

**IMPACT OF ONLINE TEACHING ON OVERALL ACADEMIC PERFORMANCE  
OF MEDICAL AND DENTAL STUDENTS DURING COVID 19 PANDEMIC.**

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## **ABSTRACT**

### **OBJECTIVE**

To assess the overall academic performance of medical and dental students during online teaching in COVID 19 pandemic.

### **METHOD**

It was a descriptive cross-sectional study. The study was conducted in Bahria University of Health Sciences from June 2022 to September 2022 after approval from Ethical review Committee Bahria University of Health Sciences. A structured questionnaire was disseminated using google forms. The subjects were recruited after applying inclusion and exclusion criteria. The data obtained was kept confidential. SPSS version 23 to analyze data.

### **RESULTS**

Result revealed that academic performance declined during online teaching during lockdown. Univariate and multivariate analysis displays association of screen time with feeling restless, did exercise, decrease academic performance however online teaching helps them connected as a group.

### **CONCLUSION**

### **KEYWORDS**

Screen time, Online, COVID, Medical, and Physical

### **INTRODUCTION**

In January 2020, COVID-19 was proclaimed as an international health concern (1). This catastrophic pandemic affected all aspects of life, including medical school education, which is one of the most emotionally and academically challenging professions (2). It resulted in the closure of educational institutions all over the globe, which brought them to the test in terms of their adaptability to deal with a crisis that necessitates the use of advanced technology to enable effective and productive online learning (3). When it comes to the lockdown, Pakistan is no different from the rest of the world. This

massive unplanned transition from traditional learning to an entirely online learning environment under the guidelines of the Higher Education Commission has significantly changed the approaches used by medical institutions (2). Many institutes are interested in how to deliver course content online, engagement of the students including their assessment (4). As a result, COVID-19, while a threat to humanity, has prompted educational institutions to engage in online learning.

The online platforms provided a way to continue teaching and learning activities. It entails utilizing technological breakthroughs to guide, design, and distribute the educational content as well as to promote two-way contact between students and teachers (1). With the aid of tools like whiteboards, chat rooms, polls, quizzes, discussion forums, and surveys, instructors and students can interact online and share course materials side by side (5). These may provide effective and practical means of achieving desired educational objectives. As learning management systems and video conferencing tools, most of the institutions in Pakistan use Microsoft Teams, Google Meet, Zoom, WebEx, Edmodo, and Moodle (2,5,6). This kind of instruction gives students an alternate approach to reduce their contact with academic staff or with one another. However, due to the economic and technology divide, a large number of students were unable to participate in online education (2). The availability of internet in rural and provincial locations, its speed and cost, the accessibility of electronic devices to access the internet, and the lack of connection between students and lecturers were among the most frequent issues with online education in general (2).

According to various researchers, COVID-19 significantly affects medical students. Students who enroll in online college courses rather than traditional in-person classes report less progress and achievement as a result of this decision (2). According to best of our knowledge there is limited literature available highlighting the impact of online teaching and academic performance of Pakistani medical students during COVID-19. There were three earlier studies that supported online learning from Pakistan. The two surveys conducted at the Dow University of Health Sciences in Karachi and the Lahore Medical and Dental College in Lahore revealed significant levels of student satisfaction with online learning methods (6–8).

It is vital to evaluate the efficiency of online teaching and learning tools given the rise in their use during COVID-19 (9). Consequently, the current study investigates how professors and students in Pakistan perceive the benefits, constraints, and suggestions associated with online learning. The report comes at a good moment because Pakistan's universities are all being forced to adopt online learning by the Higher Education Commission (HEC). In order to make it more useful and worthwhile, the findings will assist determine which adjustments should be made first.

