

# Hybrid Learning in Medical Curriculum: Perception of Medical Students of a Dedicated COVID Hospital in Eastern India

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## Abstract

**Background:** In recent years, hybrid education has transformed traditional education. This study aimed to examine students' perceptions of the quality of teaching-learning in the hybrid and offline modes of UG medical curriculum and to learn how MBBS students perceived the hybrid mode of education.

**Methods:** Using simple random sampling, an institution based descriptive cross-sectional study was carried out between November 2022 and January 2023 among 100 MBBS students at the Medical College, Kolkata. After receiving ethical approval, an online interview was carried out utilising a predesigned, pretested, semi-structured, and validated questionnaire via Google forms. Data analysed using MS Excel and SPSS version 25.0.

**Results:** 90% of students believe that traditional offline classes and online learning will coexist as a hybrid approach of instruction. Most students (63%) believed that hybrid programmes can make up for the shortcomings of completely online or offline courses.

**Conclusion:** The students felt that in the long run, the hybrid approach of teaching should be improved. They recommended making the online and offline modes more integrated, doing offline sessions to clarify questions about topics that were taught online, making the lectures more offline format-oriented, and finally, holding essential lessons offline.

**Keywords:** Traditional education, hybrid mode of learning, MBBS students, UG curriculum, Kolkata.

## Introduction

The COVID-19 pandemic, which has, as of August 2022, resulted in more than 4.4 crore cases and 5.2 lakh deaths in India alone, has drastically changed our outlooks towards multiple facets of our once "normal" lives.<sup>[1,2]</sup> Among these, the approach to education, especially undergraduate medical education, has had to undergo several vital changes.<sup>[3,4]</sup>

Clinical exposure is key to any undergraduate medical education program. However, direct contact with patients could lead to widespread infection among the students, including long COVID and post-COVID symptoms, and further increase patient load, not to mention along with severe shortage of PPEs.<sup>[5,6,7]</sup> Delaying the academic curriculum could result in an acute shortage of medical interns, for the next few academic years. Graduating students early to

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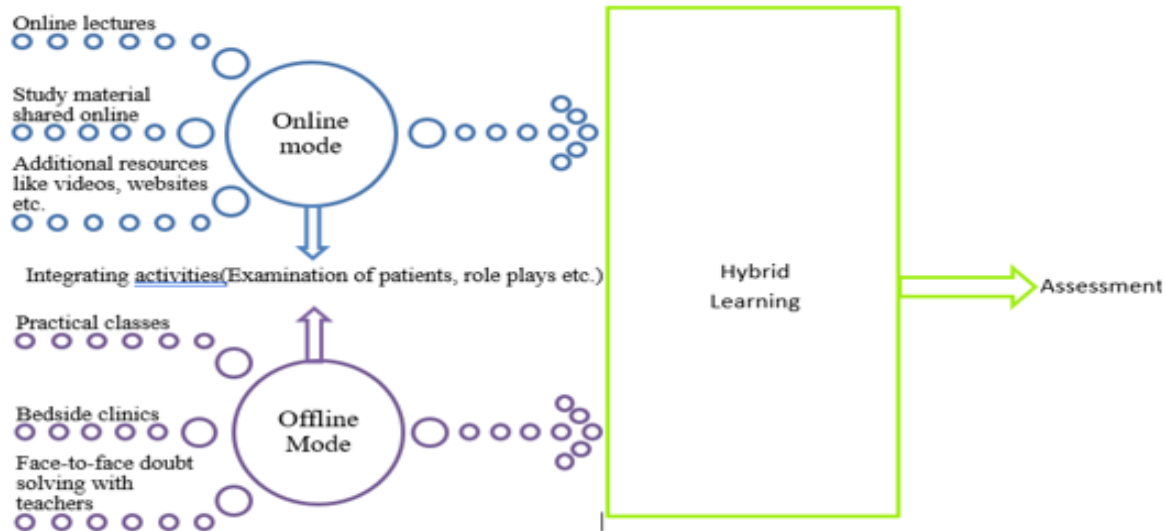
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curb the deficit of physicians leads to inadequacy of assessment and a lack of prior training in handling emergencies and other complications. Regular offline classes could not be continued (further compounded by a nation-wide lockdown). Exclusive online teaching, while suitable for lectures, present some obvious difficulties with practical classes, tutorials

and bedside clinics. Besides Medical students have had a mostly unfavourable opinion regarding it.<sup>[8]</sup>

