should not be less than 5:1. So, in this survey comprising 12 items, the minimum sample size should be 60). **Study tool:** Semi-structured pre-validated Questionnaire administered as Google form. The questionnaire was designed on the basis of relevant literature after an extensive literature review and discussion with the subject experts. Questions were checked for their relevance, rationality, clarity, and understandability before their final use in the survey. Participation in this survey is solely voluntary and only after seeking written informed consent from study subjects. Participants were sensitized regarding the content/purpose of the study before the study. The confidentiality regarding the identity and personal details of study participants was maintained throughout the study.

Methods of Data Collection and Analysis:

A pre-validated semi-structured self-administered questionnaire with 12 items shared with study participants as Google forms for data collection. Responses elicited for each item meant to assess perceptions towards online teaching as strongly disagree, disagree, neutral, agree, and strongly agree on a Likert scale with scores ranging from 1 to 5 points respectively. For the questions reflecting negative perceptions scoring was done in the reverse order. The questionnaires (12 questions) were grouped into four categories such as overall perception of students toward online teaching, quality of online teaching, classroom teaching versus online teaching, and incorporation of online teaching in the medical curriculum. Those with Scales 1 and 2 were clubbed together as one group while those with Scales 4 and 5 responses were considered together as the other group. Those respondents, who had given a scale 3 were considered equivocal and could not be included in either of the two groups and hence were not considered for statistical analysis. These two groups were compared for each of the sub-questions using Spearman's rank correlation coefficient. A p-value of <0.05 was considered to be statistically significant. The positive attitude and negative attitude were classified according to the mean scores of the participants. The data was collected and entered into MS Office Excel and analyzed in the form of percentages and proportions (1, 3, 6-11).

3. Results

A total of 100 medical students participated in this perception survey. All participants had undergone their regular academic sessions through online teaching during the COVID-19 Pandemic. Two-thirds of the respondents were males. The majority of students were well-versed in the usage of smart gadgets like mobile phones, laptops, tablets, etc. Most of the classes were taken through the Zoom platform and a few through Google classroom due to institutional availability issues. Though 70% of students find online teaching enjoyable half of the students felt more distracted and less focussed due to lack of interactivity and personal attention in the online sessions. One-third of students felt that online teaching modalities can be used as effective learning tools in terms of better understanding, 46% felt that their use can improve academic performance, and two-thirds of students found immense scope for improvement and innovation in this field. The majority of students felt that medical learning could be made more feasible, convenient, and flexible by using such platforms/interfaces.

However, a significant proportion of students ($>40\%$) believe that online teaching/e-Learning was a temporary arrangement during the Pandemic situations and could never be a substitute for conventional teaching due to several limitations like technical restraints, less interactivity, and lack of personal attention. The majority of students feel that despite several technical improvements in the learning interphase, online teaching still lags behind conventional teaching in terms of doubt clearing, feedback, and effective assessment of learning. Learning both psychomotor and soft skills could not be effectively accomplished in this mode due to a lack of real-life clinical scenarios (Table 1, Figure 1).

The comparison between two groups, one showing positive perception and the other exhibiting negative view, as compared by using Spearman's rank correlation coefficient [$r_s = -0.90494$, p (2-tailed) < 0.05 ($5e-05$)] reveals a statistically significant difference (e is standard scientific notation for powers of 10).

Table 1. Medical Students' Perceptions regarding online teaching (n=100).

S.No	Question	Strongly agree	Agree	Neutral	Disagree	Strongly disagree	Mean score
1.	Online teaching modalities are quite effective in understanding the topics and conceptualization in medical education	15	23	17	26	18	2.88
2.	Online teaching is a temporary makeshift arrangement during the COVID era and can never replace conventional teaching	18	26	20	21	15	2.89
3.	Technical restraints are a big hurdle in online teaching. It requires technical expertise, IT skills, and resources	17	32	21	22	08	2.72
4.	Online teaching exhibits less interactivity as compared to offline classes.	30	28	10	32	00	2.44
5.	Incorporation of active online teaching learning modalities can improve academic performance.	18	28	24	22	08	3.26
6.	Through online tools, students can learn at any time or any place as per feasibility and convenience (more flexible).	20	56	14	08	02	3.84
7.	The doubts and queries regarding the topic taught can be cleared through online teaching satisfactorily.	8	18	22	36	16	2.66
8.	Feedback could be taken effectively in online teaching.	6	22	20	45	07	2.75
9.	I feel less comfortable and more distracted during online sessions	26	30	10	34	00	2.52
10.	Online sessions lack personal attention	24	32	11	23	00	2.13
11.	There is immense scope for improvement and innovation in online teaching.	26	38	20	14	02	3.72
12.	Skills could not be taught effectively through online sessions.	24	50	16	10	00	2.88

