

# Online Physiology Teaching and Assessment in Undergraduate Medical Students during COVID-19 Pandemic

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Online  
Physiology  
Teaching-  
Learning During  
COVID-19  
Pandemic

## ABSTRACT

**Objective:** To study the perceptions of medical students on online Physiology teaching-learning during COVID-19 pandemic and to evaluate the preference of medical students on online teaching, traditional teaching or both.

**Study Design:** Cross sectional study

**Place and Duration of Study:** This study was conducted at the Jinnah Medical and Dental College, January to March 2021.

**Materials and Methods:** The study participants included 62 MBBS 2<sup>nd</sup> year students. A questionnaire was distributed to each student. The questionnaire included 22 items regarding online teaching and online assessment. The medical students were asked to select a response for each item on the questionnaire including the preferred teaching method from online, traditional or both. The online recorded lectures were uploaded on student portal of JMDC website during COVID 19 pandemic period. The data was presented in terms of percentage for individual item, for preference in theory, practical, tutorial, assessment and the overall preferred teaching method.

**Results:** The medical students were of the opinion that presence of teacher (74.2%), presence of colleagues (67.7%), asking the queries to teacher (71%) giving feedback to teacher (71%) were more important aspects for traditional teaching. Regarding the online recorded lectures getting enough time to understand the lecture (53.2%) and studying at own pace (54.8%) were found to be more important. In the preference of teaching method for theory (53.2%), practical (77.4%) tutorial (48.4%) and assessment (54.8%) the majority of students selected traditional method. The overall percentage of traditional method (56.5%) was higher as compared to online (27.4%) and both (16.1%).

**Conclusion:** The majority of 2<sup>nd</sup> year medical students had a preference for traditional teaching methods in Physiology.

**Key Words:** COVID 19, Physiology, Traditional Teaching, Online teaching

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## INTRODUCTION

COVID 19 has been declared as a pandemic by World Health Organization in March 2020<sup>1</sup>. The spread of the disease is through close contact with the affected persons<sup>2</sup>. The lockdown restrictions were implemented worldwide to control the severity and rapid spread of disease<sup>3</sup>. Due to COVID 19 pandemic, the teaching activities were disrupted in all educational institutions including the medical schools<sup>4</sup>.

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In medical education, traditional teaching methods are essentially employed in which teachers impart knowledge and interact with students<sup>5</sup>. As the lockdown restrictions were imposed for indefinite time period, it became a necessary requirement to switch teaching from traditional to e-learning methods<sup>6</sup>. For the e-learning, computers and other media devices are needed with the help of internet. The information is transmitted through a browser or media applications (You tube, Google meet, zoom etc.)<sup>5</sup>.

Physiology is a segment of core curriculum for all students studying medicine<sup>7</sup>. It needs to be taught effectively to be placed in the context of disease when the students practice in the community<sup>8</sup>. Physiology is a complex and continuously evolving subject<sup>9</sup>, teaching it requires expertise to make students understand the mechanisms and functions of human body. Due to COVID 19 pandemic, Physiology was also taught online as all other subjects.

The transition of medical teaching from traditional to online gave rise to many challenges<sup>3</sup>. The faculty

members were not ready for this rapid change in mode of teaching from traditional to online delivery of educational content<sup>10</sup>. The medical teachers were instructed to take online recorded lectures<sup>11</sup>. It was a big challenge to prepare the medical students for acceptability of online recorded lectures<sup>12</sup>. Moreover, there were issues related to internet connectivity and low bandwidth to stream video lectures or download large size video lecture files<sup>10</sup>. Students living in rural areas often complained of issues with live streaming of lectures and attending video conferences for lectures<sup>10</sup>. Both the students and faculties confronted many challenges while engaging in online medical education during the COVID-19 pandemic.

Several studies have been published on online teaching in medical education including effectiveness of online teaching, advantages and disadvantages of online teaching, challenges and barriers of online teaching, students' perception on online teaching in general. In this study we collected data of perception of students regarding online Physiology teaching & assessment and also about the preferred teaching method.

## MATERIALS AND METHODS

The study design was cross sectional. This study was conducted at Jinnah Medical and Dental College. The study participants were 96 undergraduate MBBS 2<sup>nd</sup> year students. The duration of study was 3 months, from 1<sup>st</sup> January 2021 to 1<sup>st</sup> March 2021. The study was approved by Ethics review board of Jinnah Medical and Dental College. After getting the ethics approval, the participants were enrolled in the research study. Informed consent was obtained from each participant. Participants were explained the purpose of study. A questionnaire was distributed to each student who gave consent to participate in the study. The questionnaires were collected and the data was analyzed.