Therefore, hybrid mode was chosen as an alternative. It aims to combine the features of both offline and online learning. A basic scheme of hybrid learning is described in the flowchart given below:-



**Fig 1: A schematic diagram of the hybrid approach of medical education**

The National Medical Commission emphasizes on Competency-based Medical Education (CBME) requiring students to be proficient in communicating with patients and in their clinical skills, both of which are difficult to teach if the mode of teaching is exclusively online.<sup>[9-13]</sup> The *Module on Online Learning and Assessment 2020*, released by the NMC, recommends hybrid teaching for topics where mere online learning is insufficient for attaining the recommended levels of competency.<sup>[14]</sup>

Review of literature showed most of the pre-pandemic studies on hybrid medical teaching had been done in developed countries, with India making only minor contributions.<sup>[15]</sup> While there have been contributions in this field from India post-2019, the work that has been done mainly focuses on an educator-centric view of the subject, dealing with good online teaching practices, effectivity of E-Learning tools and performance of students in exams (assessed by the teachers, obviously).<sup>[16-18]</sup> However, there is a conspicuous absence of studies regarding how medical students, the chief beneficiaries of hybrid learning, have perceived this mode. While there is an abundance of studies regarding assessment of the performance of students,

done by the educators, in hybrid mode of learning, there is a distinct lack of work on how students rate various aspects of the mode, including the efficacy of the educators. These are, therefore, the important gaps in existing knowledge.

The success of any venture greatly depends on the efficacy of the service-providers and the satisfaction of the consumers. Similarly, hybrid learning will be more effective when the perception of the medical students regarding its advantages and disadvantages compared to traditional offline learning (as perceived by the students) can be identified and any causes of dissatisfaction among the students can be solved. This is more important considering that hybrid learning can potentially replace exclusively offline learning in future and help broaden the learners' horizons beyond the textbook, laboratory and the ward<sup>(4)</sup>.

With this background, the following study was conducted to find out the students' perception regarding quality of teaching-learning in offline and hybrid mode of UG Medical curriculum and the reasons (if any) for dissatisfaction regarding hybrid teaching.

## Materials and Methods

A Descriptive epidemiological institution-based study was conducted among Undergraduate Medical students between November 2022 to January 2023 which included UG Medical students studying in 6<sup>th</sup> to 9<sup>th</sup> Semesters of MBBS curriculum in Medical College & Hospital, Kolkata.

Students not giving informed consent and on whom pre-test was conducted, was excluded from the study. Sample size was using Cochran's formula, estimated prevalence,  $p$  was taken as 50%,  $q = (100-p) = 50\%$  and absolute error  $d = 10\%$ , the estimated minimum sample size calculated was 100. Simple random sampling was used using a sampling frame constituting total number students from 6<sup>th</sup> to 9<sup>th</sup> semesters of MBBS curriculum.

A predesigned, pretested and semi-structured, validated questionnaire was used for collection of data pertaining to experiences of Offline teaching-learning versus that of hybrid technique of the same. Online interview via Google forms. Data collected was kept confidential and subjects remained anonymous. 6 questions for obtaining socio-demographic data had been set in a short-answer question format (Part 1). 14 questions had been set in a 7-point Likert scale

format (Part 2). 4 questions had been set in a yes/no format, with a multiple choice question format if "yes" was chosen, besides allowing the subject to add any other points in brief. The last question was in a 4-option MCQ format with provision for adding further points.(Part 3)

Participation in the study was voluntary and refusal was considered non-punitive. Informed consent was taken from individuals for voluntary participation in the study.

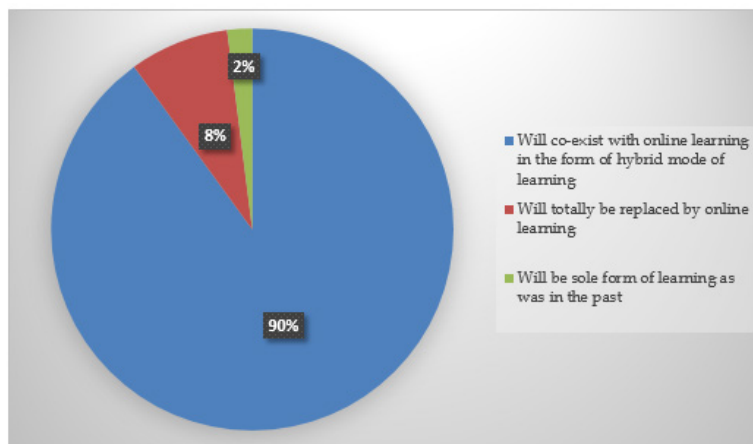
Collected data were compiled in MS excel and analysed using Statistical Package for Social Sciences (SPSS) version 25.0. Mean and standard deviation was calculated for continuous variables and categorical variables was presented as percentage. Various graphs and diagrams were used to represent the result. The study took place only after obtaining necessary permissions from Institutional Ethics Committee, Medical College, Kolkata vide reference number MC/KOL/IEC/NON-SPON/1501/08/2022 dated 18/08/2022.

