

Research Article

Sustaining Medical Education During COVID-19 Pandemic: Student's Perspective on Online Teaching and Learning in a Tertiary Care Teaching Hospital of Odisha, India

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DOI: <https://doi.org/10.24321/0019.5138.202408>

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How to cite this article:

Sustaining Medical Education During COVID-19 Pandemic: Student's Perspective on Online Teaching and Learning in a Tertiary Care Teaching Hospital of Odisha, India. J Commun Dis. 2024;56(1):43-49.

Date of Submission: 2023-12-20

Date of Acceptance: 2023-03-17

A B S T R A C T

Background: The COVID-19 pandemic has caused a paradigm shift in the medical education system from traditional teaching to distant online teaching. This transition dealt with a lot of infrastructural and technical difficulties at both the teacher's and student's end.

Aim: This study was conducted to analyse the perceptions of medical students on the role of online teaching in facilitating their education.

Materials and Methods: This cross-sectional study was conducted among undergraduate medical students of Srirama Chandra Bhanja (SCB) Medical College, Cuttack, during July and August 2020. The study population comprised medical students from the 2nd, 4th, and 6th semesters. Data collection was done in Google form being circulated by Whatsapp or email to the students enquiring about the perceptions, benefits, and challenges of online classes. Data analysis was done using software IBM SPSS version 21.0. Odds ratio with a 95% confidence interval was calculated for association and $p < 0.05$ was considered statistically significant.

Results: Out of 637 students, 411 (64.5%) found online classes useful to satisfy their educational needs, but a large group of 389 (61.1%) students felt online classes do not help in better understanding. Nearly 60% of students belonging to the 4th and 6th semesters and aged more than 21 years were twice more attentive than students in the 2nd semester. Similarly, half of the students reported being attentive in online classes where they found the teacher to be cooperative with an Odds ratio of 5.04 (CI: 2.6–9.4).

Conclusion: The COVID-19 pandemic has introduced a new normal where online teaching cannot be avoided. Despite challenges faced during online teaching, 64.5% of students found it useful.

Keywords: Medical Education, COVID-19 Pandemic, Perception, Online Teaching

Introduction

Owing to the COVID-19 pandemic, the Government of India withheld classroom teaching in all educational institutions. Medical education faced various challenges in teaching tomorrow's physicians, also it was affected as most teaching hospitals were burdened with COVID-19 load.¹ As there is uncertainty about the duration of this pandemic and social distancing measures are needed for a long, the education of future doctors requires intense and prompt attention.² Thus the Medical Council of India came up with changed guidelines to continue teaching medical students during the COVID-19 pandemic.³

Accordingly, our medical colleges adopted new teaching-learning methods to maintain excellence in medical education and to keep in continuous touch with medical students to keep their faith and confidence in the education system. New adaptations included online learning through different software applications like Zoom, Google Classroom, Google Meets, Microsoft Team, etc. which encouraged students to experience active learning rather than being passive learners.⁴ The conventional modes of learning in medical education, i.e. the classroom lectures and practical classes, provide an effective way to transfer knowledge and skills; but as we cannot continue this, online learning has emerged as an alternative method in this time of unprecedented crisis.^{5,6}

Online teaching has played a key role in medical education over recent years.⁷⁻⁹ A recent systematic review suggested that offline teaching and online teaching are equivalent in terms of outcomes of examinations.¹⁰ The unprecedented COVID-19 pandemic has caused a sudden shift towards the exclusive adoption of online teaching, forming the major source of medical education and enabling students to continue to learn remotely. Nevertheless, learning relying on the Internet needs to be tailored towards different learning styles to enable it to be impactful and effective.¹¹ Concerns have been raised regarding the quality of resources produced during the pandemic due to time constraints, particularly as these resources aim to compensate for lack of exposure.¹² In the current scenario, it is likely that online learning and telemedicine will continue to form vital sources of medical education. Many authors have suggested that digital health platforms for both patients and students will remain an integral part of care even after the COVID-19 pandemic.¹³ Thus having a greater understanding of the perceived advantages and drawbacks will allow medical colleges to improve their method of delivery of online teaching. While many students have acknowledged the impact of the COVID-19 pandemic on their education, to date no study has investigated the outlook of medical students regarding the change in teaching learning patterns.

Therefore we aimed to investigate the perceptions of medical students on the role of online teaching in facilitating their education during the COVID-19 pandemic. This could help medical colleges to develop their curricula better in the future.

Materials & Methods

A cross-sectional study was conducted among undergraduate medical students of Srirama Chandra Bhanja (SCB) Medical College, Cuttack, from July 1, 2020 to August 31, 2020. Permission was taken from the Dean & Principal, SCB Medical College, Cuttack before the commencement of the study as it involved medical students as study subjects. The study population comprised medical students from the 2nd, 4th, and 6th semesters as online classes were started for these students initially. Google Form was created with a set of questions enquiring about the attitude, perceived usefulness, benefits, and challenges of online classes. The Google Form was disseminated via social platform i.e. WhatsApp and with the aid of class representatives, it was circulated among study participants. After disseminating the questionnaire, the students were given a time of 1 month to submit the responses. Submitting the Google Form implied giving consent for participation in the study. Incomplete responses were excluded from the study. So the final sample size came to be 637 (total MBBS students of 3 semesters: 750) which included students who have submitted the completed Google form.

