

## ORIGINAL ARTICLE

**COMPARISON BETWEEN TRADITIONAL, RECORDED, AND ZOOM ONLINE PHYSIOLOGY TEACHING IN UNDERGRADUATE MEDICAL STUDENTS DURING THE COVID-19 PANDEMIC****Sadaf Fatima, Sulail Fatima, Sara Rafique, Sassi Kanwal, Rabeea Rizwan\*, Kiran Zehra**

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**Background:** Due to COVID-19 educational institutions remained closed for traditional teaching, and online teaching methods were implemented. The recorded physiology lectures were forwarded to students, and teaching was conducted online. The objective of this study was to compare online, recorded, and face-to-face physiology teaching in undergraduate medical students during COVID-19 pandemic. **Methods:** This cross-sectional study was conducted from April to June 2021 at Jinnah Medical and Dental College, Karachi, Pakistan. The study participants included 84 undergraduate 2<sup>nd</sup> year medical students. The questionnaire included 21 items regarding zoom online, recorded, and traditional teaching. The students selected the preferred teaching method. The data were presented in terms of percentage for individual items, preference in theory, tutorial, and overall preferred teaching method. **Results:** The medical students believed that presence of teacher (86.9%), asking queries to teacher (87%), giving feedback to teacher (81.2%), and interest in learning (83.8%) were more important elements to consider for traditional teaching. Regarding the recorded lectures, understanding the lecture (51.4%), and studying at own pace (52.7%) were found to have high percentage. In relation to preference of teaching method for theory (73.5%), tutorial (76.9%) overall preferred teaching method (78.2%), majority of the students selected traditional teaching method. **Conclusion:** The majority of undergraduate medical students had a preference for traditional teaching methods in Physiology. Among online teaching during COVID-19 pandemic, the students preferred recorded sessions over zoom online classes.

**Keywords:** COVID-19, Physiology, Traditional, Online, Teaching, Recording

Pak J Physiol 2021;17(4):51-4

**INTRODUCTION**

The COVID-19 emerged as a pandemic in March 2020.<sup>1</sup> Due to the severity and widespread of disease, the healthcare professionals suggested social distancing and lockdown restrictions.<sup>2</sup> During the first wave of COVID-19 pandemic, all educational institutions remained closed for traditional/face to face teaching.<sup>3</sup> The teaching in medical schools is based on traditional teaching. The direct interaction of teachers and students is evident in traditional teaching.<sup>4</sup> As the lockdown restrictions were implemented for an indefinite period, there was a transition of teaching methods changed from traditional to online.<sup>5</sup>

Physiology is one of the basic science subject taught in foundation years of medical sciences.<sup>6</sup> Teaching of Physiology makes students understand and comprehend the normal functions and mechanisms of the human body. The importance of physiology teaching/learning is signified by its application in clinical years.<sup>7</sup> Good understanding of physiological concepts helps in studying pathology and medicine.

After the declaration of COVID-19 as a pandemic, the teaching institutions in Pakistan including the medical universities remained closed from March to September 2020. Like a study from Turkey<sup>8</sup>, during this period, the recorded Physiology lectures were forwarded to undergraduate medical students of our Institute. The

acceptance of recorded lectures was a big challenge for faculty as well as students<sup>5</sup>, but it became a necessity to acclimatize to this change in teaching mode due to prolonged closure of educational institutions.

Studies have been published regarding the challenges of online teaching, the advantages and disadvantages of online teaching, and students' perception of online teaching in general. In this study, data were collected from undergraduate students regarding comparison of traditional, Zoom online and recorded Physiology teaching, and preferred teaching method.

**METHODOLOGY**

The study design was cross-sectional. This study was conducted at Jinnah Medical and Dental College, Karachi, Pakistan for a period of 3 months from April to June 2021. The study participants included 78 undergraduate medical students of 2<sup>nd</sup> Year MBBS. The sample size was calculated with Raosoft sample size calculator. There were 106 students studying in 2<sup>nd</sup> year MBBS at Jinnah Medical and Dental College. The sample size was calculated keeping 106 population size, 5% margin of error, 95% confidence interval, and 50% response distribution. The minimum recommended sample size was calculated to be 84.

The study was approved by the Ethics Review Board of Jinnah Medical and Dental College. Informed consent was obtained from all participants. A questionnaire was distributed to all participants and their responses were analysed.