In order to study the perceptions of students regarding online Physiology teaching and assessment in COVID 19 pandemic, questionnaire was distributed to 2<sup>nd</sup> year medical students. The questionnaire included 22 items from online teaching and assessment. The questionnaire used in our study, was developed by Vala<sup>5</sup> et al. in which evaluation of e-learning classes in medical students during COVID 19 pandemic was studied. The questionnaire was modified. Some questions were added and some were removed. The students were asked to select a response for each item on the questionnaire. The medical students provided their perceptions on online teaching and online assessment. They also selected preferred teaching method between traditional classes, online classes or both.

The sample size was calculated from Raosoft Sample size calculator. There were 96 students studying in MBBS 2<sup>nd</sup> year at Jinnah Medical and Dental College. Sample size was calculated keeping 96 population size, 5% margin of error, 95% confidence interval and 50%

response distribution. The minimum recommended sample size was of total 77 students. Out of which, 62 gave consent to participate in the study.

The data was analyzed using SPSS version 22. Descriptive statistics was used for analysis of data. Data was expressed in terms of percentage for each item, for preference in theory, practical, tutorial, assessment and the overall preferred teaching method.

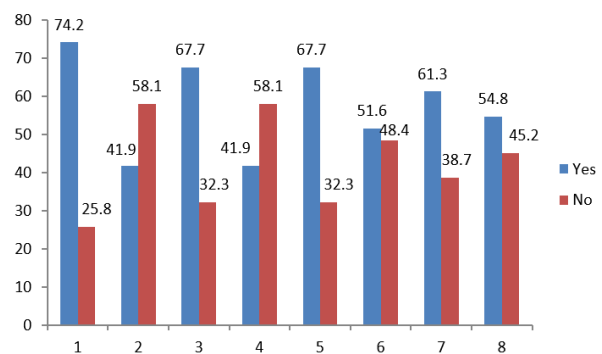
## RESULTS

The mean age of students was 19.5± 0.6 years (male 38% & female 62%). Figure I showed comparison of individual items 1 to 8. Figure II showed the comparison of individual items 9 to 18 on the basis of preference of traditional, online or both teaching methods. Figure III showed the comparison of items 19 to 22 for preference of teaching method in theory, practical, tutorial and assessment. Figure IV showed the overall comparison of teaching method.

In figure I, the x-axis showed the item numbers and the y axis showed percentage of individual items that students selected in the form of Yes and No. In most of the items, the students selecting the yes response had a higher percentage.

In figure 2, the x-axis showed the item numbers and the y axis showed percentage of individual items that students selected for their preferred teaching method. In most of the items in this section, the students preferred the traditional teaching method. The individual items include the importance of presence of teacher in class, presence of other students in class, online education giving more freedom, hindering of online teaching and assessment due to internet, alignment of online teaching and online assessment, time for understanding the lecture, asking queries from teacher, giving immediate feedback to teacher, interest in learning and retention of information for assessment.

In figure 3, the x-axis showed the item numbers and the y axis showed percentage of preference of teaching method for theory, practical, tutorial and assessment. In all the items in this section, the students preferred the traditional teaching method.



**Figure No.1: The comparison of individual items 1 to 8 in MBBS 2<sup>nd</sup> year students**

In figure 4, the percentage of Traditional, online and both teaching methods is mentioned. Traditional teaching method has got the highest percentage.

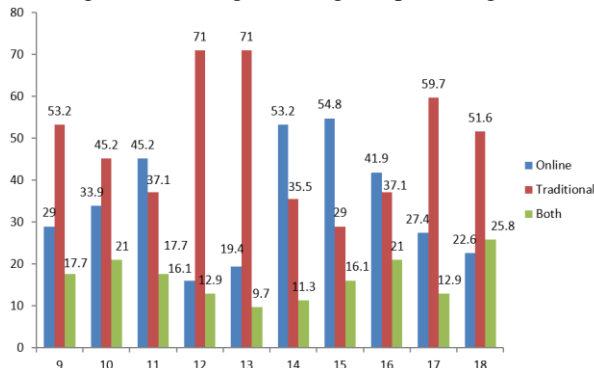


Figure No.2: The comparison of individual items on the basis of teaching methods in MBBS 2<sup>nd</sup> year students

