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Student's Perceptions Regarding e-Learning during Covid-19 at Private Medical and Dental Colleges of Bangladesh

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ABSTRACT:

Background: Covid-19 pandemic era introduce E-learning process in education system all over the world include medical science. Repeated researches should be conducted to explore the limitations and combat with the challenges of the E-learning process as well as find out the methods of suitable medical education system for future. **Method:** A cross-sectional study was performed among 334 MBBS (n = 114, 34.3%) and BDS (n = 218; 65.7%) students of four selected private Medical and Dental colleges in Bangladesh to reveal the perception of the students towards E-learning during the COVID-19 outbreak. Data was collected through an online platform using the snowball sampling technique in between October 2021 to March 2022. **Result:** Most of the participants use mobile phones (n = 308, 92.8%) and Wi-Fi connections (n = 153, 46.1%) for online classes. Majority of the participants had negative perception regarding E-learning. In addition, most of the participants responded that, E-learning is not better than traditional teaching (n = 292, 88%), the quality of E-learning is not satisfactory (n = 198, 59.6%), the usefulness of E-teaching regarding clinical and practical demonstrations is not satisfactory (n = 284, 85.5%), and the blend of E-learning will be beneficial in the future (n = 224, 67.5%), where female students (p = 0.049) and BDS students (p = 0.003) gave a more positive response in comparison to male students and MBBS students. BDS students gave more positive response about the satisfaction in quality of E-learning rather than MBBS students (p= 0.003). MBBS students significantly responded more negatively than did BDS students (p = 0.003) regarding student-teacher interactions during the e-learning process. **Conclusion:** Students adjusted themselves with the E-learning techniques but they believe that blending of E-learning, which combines both classroom and distance learning will be beneficial for them in future. The COVID-19 pandemic affects future approaches to teaching methodologies and changes to the medical education system.

KEY WORDS: Perceptions, E-learning, Medical and Dental College, Student

INTRODUCTION:

Information technology has a significant influence on our daily lives in today's world. Every field, including education, relies on technological assistance to function successfully. E-learning has advanced significantly in recent years, with the introduction of E Conferences, Webinars, and E-learning platforms, among other innovations. However, during the lockdown period caused by the COVID -19 virus, all educational institutions are shuttered, and instructors and students are faced with a slew of new problems. There is no option but to use E-learning as the principal mode of instruction in the classroom[1].

Electronic (E) or online learning may be defined as the use of electronic technology and media to provide, support, and enhance both learning and teaching. It includes interaction between learners and instructors via online platform[2]. Web-based learning, online learning, dispersed learning, computer-assisted education, and Internet-based learning are used to describe E-learning. There have traditionally been two types of E-learning: remote learning and computer-assisted training. Distance learning is a method of delivering teaching to learners far away from a central place using information technology. Computer-assisted instruction (also known as computer-based learning and computer-based training) provides stand-alone multimedia learning and teaching packages using computers. As the Internet integrates technology, these two forms are merged into E-

learning[3]. The online classroom substitutes the traditional classroom with its chalkboard, whiteboard, and projectors of an educational establishment with a virtual environment. The learning environment is created through the use of the internet, video, audio, text communications, and software[4]. Several studies have been conducted to determine the importance and effectiveness of E-learning deployment. It is being promoted as a teaching approach by several organizations worldwide[1].

The COVID-19 pandemic has negatively impacted education systems throughout the world, affecting approximately 1.6 billion students across 190 countries and all continents. 94% of the world's student population has been affected by sudden closures of educational institutions, with up to 99 % in low and lower-middle-income nations[4].

In response to the COVID-19 pandemic, the Government of Bangladesh has suspended all on-campus educational activities as of March 18, 2020. With students' vaccination, educational organizations have started offline classes in limited form in late 2020. Still, unfortunately again, from January 21, 2022, on-campus educational activities have been suspended again, resulting in an abrupt halt to all teaching-learning activities across the country. As has happened in othernations, online classes have become a key priority in the education system of Bangladesh, more so than ever before. On the other hand, virtual teaching had been a new experience at almost all medical and dental colleges; unexpected closures of face-to-face classes left faculty and students with little time to adjust to the new virtual classroom option[4].