The questionnaire used in our study was developed by Vala *et al*<sup>4</sup>, in which evaluation of e-learning classes in medical students during the COVID-19 pandemic was studied. The questionnaire was modified. Some questions were added and some were removed. Some questions were added in the section of the ‘Yes’ and ‘No’ section. The study done by Vala *et al*<sup>4</sup> compared traditional, e-learning, or both. We compared zoom online, recorded sessions and traditional teaching. The questionnaire containing 21 items was distributed to medical students. The students were asked to select a response for each item on the questionnaire. The undergraduate medical students provided their opinion in individual items. They also selected a preferred teaching method for theory, tutorial and also the overall preferred teaching method.

The data were analysed using SPSS-22. Descriptive statistics were used for the analysis of data. Results were expressed in terms of percentage for each item, for preference in theory, tutorial and the overall preferred teaching method.

## RESULTS

The comparison of individual items 1 to 6 is shown in Figure-1. The X-axis shows the item numbers of questionnaire and the Y-axis shows percentage of individual items that students selected in ‘Yes’ and ‘No’ format. In majority of items, the students selected the ‘Yes’ response.

Comparison of individual items 7 to 18 on the basis of preference of traditional, zoom online or recorded teaching methods is shown in Figure-2. The X-axis shows the item numbers and the Y-axis shows the percentage of individual items that students selected for their preferred teaching method. In 9 out of 12 items in this section, the students preferred the traditional teaching method. The individual items include concentration in the class, motivation, asking queries from the teacher, giving immediate feedback to the teacher, feeling more personalized, freedom in learning, collecting the study material, interest in learning, and retention of information for subsequent assessment.

Figure-3 shows comparison of preferred teaching method in theory, tutorial, and overall teaching method. It shows the percentage of preference of teaching method for theory, tutorial and overall teaching method. The majority of students preferred the traditional teaching method.

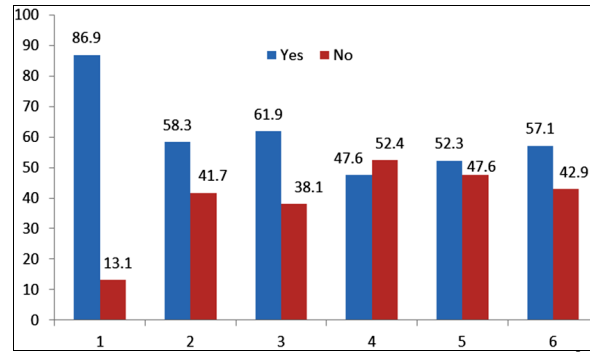


Figure-1: Comparison of individual items 1–6 in 2<sup>nd</sup> Year MBBS students

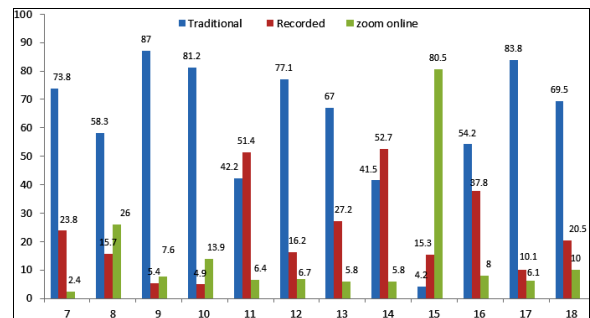


Figure-2: Comparison of items 7–18 on the basis of traditional, recorded, and Zoom online teaching methods in 2<sup>nd</sup> Year MBBS students

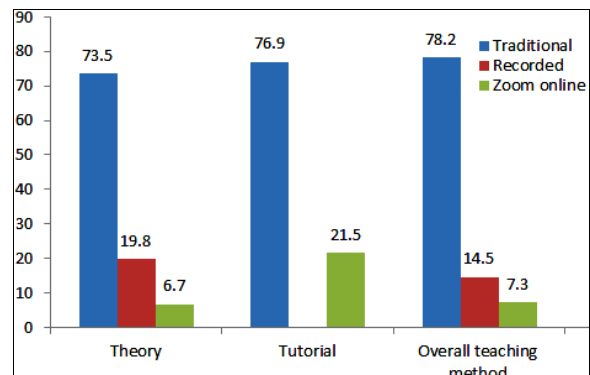


Figure-3: Preference of teaching method in theory, tutorials, and overall teaching methods in 2<sup>nd</sup> Year MBBS students

## DISCUSSION

In 2021, the new session in medical universities in Pakistan started on 1<sup>st</sup> March. Due to continuation of COVID-19, the Higher Education Commission announced that 50% of the students are allowed to attend classes on campus and the remaining 50% to take online classes. This rule was followed by Jinnah Medical and Dental College where half of the class was attending physically on campus, while the other half attended the lectures live on Zoom.