Statistical Analysis

Data collected in Google form was downloaded into a Microsoft Excel spreadsheet and analysed using software SPSS version 21 after cleaning for invalid or incomplete responses. Categorical variables were expressed in terms of proportions and continuous variables as means with standard deviation. The odds ratio was used to measure the difference between the two groups.

Results

The majority of the respondents i.e. 428 (67.2%) were males. Except for four students, the rest 633 (99.4%) students stayed at home with 38% of them living in rural areas. Among 637 students, 232 (36.4%), 204 (32%) and 201 (31.6%) students were from the 2nd, 4th, and 6th semesters respectively. The questionnaire was formulated concerning attitude, perceived usefulness, benefits, and challenges of online teaching. Nearly 9 out of 10 students felt the teachers were cooperative during the online class. However, only 4.7 % students reported of being always attentive in these classes. A large number of students i.e. 55.4% preferred PowerPoint presentations being the most useful media for learning as shown in Table 1.

Table I. Distribution of Various Parameters of Students Regarding Their View Toward Online Teaching

S. No.	Parameters	Values	Number	Percentage
1	Semester	2nd	232	36.4
		4th	204	32.0
		6th	201	31.6
2	Age (year)	> 21	173	27.1
		≤ 21	464	72.9
3	Gender	Male	428	67.2
		Female	209	32.8
4	Place of stay	Home	633	99.4
		Hostel	4	0.6
5	Locality	Urban	395	62.0
		Rural	242	38.0
6	Attentive in class	Always	30	4.7
		Mostly	302	47.4
		Sometime	227	35.6
		Rarely	78	12.2
7	Preferred media for teaching	Text/ PDF	8	1.3
		Powerpoint with audio & video	497	78.0
		Powerpoint only	44	6.9
		Powerpoint with audio	83	13.0
		Links	5	0.8
8	Online classes are useful	Yes	411	64.5
		No	226	35.5
9	Online classes help in better understanding	Yes	248	38.9
		No	389	61.1
10	Online classes help improve performance	Yes	327	51.3
		No	310	48.7
11	Online classes help improve the standard	Yes	266	41.8
		No	371	58.2

During the pandemic, the majority of students i.e. 411 (64.5%) found online classes useful to meet their educational needs. A large group of 389 (61.1%) students felt online classes do not help in better understanding. However, the maximum number of students (73.8%) felt it was not very difficult on the part of teachers to learn the new medium of online teaching.

Although teaching online over various platforms was the need of the hour, this new medium was a path-breaking method in the new era. The potentials, as well as challenges of online teaching, need to be thoroughly judged as it could pave a better way to reach many students easily and

effectively. So, to ponder over the new method of online teaching, various factors have been analysed in the study.

On analysing the attitude of students concerning online teaching, we found nearly 60% of the students belonging to the 4th and 6th semesters and aged more than 21 years were twice more attentive than students in the 2nd semester. Similarly, half of the students were attentive in online classes where they found the teacher to be cooperative with an Odds ratio of 5.04 (CI-2.6–9.4) (Table 2). Almost six out of ten students belonging to the urban area had twice as easy access to the internet for online classes.

Table 2. Association of Parameters Depicting the Attitude of Students Towards Online Teaching with Reported Attentiveness of Students

Parameters	Values	Responses		p Value	Odds Ratio [95% CI]
Attentive					
		Yes n (%)	No n (%)		
Semester	(6th, 4th) 2nd	238 (58.8) 94 (40.5)	167 (41.2) 138 (59.5)	< 0.0001	2.09 [1.5–2.9]
Cooperative Teacher	Yes No	319 (55.8) 13 (20.0)	253 (44.2) 52 (80.0)	< 0.0001	5.04 [2.6–9.4]
Age (year)	> 21 ≤ 21	107 (61.8) 221 (47.6)	66 (38.2) 243 (52.4)	0.0015	1.78 [1.24–2.5]
Place	Urban Rural	251 (63.5) 118 (48.8)	144 (36.5) 124 (51.2)	0.0003	1.83 [1.32–2.53]

Students were interviewed about the perceived usefulness of online teaching. Almost 70% of students who reported being attentive, found online classes nearly 15 times more useful as compared to those who were not attentive. Similarly, those students aged more than 21 years

reported better understanding, improved performance, and standards with the help of online classes with an odds ratio of two (Table 3). Moreover, those who found online classes useful had a better understanding of the content of the class and documented improved performance.

