

The Comparison of Assessment Scores Between Modules Taught Face to Face and Online in Undergraduate Medical Students During COVID-19 Pandemic

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ABSTRACT

Objective: To study the comparison of the Physiology test score and overall test scores between modules taught face to face and online.

Study Design: Cross sectional study

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

Materials and Methods: The study participants included 2nd year medical students. There were total 96 MBBS students. Out of 96, 90 students attempted the Neuroscience module test and 88 attempted the Endocrine module test. The Neuroscience module was taught face to face on campus before the lockdown for COVID 19 pandemic was implemented. For the endocrine module, online recorded lectures were sent to students. In both the modules, test was conducted online. The Physiology test scores as well as the overall test scores were compared.

Results: The Physiology test score was higher (54.64±20.12) in Neuroscience module that was taught face to face as compared to (31.42±26.00) in Endocrine module that was taught online. Regarding the overall module test score, Neuroscience has a higher score (62.12±13.45) as compared to Endocrine (52.06±16.81). The overall passing percentage was (74%) in Neuroscience module and (48%) in Endocrine module.

Conclusion: The medical students had a higher test score in module taught by face to face teaching method as compared to the module taught online.

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

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INTRODUCTION

COVID 19 is a highly infectious disease¹. It is considered as a pandemic due to its severity and spread worldwide¹. This disease spreads through close contact with the affected persons². To prevent this illness, social distancing, medically recommended quarantine process, and maintenance of personal hygiene were advised by health workers². Due to COVID 19 pandemic, all educational institutions including the universities were closed for traditional teaching³.

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Traditional teaching methods are an integral part of medical studies in which teacher has direct communication with students⁴. This method has been universally accepted⁴. Due to lockdown and closure for indefinite time period, it became a necessity to shift teaching from traditional to e-learning methods⁵. All institutes including the medical colleges had to take online classes⁶. The online classes or e-learning occurs at computers and other media devices with the help of internet. The information was delivered through a browser or media applications (You tube, Google meet, zoom etc.)⁴.

Physiology is one of the basic science disciplines taught at undergraduate level in traditional & integrated curriculum in medical education⁷. Its importance lies in its application in clinical practice⁸. Physiology learning is related with understanding the mechanisms and functions of the human body. To understand the physiology concepts, a number of cognitive processes, such as memorization, comprehension, analysis, classification, summarization, calculation, multi-disciplinary connections, and clinical application are required⁹. Due to COVID 19 pandemic, Physiology

classes were also conducted online like all other subjects.

The shift from traditional teaching to online had its own challenges⁵. Most of the teachers in Pakistan were not prepared for this sudden change from in-person teaching to an entire online delivery of instructional content in a matter of days without any comprehensive planning and faculty training¹⁰. Many institutes including Jinnah medical and dental college instructed their faculty to take recorded lectures. Challenges were faced not only in online teaching but also in online assessment¹⁰. Many faculty members were deficient in formal training for online assessment such as preparing online exams and conducting them¹⁰. For the students, acceptability of online/recorded lectures was a big challenge⁵.

Studies have been published on online teaching in medical education. In this study we compared the Physiology test scores and the overall test scores of the module taught face to face (Neuroscience) and the module taught online (Endocrine system).

MATERIALS AND METHODS

The study design was cross sectional. The study was conducted at Jinnah Medical and Dental College. The study participants included 96 undergraduate MBBS 2nd year students. The time duration of study was 3 months, from 1st January 2021 to 31st March, 2021. The study was approved by Ethics review board of Sohail University. After getting the ethics approval, the module test scores of students were collected from Examination department of Sohail University. In addition to the fact that Neuroscience was taught face to face and Endocrine taught through recorded lectures, these modules were selected as they had substantial proportion of Physiology content in module teaching. Each module test conducted at JMDC includes a total of 100 questions from the subjects of Anatomy, Physiology and Biochemistry. The number of Physiology questions was 42 out of 100 in Neuroscience module and 45 out of 100 in Endocrine module. We collected the overall test scores and the Physiology test scores of Neuroscience and endocrine modules. The assessment of both modules was conducted online. The Neuroscience module was taught on campus and Endocrine was taught online. The overall scores and Physiology scores of both modules were compared. Out of 96 students, 90 students attempted the Neuroscience module test and 88 students attempted the Endocrine module test.

The data was analyzed using SPSS version 22. The results of quantitative data were expressed as mean \pm SD. The passing students' data was expressed in the form of percentage. In statistical analysis, only p-values ≤ 0.05 were considered significant.

RESULTS

The Physiology module test score comparison was shown in table I and the overall score comparison was shown in table II. In figure I, the overall percentage of students passed in both modules was mentioned.