With the relatively recent introduction of this teaching style in Bangladesh, both instructors and students are still adjusting to the new system. The shift from traditional to online education, however, is not without difficulties. Students and instructors alike face increasing time constraints and demands, compelling departments to develop innovative approaches to offering a more personalized, self-directed learning experience[2]. During the implementation of long-distance learning, we found that several factors might impact the process, either positively or negatively[5]. As more medical institutions use the Internet as a digital library of teaching and learning forums, the concept of “Blended learning”, is gaining favor[6]. “Blended learning” is a method that mixes e-learning technologies with traditional instructor-led instruction. The phrase blended learning may be new, but most instructors are acquainted with the concept. Multimedia and e-learning increase teaching and learning, according to educators, administrators, and students[7].

The moment has come to find out what students think and feel about this virtual approach to teaching and learning is critical to do it now. Finding out whether the learners are receptive to the new approach, whether they would want any adjustments that is blending mode or whether they would prefer to return to conventional learning entirely would be an intriguing question to investigate.

Innovative technologies and learning management systems for both teaching and assessment have progressed, providing a usable answer for educators and enabling policymakers the ability to implement the use of information technology during quarantine days to cover course work[8]. Stakeholders, including institutional administrators, instructors, and students, are making significant efforts to maximize the use of available technology for advancing the educational process and limiting the gaps that will come from the existing conditions.

The sudden shutdown of educational institutions due to the COVID 19 pandemic had a significant historical influence on worldwide educational systems. Bangladesh was not different from this. In undergraduate medical and dental college, the situation was challenging and quickly transitioning from traditional to new. This simple study aimed to find out how students felt about E-learning while the medical and dental colleges were closed due to the covid-19 outbreak. Students' perspectives may also result in recommendations for further development in this sector or for adjustments to the same study area based on their experiences.

MATERIALS AND METHODS:

Study Design: A descriptive type of cross-sectional study was conducted from October 2021 to March 2022**.** Students who were studying in MBBS and BDS course in different private medical and dental colleges in Bangladesh, participated via online platform. **Study sites:** Two private medical and two private dental Colleges in the capital city of Bangladesh were selected as the study sites. Each organization offered classroom and clinical training facilities and outdoor services, while 114 MBBS students and 218 BDS students participated in our e-learning study for the first and second disciplines, respectively. **Study Population:** Current students of those two study sites from their first to fourth academic years were actively involved in this study.

Sample Size and Sampling technique: The snowball sampling technique was used for collecting data. Once a participant filled up the online questionnaire, he/she was requested to forward the survey link to his/her Personal/professional networks. The sample size was calculated using A web-based survey of private medical students in Bangladesh that showed the personal viewpoints of 217 pre-clinical and clinical MBBS students at the study center, with an 87 percent response rate, 95% confidence intervals, and 80% power, the estimated minimum sample size was 175. **Study Questionnaire:** A structured survey questionnaire was used for data collection in this study. Google forms were used to create the survey. The study questionnaire collected socio demographic data as well as information on choice of device and internet connection used for e-learning, perception of students regarding e-learning, perception regarding e-learning in male and female students, perception regarding e-learning in MBBS and BDS students, factors considered to be supportive or inhibitory for e-learning. The entire study questionnaire had a total of about 13 items, which did not require more than 10 min to complete by a study participant. A pretest of the questionnaire was performed on a selective group of participants and the necessary modification was done before

the data collection. **Data Collection:** The online link of the survey was e-mailed to all the students at all sites inviting them to participate. The volunteer nature of the study was highlighted. Data were collected during October 2021 to March 2022. Only those who provided consent could proceed to the following screens. The following screens displayed the entire study questionnaire. **Data Analyses:** Data were analyzed using IBM SPSS (statistical packages for social Science) 25. At first, descriptive analyses were conducted. Variables were reported as proportions and percentage. Chi-squared tests were conducted to determine association and $p < 0.05$ was considered significant among the MBBS and BDS (male & female) students in the different institution. **Ethics:** The study protocol was reviewed and approved by the Human Research Ethics Committee at one of the study sites (Ref. No.: SDC/C-7/2021/831). The survey was completely voluntary in nature and it was clarified in the PLIS, so that participants got the opportunity to have an informed choice to participate in the study. The data presented in this study are available on reasonable request from the corresponding author.