Table 3. Association of Various Parameters Depicting Perceived Usefulness of Online Teaching with Reported Attentiveness, Better Understanding, and Improved Performance and Standard of Students

Parameters	Values	Responses		p Value	Odds Ratio [95% CI]
Attentive					
		Yes n (%)	No n (%)		
Age	>21 yr ≤21 yr	107(61.8) 221(47.6)	66(38.2) 243(52.4)	0.0015	1.78 [1.24-2.5]
Usefulness	Yes No	298 (72.5) 34 (15.0)	113 (27.5) 192 (85.0)	< 0.0001	14.89 [9.7–22.7]
Better understanding					
Age (year)	> 21 ≤ 21	90 (52.0) 159 (34.3)	83 (48.0) 305 (65.7)	0.0001	2.08 [1.45–2.90]
Usefulness	Yes No	237 (57.7) 11 (4.9)	174 (42.3) 215 (95.1)	< 0.0001	26.62 [14.08–50.32]
Improved performance					
Age (year)	> 21 ≤ 21	112 (64.7) 214 (46.1)	61 (35.3) 250 (53.9)	< 0.0001	2.14 [1.49–3.07]
Usefulness	Yes No	308 (74.9) 19 (8.4)	103 (25.1) 207 (91.6)	< 0.0001	32.57 [19.36–54.8]

Improved standard					
Age (year)	> 21	102 (59.0)	71 (41.0)	< 0.0001	2.60 [1.82–3.70]
	≤ 21	165 (35.6)	299 (64.4)		
Usefulness	Yes	235 (57.2)	176 (42.8)	< 0.0001	8.39 [5.48–12.86]
	No	31 (13.7)	195 (86.3)		

Table 4. Benefits and Challenges as Perceived by Students Towards Online Teaching

S. No.	Benefits	Number	Percentage
1	Cost-effectiveness of online education	397	62.3
2	Flexibility in the timing of classes	342	53.7
3	Able to learn at your own pace	321	50.4
4	Easy recording of the class for further reference	217	34.1
5	More content regarding the particular subject of interest	158	24.8
Challenges			
1	Lack of internet connectivity	381	59.8
2	Technical failure	375	58.9
3	Distractions at home	309	48.5
4	Visual fatigue	284	44.6
5	Lack of face-to-face interaction	268	42.1
6	Academic dishonesty	211	33.1

The benefits of online teaching recognised by students were the cost-effectiveness of online education and flexibility in the timing of classes as stated by 62.3% and 53.7% of students respectively. During the time of the pandemic, teaching students online had many challenges although it was the only option left. The majority of inconveniences faced by students in online classes were limited internet access (59.8%), frequent technical failure (58.9%), lack of face-to-face interaction (42.1%), distractions at home (48.5%), visual fatigue (44.6%) and academic dishonesty (33.1%) as shown in Table 4.

Discussion

There is a paradigm shift in the teacher and student mindset due to the COVID-19 pandemic. The pandemic has forced educational reformers to make rapid preparations and radical adjustments in such a short period. At this crucial juncture, when the whole world is fighting to combat the deadly virus, the onus is on the academicians to keep the process of teaching and learning continuous, effective, and uninterrupted. This questionnaire-based study gives

us an understanding of the perception of medical students regarding online education. 63.5% of students found online education to be useful. The remaining 35.5% either disliked it or found it not useful. This implies that medical students have adapted themselves so fast to the innovations in medical teaching. 78% of the students find it comfortable to have the online teaching sessions on PowerPoint with audio and video, as regular classroom teaching also takes place by using PowerPoint presentations. This finding is similar to a study conducted in Chennai, Tamil Nadu.¹⁴

Sloan and Lewis observed that the recent advances in the field of innovative technology have made a significant improvement in the learning experience of students in the last few years.¹⁵ The students find online education as a useful tool for distance learning. Lucieer et al. and Kim et al. observed that this form of self-regulated learning would offer a tremendous boost to the academic performances of medical students.^{16,17} This finding is in agreement with our study where 51.3% of students believed that online education improved their academic performance.

When each of the challenges faced by students was critically analysed, limited internet access poses a real challenge to many students. As online teaching goes on live streaming, several students face either a disruption in audio or video connectivity. This is followed by distractions at home and a lack of face-to-face interaction with the teachers. A similar study by Longhurst et al. observed a lack of practice sessions and difficulty in maintaining student-teacher relationships during online teaching as the major challenges.¹² Long screen time leading to visual fatigue was one of the concerns for the students in our study. A similar challenge was reported by another study.¹⁸ This also led to reduced concentration in class. The optimum duration of a session or class of 30 min will help improve the attention span of students and also reduce screen time at a stretch.¹⁹

This study has shown that the usefulness of online teaching as perceived by students was comparable to that of multiple previous studies.^{20,21} Rajab et al. observed that good teaching is always good teaching irrespective of whether it happens face-to-face or online.²² In our study, a majority of students found online teaching beneficial because of its cost-effectiveness, flexibility in the timings of class, learning at your own pace, and easy recording of the class for further reference.

Limitations of the Study

The limitation of the study was that the study was conducted in a single centre. A multicentric study could have led to more generalisable results.

Conclusion

The COVID-19 pandemic has been an eye-opener for the medical education system, as the need for a more sound and robust system was recognised to overcome the challenges faced at present and in the future. The pandemic has introduced us to a new normal where online teaching and learning cannot be ignored. However, there is a need for quality assurance and standard guidelines for both students and teachers for smooth functioning and better utilisation of this new modality of teaching.

Source of Funding: None

Conflict of Interest: None

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