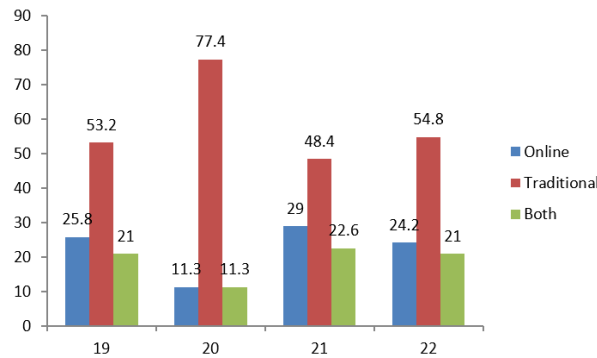


Figure No.3: The comparison of preference of teaching method in theory, practical, tutorial and assessment in MBBS 2<sup>nd</sup> year students

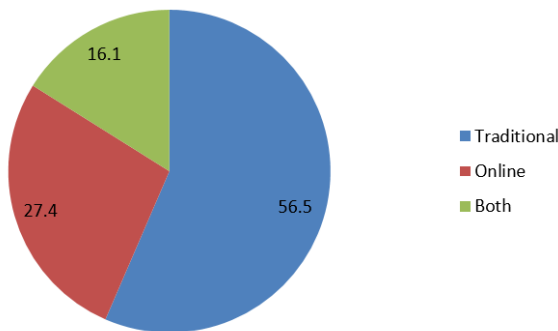


Figure No.4: The comparison of overall preference of teaching method in MBBS 2<sup>nd</sup> year students

**DISCUSSION**

In this study the perceptions of students regarding online Physiology teaching and assessment in COVID 19 pandemic was studied. In Figure I, majority of students selected the ‘Yes’ option for item 1, 3, 5, 6, 7 and 8. Students were in favor of traditional teaching where the presence of teacher (item 1) and colleagues

(item 3) is required. Item 5 was related to conducting traditional classes first followed by online classes. Item 6 and 7 were regarding the accessibility of internet hinders online classes and online assessment. The item 8 was regarding the alignment of online teaching with online assessment. The item 2 and 4 of questionnaire was related to the online classes giving freedom and if students felt more personalized with online classes. The majority of students selected the option ‘No’ for item 2 and 4. In majority of items our study results were same as that of Vala<sup>5</sup> et al. except of item 4. Our students selected the option ‘No’ while in study of Vala<sup>5</sup> et al. majority of students selected ‘Yes’ option. Our study results in this section reflect that majority of students approved traditional teaching that helps in better learning. Our study finding is same as reported by Qamar<sup>13</sup> et al.

In figure II, students selected traditional teaching as the preferred method in item 9, 10, 12, 13, 17 and 18. Item 9 and 10 of questionnaire was related to concentration and motivation in learning. Item 12 was regarding asking the queries to the teacher and item 13 was related to giving immediate feedback to the teacher. The item 17 was regarding the interest in learning and item 18 was related to retention of knowledge for assessment. The study done by Abbasi<sup>14</sup> et al. and Hameed<sup>15</sup> et al. mentioned that students did not prefer e-learning over face to face teaching. Hameed<sup>15</sup> et al. recommended blended learning for future medical education. The study done by Ansar<sup>16</sup> et al. reported that students were not satisfied with e-learning and they pointed out some critical defects in the system. The students selected online teaching as their preference in item 11, 14, 15 and 16. The item 11 was regarding getting enough time for understanding the lecture and 14 was linked with studying at own pace. Anwar<sup>17</sup> et al. mentioned the students’ agreement towards online lectures as they were found to be more organized. The item 16 was related to collecting the multiple resources/study material. Anwar<sup>17</sup> et al. reported the students’ satisfaction towards online study material that provided flexibility in learning and saved time. The item 15 was related to distraction in online classes. Baczek<sup>4</sup> et al. suggested that to implement the online learning into the curriculum, a well thought-out strategy and active approach is required. In all items of this section, our study results were the same as study done by Vala et al<sup>5</sup>

In the preference of method for theory, practical, tutorial and assessment as shown in items 19, 20, 21 and 22, the students preferred traditional teaching. Our study results were similar to study of Vala et al<sup>5</sup>. In the overall preference of teaching method, traditional (56.5%) got a higher percentage as compared to online (27.4%) and both (16.1%). These findings are quite similar to study done by Vala et al<sup>5</sup> where traditional was 59%, online 26% and both was 15%.

## CONCLUSION

The majority of 2<sup>nd</sup> year medical students had a preference for traditional teaching methods in Physiology.

### Author's Contribution:

Concept & Design of Study: Sadaf Fatima  
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 Revisiting Critically: Sadaf Fatima, Fadieleh Sohail  
 Final Approval of version: Sadaf Fatima

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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