$r_s = -0.90494$, p (2-tailed) < 0.05 (5E-05)

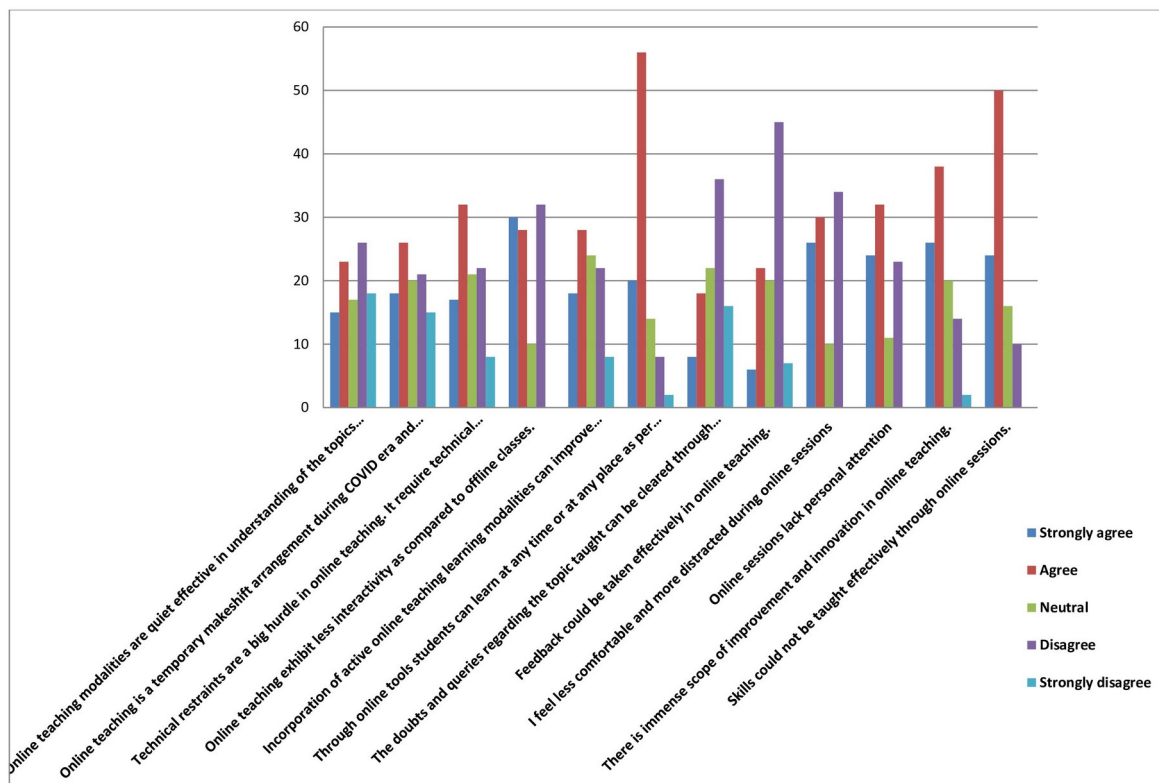


Figure 1. Medical students perception regarding online teaching (5 point Likert scale).

4. Discussion

Similar findings were reported by a number of such perception surveys conducted in different parts of the world during the COVID-19 pandemic. Unlike our study which involved only students as a test group, Mishra L et al 2020 in an exceptional study conducted at Mizoram University, India employed both quantitative and qualitative approaches to study the perceptions of students as well as students on online teaching-learning modes. Most of the teachers felt that faculty can be better motivated for online teaching only if they are convinced of its benefits esp. in the pandemic situations. Like our study where the students highlighted the flexibility aspect of online teaching, here also students opined that the online learning process during COVID-19 had helped them to be in touch with their lessons outside the classroom and created an alternative for completion of the syllabus (1).