## Results and Discussion

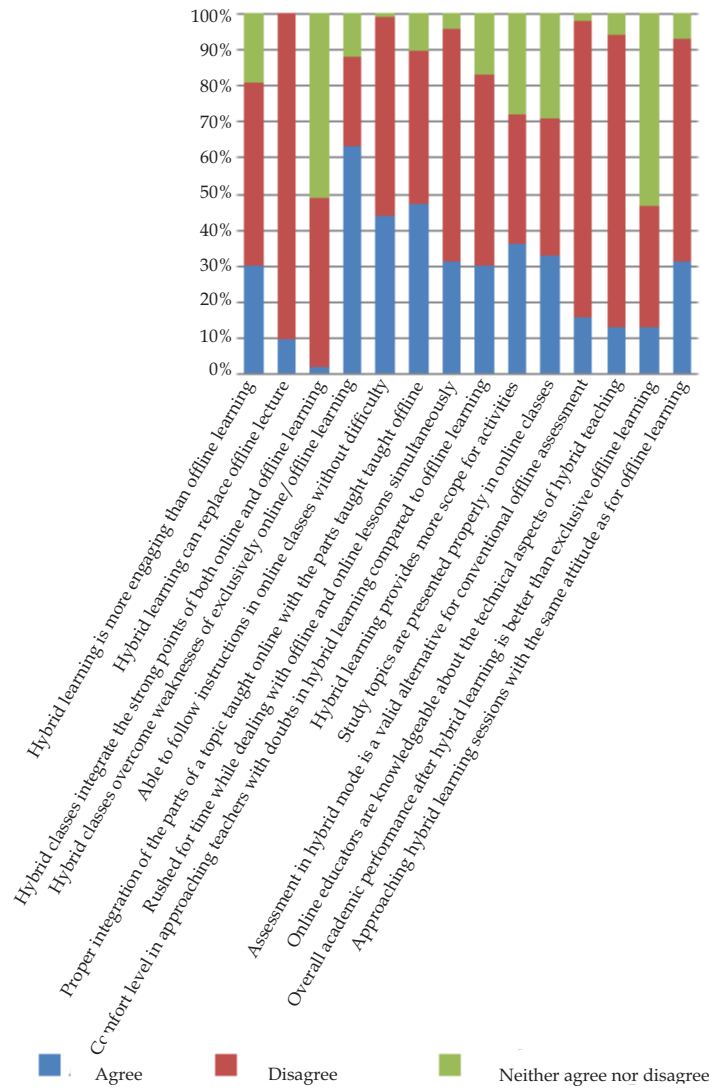
The mean age is 21.25 +/- 1.009 years, minimum being 19 years and maximum 24 years.

**Table 1: Distribution of study participants according to demographic variables (n=100)**

Variables	Category	Frequency	Percent
Professional Year of MBBS	3rd Prof Part 1	93	93.00
	3rd Prof Part 2	2	2.00
	2nd Prof	5	5.00
Gender	Male	79	79.00
	Female	21	21.00
Performance in last exam (in percentage obtained)	50-70	51	51.00
	Above 70	49	49.00



**Figure 2: A pie-diagram showing opinion of students regarding relevance of conventional offline classes in the next 10 years(n=100)**



**Figure 3: A component bar diagram showing opinion of students regarding mode of learning (n=100)**

Majority of the students (63%) agreed that hybrid classes can overcome the weaknesses of exclusively online or offline classes. 90% of the students disagreed with that fact that hybrid learning can replace

offline lectures. 52% of the students neither agreed or disagreed with the fact that overall academic performance after hybrid learning has been better than that after exclusive offline learning.