## **MATERIAL AND METHODS**

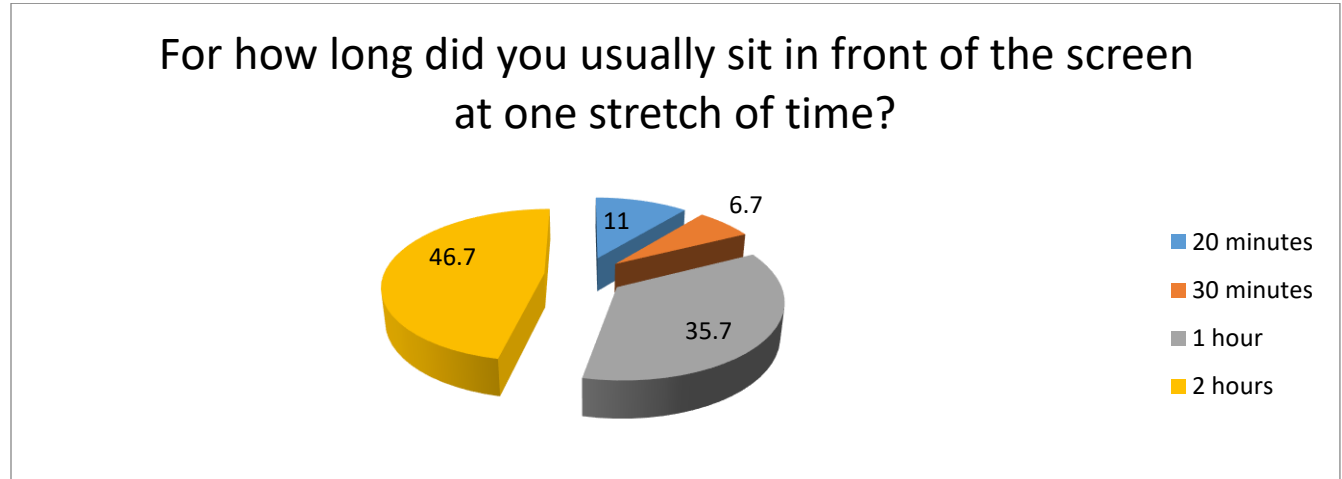
This epidemiological study was conducted among the students of Bahria University of Health Sciences for the duration of 4 months (June 2022 to September 2022) using descriptive cross-sectional study design. Sample size 210 was calculated in line with the previous literature using open EPI website calculator (3). Ethical approval was obtained from the Ethical Review Committee of Bahria University of Health Sciences. After obtaining informed consent from the participants, using inclusion and exclusion criteria a structured questionnaire generated using Google forms was distributed among the students enrolled in their third and fourth years of MBBS and third year of BDS at Bahria university of Health Sciences. Total 210 students who attended online teaching modules for at least one year (3rd year MBBS, 4th year MBBS, and 3rd year BDS) via online teaching Apps (Microsoft teams, WhatsApp, Skype, and FaceTime) were included, while students who did not attend online classes, attended online teaching for less than two years, or were unwilling to participate were excluded from the study.

## **STATISTICAL ANALYSIS**

IBM-SPSS version 23.0 was used to store and analyze data. Counts as well as percentages were reported on the baseline characteristics of the studied samples, which included class, specialty, duration of online class, electronic devices frequently used to attend online classes, duration of screen time, and factors that may affect the physical and mental health due to excessive screen time during online teaching. The Pearson Chi Square test was used to examine the relationship. To estimate the risk of associated risk factors of excessive screen time during online instruction, binary logistic regression was used. Class, specialty, and factors that showed a significant association in the Pearson chi square test with a p-value less than 0.05 were subjected to univariate and multivariate analysis. The odds ratio was reported along with the 95% confidence interval. Statistical significance was defined as p-values less than 0.05. Pie diagrams and bar charts were also used to present data graphically.

## **RESULTS**

**PIE CHART 1**



**TABLE 3:**

**Effects of excessive screen time on the academic performance of medical students**

Variables		20 minutes (n=23)		30 minutes (n=14)		1 hour (n=75)		2 hours (n=98)		p-value
		n	%	N	%	n	%	n	%	
Were topics effectively delivered to you using the online mode of teaching?	Sometimes	10	43.5	4	28.6	38	50.7	41	41.8	0.18
	Often	10	43.5	5	35.7	26	34.7	29	29.6	
	Always	0	0.0	3	21.4	4	5.3	17	17.3	
	Never	3	13.0	2	14.3	7	9.3	11	11.2	
How often did you face internet connectivity problems?	Sometimes	10	43.5	7	50.0	29	38.7	40	40.8	0.56
	Often	9	39.1	3	21.4	32	42.7	41	41.8	
	Always	2	8.7	1	7.1	10	13.3	12	12.2	
	Never	2	8.7	3	21.4	4	5.3	5	5.1	
How often did you experience a lack of interest	Sometimes	8	34.8	5	35.7	20	26.7	17	17.3	0.053
	Often	6	26.1	5	35.7	29	38.7	46	46.9	