In a similar study by Ramachandran K et al 2021, 78% of students found online teaching enjoyable and interesting. In our study, too students have reported better understanding of concepts due to this factor. The most significant challenge faced by the students was the problems associated with internet connectivity, Lack of co-curricular activities, inability to meet and interact with friends, and difficulty in concentrating and keeping focussed on online sessions. This is in accordance with our study where the students have reported technical restraints, lack of interaction, and distractions as chief constraints for online learning.

Like our study which highlighted the positive perceptions of students regarding online teachings like better understanding, easier conceptualization, flexibility, convenience, and better academic performance, in this study, too a majority of students felt that such online teaching programs are greatly beneficial. About 55% of students prefer to have a blend of online and classroom teaching while 22% felt the need for more classroom teaching in the future (12).

In a feedback survey by Kazi M et al 2020, 90.5% of students found Google Classroom to be a relevant online learning platform, 64.3% of participants liked the assignment submissions and 72.2% felt that the knowledge gained in such sessions could be retained, and reproduced easily (8). In line with this study, our study participants also felt that the doubts and queries regarding the topics taught can be cleared satisfactorily through online teaching.

In a study by Joji et al 2022 at Arabian Gulf University, 168 students participated out of which 50.6% preferred face-to-face lab sessions as compared to 30.4% who preferred online labs. 51.8% considered online labs to be an essential addition to face-to-face labs. Among the faculty, 85.7% preferred the conventional teaching. None of the participants liked the idea of replacing conventional teaching with online mode (13). In our study, too most of the participants considered online teaching only as makeshift arrangements during special situations, which can not replace conventional teaching.

An extensive online national survey was conducted by Dost S et al involving 2721 medical students across 39 medical schools focussed on the use and experience of online teaching during the COVID-19 pandemic and Perceived benefits and barriers of online teaching through Qualtrics, an online survey Software. In this study, students didn't find online teaching to be engaging or enjoyable, with limited opportunities to ask questions, and did not find it as effective as classroom teaching (11). Such studies pave the way for AI-assisted surveys for evaluating study tools and teaching modalities.

The main advantages of online teaching appear to be that it saves traveling time/cost, provides flexibility, the ability for students to learn at their own pace, more convenient and comfortable. On the other hand, students reported family distractions, Internet connectivity, anxiety, and lack of space as barriers to effective online teaching (11, 14).

Like our study, in a similar perception survey by Thomas et al 2020 in Kerala, Learning at leisure was the top reason why students liked online classes, whereas network problems were the top reason for disliking the class. Lack of sufficient interaction was another reason why students disliked online learning. More than half the participants disagreed to continue online classes after the pandemic crisis resolves. More than half of the students favoured regular classes over online classes (10). There are several such perception surveys conducted globally but no such studies have been conducted in the medical institutes of Central India during COVID-19 Pandemic and in post-COVID phase. With paucity of such data, such studies are the need of hour to formulate educational policies and strategies especially in the current scenario.

Limitations of the study: Being an intentional sample, it is subject to bias. Neutral responses were excluded from the results as done routinely in such perception surveys, which could lead to certain biases in interpretation limiting the quality of the analysis to some extent.

5. Conclusions

- The findings of this study indicate that online teaching which was incorporated in medical education as a temporary arrangement during the COVID era despite several challenges has succeeded to some extent in imparting the requisite knowledge.
- Though in terms of personal attention, interactivity, participation, and skill training, e-learning may not replace the conventional predominantly practiced teaching modalities like Lectures but they can play a significant role as adjuvant learning tools when blended with traditional teaching; complementing with the latter for enhanced learning experience.
- There is a growing need to explore the prospects of introducing newer interactive online teaching modalities as reinforcers in the learning process. This perception survey paves the way for more extensive studies shortly aiming at comparing conventional teaching tools with interactive online teaching modalities in terms of learning gain.

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