Table I showed the comparison of physiology test scores between modules taught face to face (Neuroscience) and that taught online (Endocrine). There was significant difference between the two modules.

Table 2 showed the comparison of overall test scores between the module taught face to face (Neuroscience) and the module taught online (Endocrine). The significant difference was found between modules.

Figure I showed the comparison of overall passing percentage between module taught face to face and that taught online. The passing percentage was significantly higher in Neuroscience module that was taught on campus.

Table No.1: The comparison of Physiology test score between Neuroscience and Endocrine modules in MBBS II students

Module Name	n	Mean \pm SD test Score	p value
Neurophysiology	90	54.64 \pm 20.12	<0.001
Endocrinology	88	31.42 \pm 26.00	

Table No.2: The comparison of overall test score between Neuroscience and Endocrine modules in MBBS II students

Module Name	n	Mean \pm SD test Score	p value
Neurophysiology	90	62.12 \pm 13.40	<0.001
Endocrinology	80	52.06 \pm 16.81	

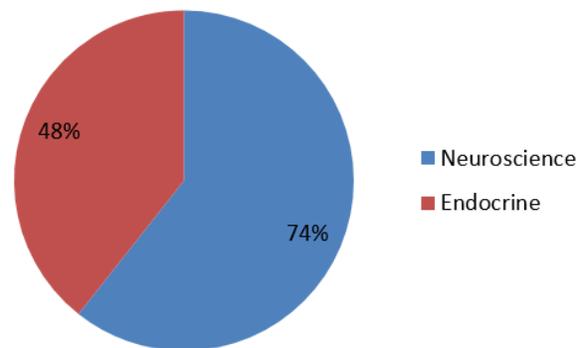


Figure No.1: The comparison of overall passing percentage between Neuroscience and Endocrine modules in MBBS II students

DISCUSSION

The World Health Organization declared the outbreak of COVID-19 in January 2020. The Covid-19 pandemic has raised significant challenges for the higher education community all over the world³. One of the urgent and unexpected challenges was the shift of

previously face-to-face university courses to be taught online¹¹. Teaching staff of different backgrounds and ages have had to record and their classes at home, with all the practical and technical challenges¹¹.

In table I, we compared the Physiology test scores of Neuroscience module that was taught on campus by way of traditional or face to face teaching method and the Endocrine module that was taught through recorded lectures during lockdown period of COVID 19 pandemic. There were 42 Physiology questions out of total 100 questions in the Neuroscience module test. Out of a total of 100, there were 45 Physiology questions in Endocrine module. The Neuroscience module test scores were significantly higher in Physiology as compared to the Endocrine module. Physiology is a subject based on concept building and for learning and understanding the Physiological concepts and mechanisms, interaction between teacher and student is required. The reason of getting higher Physiology scores in the module taught face to face as compared to module in which recorded lectures were sent to students, was that the traditional teaching results in better concept building and understanding. This finding was reflected in the module test results.

In table 2, we compared the overall test scores of Neuroscience and Endocrine modules. The test scores were higher in Neuroscience module as compared to the Endocrine module. The study done by Qamar¹² et al reported that the majority of students were in favor of face to face teaching. In a study done by Sahar¹³ et al, the majority of students did not prefer e-teaching over face to face teaching. Our study results highlight the same findings as reported in these studies. In our study, the significance of face to face teaching was highlighted in the form of higher scores in the Neuroscience module test that was taught on campus. Kaur¹⁴ et al reported that online teaching can be combined with face to face teaching but it cannot be a replacement of traditional teaching.

In figure I, the overall passing percentage of the two modules was compared. The number of students attempting the Neuroscience module test was 90 and that of Endocrine module test was 88. The significantly higher passing percentage in Neuroscience module (74%) as compared to (48%) in Endocrine reflects the better understanding of all the subjects taught on campus.

Out of 96 students in MBBS 2nd year, 6 students could not attempt the module test paper of Neuroscience and 8 could not attempt the test of Endocrine. The reason of students missing the tests was that although the recorded lectures were sent to students, there was live online assessment done. The major cause of students missing the tests was the internet accessibility and low bandwidth to stream the online module test paper.

To the best of our knowledge, this is the first study done on the comparison of test scores of modules taught face to face and online.

CONCLUSION

The medical students had a significantly higher test score in module taught by face to face teaching method as compared to module taught online.

Author's Contribution:

Concept & Design of Study:	Sulail Fatima
Drafting:	Sadaf Fatima, Fadieleh A. Sohail
Data Analysis:	Sassi Kanwal, Kiran Zehra, Saqib Kamran
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Final Approval of version:	Sulail Fatima

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

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