during online classes?	Always	8	34.8	4	28.6	15	20.0	31	31.6	
	Never	1	4.3	0	0.0	11	14.7	4	4.1	
Did you participate in online discussions during the class?	Sometimes	12	52.2	6	42.9	30	40.0	42	42.9	0.15
	Often	4	17.4	2	14.3	17	22.7	33	33.7	
	Always	4	17.4	1	7.1	17	22.7	12	12.2	
	Never	3	13.0	5	35.7	11	14.7	11	11.2	
Do you feel your academic performance improved/declined during this period?	Improved	8	34.8	7	50.0	26	34.7	18	18.4	0.01*
	Declined	15	65.2	7	50.0	49	65.3	80	81.6	
Did you feel well prepared for your examination by this mode of teaching?	Yes	7	30.4	4	28.6	29	38.7	21	21.4	0.10
	No	16	69.6	10	71.4	46	61.3	77	78.6	
Did the fear of being infected affect your overall performance?	Yes	13	56.5	8	57.1	45	60.0	54	55.1	0.93
	No	10	43.5	6	42.9	30	40.0	44	44.9	
*p<0.05 was considered statistically significant using Pearson Chi Square test										

## **DISCUSSION**

The introduction of new teaching methodologies always proves challenging for the teachers and students (10). But the challenges brought about by the unforeseen pandemic were unprecedented. There was no time to plan and organize the infra-structure or to familiarize and train the stakeholders (11). This contributed towards elevating the stress and anxiety experienced by the students during online teaching. There was also an overall decrease in the mental well-being of students during the lockdown due to fear for health, social isolation, financial issues and the general environment of uncertainty (12).

According to the findings in our study, the majority of students who have participated in online lessons for the maximum duration (2 hours) believe that the topics of the teacher's lessons are sometimes effectively conveyed to them during the online classes. Universities struggled to convert all face-to-face courses to distance learning. That is, switching to correspondence education in such a short period of time was challenging. Distance learning has made a significant impact, particularly in Pakistan. As in developing countries, technological progress is slow. A lesson plan, course materials (both audio and video), appropriate software installation, and technology support are all necessary steps in taking an online course (13,14). However, our results show that the teachers accepted the changed form of teaching very quickly and were able to conduct lectures effectively using online technologies. The study results show that maximum number of students often faced internet connectivity issues.

Our study findings suggest that students frequently expressed a lack of interest in class. According to previous research, students readily accepted the transition from traditional face-to-face learning to new learning methods (15). However, a lack of face-to-face interaction, a proper learning environment in the classroom, and multiple connectivity issues are significant factors that contribute to a lack of interest in online classes (15).

Research shows that most students avoid participating in class discussions during online classes. Therefore, we suggest that more collaboration in an online course will improve the overall success rate of the online course. 55.1% of students accepted the fear of infection as affecting their general activity. Depression is one of the main causes of disability in modern society (16). Epidemics or natural disasters increase the level of depression in the population in the long run. Strong disease awareness campaigns, prevention education, and effective coping strategies are recommended to reduce COVID-19 fear. Improving the health response can also help to reduce anxiety because there are higher expectations of a response in the event of illness (17–19). 81.6% of the study subjects were of the view that their overall performance declined during this period. 78.6% of the students thought that they did not feel well prepared for examination using this mode of teaching. In view of these results, it can be concluded that in a developing country like Pakistan more faculty development programs are required to train the faculty for online mode of teaching for such events in future. With the aggravating monsoon season, floods and outbreak of dengue it is necessary for the universities to keep backup plans ready to deal with such situations in future.

In general, to improve online learning it is recommended that, students be provided with electronic devices to access the internet, internet speed be improved, cheaper or even free internet packages be provided, professional training for lecturers be provided, and interaction between students and teachers be enhanced. Future research on this topic should consider registration measures related to the economy, employment status, housing conditions, goods and/or resources, and so on. These sociodemographic factors may shed lighter on other factors that may be protective or precursors of depression in a complex system that includes anxiety, stress, and fear. It may also help to better target potential preventive and mitigating actions, as well as optimize resources for those at risk among the university student population as a whole.

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