**Table 2: Distribution of study subjects regarding difficulty in joining online classes and the reasons cited. (n=100)**

Difficulties in joining online classes	Reasons	Frequency	Percent
No		48	48.00
Yes*		52	52.00
	Difficulty in receiving the links for joining classes	30	57.69
	Interruption from fellow batchmates during classes.	23	44.23
	Environment inconducive to academics	19	36.54
	Problems with internet connection	11	21.15

\*Multiple response

**Table 3: Distribution of study subjects regarding difficulty in accessing online classes and study materials and the reasons cited. (n=100)**

Difficulties in accessing online classes and study materials	Reasons	Frequency	Percent
No		69	69.00
Yes*		31	31.00
	Have difficulty navigating through online lecture platforms.	11	35.48
	Inability to stay focused when using a device for studying.	17	54.84
	Suffer from device-induced conditions	19	61.29
	Have to use devices from cybercafé or from fellow batchmates	1	3.22

\*Multiple response

**Table 4: Distribution of study subjects regarding difficulty in accessing offline classes and the reasons cited. (n=100)**

Difficulties in accessing offline classes	Reasons	Frequency	Percent
No		84	84.00
Yes*		16	16.00
	Transportation from residence to college is difficult and/or expensive to avail.	8	50.00
	Difficulty in time management	4	25.00
	Prior info regarding classes is not given on time	5	31.25
	Suffer from some condition which makes attending offline classes strenuous	2	12.50

\*Multiple response

Thus, after all experiences, the students opined that there should be improvement in hybrid method of teaching in the long run. They suggested improving the integration between online and offline modes, conducting offline doubt-clearing sessions for topics taught online, making the classes more offline format-oriented and lastly taking important classes' offline.

The present study showed that the hybrid mode of education was preferred by about 86% of the participants. Most of the participants [63%] felt that the hybrid mode of education could eliminate the lacunae in conventional offline as well as exclusive online mode of education. However, majority [90%] were of the opinion that hybrid education should not replace offline lectures. It was observed that 52% of

the study subjects faced some form of difficulty while joining the online classes, whereas 31% had difficulty in accessing online study materials. It was found that 16% of the participants faced difficulty in attending offline classes, mainly due to transportation-related problems.

Prior to the COVID 19 pandemic, the hybrid mode of education was being practiced in a few institutions imparting higher education, where international students were also entitled to get enrolled. The provision for distant learning with the help of an online platform helped many students, and simultaneously reduced the financial burden on the institution as well as the students.<sup>[19]</sup> During the pandemic, enforcement of lockdown and restrictions in travelling resulted in closure of schools, colleges



and universities across the globe.<sup>[20]</sup> Consequently, the institutions shifted from the conventional mode of offline classes to the more feasible option of online mode of teaching.<sup>[21]</sup> This allowed continuation of the process of imparting education during the difficult times. However, the online mode of education appeared to have some disadvantages like less scope for interaction, absence of hands-on training, feeling of loneliness, as well as network connectivity issues during the classes.<sup>[22]</sup> It was necessary to find out the shortcomings of online classes in order to improve the method of imparting education. Several studies were undertaken in India and abroad in order to identify various problems associated with online classes.

A study from AIIMS, Raipur, India showed that majority of the students used mobile phones to access online classes, and most of them faced technical issues during the process.<sup>[23]</sup> In the present study also, technical issues appeared to be a major disadvantage of online mode of education. Another study from Pakistan highlighted internet connectivity issues, poor IT skills of the students and lack of proper facilitation by the faculty as the main barriers to successful implementation of online medical education.<sup>[24]</sup> Similarly, another Pakistani study commented that online mode was convenient, accessible and beneficial for remote learning, but carried the disadvantages of inefficiency and difficulty in maintaining academic integrity.<sup>[25]</sup> A study from Saudi Arabia also concluded that online mode of education can assist the teaching process in medical schools, but cannot be the sole mode of education.<sup>[26]</sup> The study by Singh et al has rightly pointed out that mixed mode or hybrid mode of education is the best mode of learning medical science.<sup>[27]</sup> Similarly, Wang et al has also found that majority of students preferred a mixed method of learning.<sup>[28]</sup> The disadvantages of online and offline modes can be alleviated by this mixed method of learning.

In spite of a small sample size, the present study focuses on the advantages and disadvantages of the hybrid mode of education in these turbulent times. It is evident from the present study that hybrid mode of medical education could be the preferred mode, given its ability to combine the advantages of offline and online education system.

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