In this study, comparison between Zoom online, recorded sessions, and traditional teaching

methods was done in 2<sup>nd</sup> Year medical students during COVID-19 pandemic. Majority of the students selected 'Yes' option for items 1, 2, 3, 5, and 6. Item 1 was related to presence of teacher for learning Physiology. The majority of students were in favour of it. Item 2 was related to students learning affected by presence of colleagues. Item 3 was linked with accessibility of the internet hinders online classes. Item 4 was regarding the internet accessibility hindering the online assessment. Item 5 was related to alignment of online teaching with online assessment. In item 6 the students preferred the optical mark recognition system. In item 1 and 2, our study results were similar to that of Vala<sup>4</sup> *et al.* In item 3, our students selected the option 'Yes' while in the study of Vala *et al.*<sup>4</sup> students' selected 'No'. The items 4, 5, and 6 in questionnaire were added in our study.

In the present study, item 7 and 8 of the questionnaire were regarding the concentration and motivation in learning respectively. Item 9 was regarding asking the queries to the teacher, and item 10 was related to giving immediate feedback to the teacher. Item 11 was related to understanding the lecture. Item 12 was linked with the teaching method making students feel more personalized, and item 13 was related to teaching method giving more freedom in learning process. Item 14 was related to the teaching method that helped students to study at their own pace. Item 15 was linked with teaching method by which students get more distracted. Item 16 was linked with the collection of study material. Item 17 was related to interest in learning, and item 18 was regarding the retention of knowledge for assessment. The students selected traditional teaching in items 7, 8, 9, 10, 12, 13, 16, 17, and 18. Abbasi *et al*<sup>9</sup> and Hameed *et al*<sup>10</sup> reported that students did not prefer e-learning over face-to-face teaching. Hameed *et al*<sup>10</sup> recommended blended learning for medical education in future. The study done by Ansar *et al*<sup>11</sup> mentioned the students' dissatisfaction with e-learning. In our study, students reported the Zoom online classes causing distraction. As suggested by study of Baczek *et al*<sup>5</sup>, to conduct online classes, a well-planned and active approach is required. Our observations in item numbers 7, 8, 9, 10, 11, 14, 15, 17, and 18 were similar to the study done by Vala *et al*<sup>4</sup>. The students in our study preferred traditional while the students in Vala<sup>4</sup> *et al* study preferred online teaching method for the item 16.

In our study, very small percentage of students selected Zoom online classes. The study done by Alves *et al*<sup>12</sup> reported that the online classes are difficult to administer in Physiology as many concepts need face-to-face interaction for better understanding. Students also mentioned that the conducive learning environment was lacking at home and internet connectivity was also a big issue. To conduct online

classes successfully, an excellent knowledge of the subject, proficient computer knowledge and command, good communication skills, and clarity of expression is required.

Majority of our students liked the Traditional teaching method for theory classes, and tutorials; and the overall preferred teaching method was Traditional. Our results are same as the study done by Vala *et al*<sup>4</sup> but the percentage of students selecting traditional (73.1%) for theory, (76.9%) for tutorial, and (76.9%) for the overall preferred teaching method was much higher in our study as compared to Vala *et al*<sup>4</sup> study where 40.8% students selected traditional for theory classes, 51.2% for tutorials, and 59% as the overall preferred teaching method. Our study results are similar to the study by Qamar *et al.*<sup>13</sup>

## CONCLUSION

Majority of undergraduate medical students preferred traditional teaching methods for Physiology. Among online teaching modes, the students preferred recorded sessions over Zoom online classes.

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**Received:** 24 Jun 2021

**Reviewed:** 20 Oct 2021

**Accepted:** 21 Oct 2021

**Contribution of Authors:**

**SF:** Concept, design of study and final approval

**SF:** Drafting and data analysis

**SR:** Drafting and data analysis

**SK:** Drafting and data collection

**RR:** Data analysis

**KZ:** Drafting the manuscript

**Conflict of Interest:** None

**Funding:** None