RESULTS:

This study was conducted among 332 undergraduate students who are studying in MBBS and BDS course in different private medical and dental colleges in Bangladesh.

Table- 1: Demographics of students and choice of device and internet connection used for e-learning

Variables	Number	percentages
Gender		
Male	116	34.9%
Female	216	65.1%
Discipline		
MBBS	114	34.3%
BDS	218	65.7%
Phase		
1st	103	31%
2nd	71	21.4%
3rd	61	18.4%
4th	97	29.2%
Used device		
Mobile	308	92.8%
Computer	8	2.4%
Laptop	16	4.8%
Internet connection		
Wi-Fi	153	46.1%
Cellular	59	17.8%
Combination of Wi-Fi and cellular	120	36.1%

Table1: Majority of the study participants were female and from BDS course. Students from all academic phases participated in the study, however, 1st and 4th phases students were predominant. Most of the participants used mobile and Wi-Fi for accessing E-learning.

Table-2: Perception of students regarding E-learning

	Yes		No	
	Number	Percentage	Number	Percentage
E-learning is better than traditional teaching	40	12%	292	88%
Quality of e-learning is satisfactory	134	40.4%	198	59.6%
Impact of e-teaching is less	275	82.25	57	17.2%
Student-teacher interaction is satisfactory	115	34.6%	217	65.4%
Usefulness of E-teaching regarding clinical and practical demonstration is satisfactory	48	14.5%	284	85.5%
Blending of E-learning will beneficial in future	224	67.5%	108	32.5%

Table 2: Majority of the participants had negative perception regarding e-learning. Most of the participants responded that, traditional teaching is better than e-learning, quality of e-learning is not satisfactory and there is less impact of e-teaching. Again most of the participants responded that student-teacher interaction is not satisfactory in e-learning and usefulness of e-teaching in clinical and practical demonstration is not satisfactory. In the other hand a large number of students responded that, blending e-learning will be beneficial in the future.

Table-3: Perception regarding E-learning in male and female students

		Yes	No	p-value
E-learning is better than traditional teaching	Male	12.9%	87.1%	.421
	Female	11.6%	88.4%	
Quality of e-learning is satisfactory	Male	35.3%	64.7%	.106
	Female	43%	57%	
Impact of e-teaching is less	Male	85%	15%	.232
	Female	81.5%	18.5%	
Student-teacher interaction is satisfactory	Male	30%	70%	.128
	Female	37%	63%	
Usefulness of E-teaching regarding clinical and practical demonstration is satisfactory	Male	11%	88%	.142
	Female	16%	84%	
Blending of E-learning will beneficial in future	Male	61%	39%	**.049**
	Female	71.8%	29.2%	

Table 3: Most of both the male and female participants perceived that, e-learning is not better than the traditional teaching, quality of e-learning is not satisfactory and impact of e-teaching is less. Again,majority of the male and female participants perceived that, student-teacher interaction is not satisfactory in e-learning and usefulness of e-teaching in clinical and practical demonstration is not satisfactory. In the other hand the female students had more positive response that, blending of e-learning will be beneficial in future rather than that of male students, which was significant (p-value=0.049).

Table-4: Perception regarding E-learning in MBBS and BDS students

		Yes	No	p-value
E-learning is better than traditional teaching	MBBS	11.6%	88.4%	.472
	BDS	12.4%	87.6%	
Quality of e-learning is satisfactory	MBBS	29.8%	70.2%	**.003**
	BDS	45.9%	54.1%	
Impact of e-teaching is less	MBBS	86%	14%	.174
	BDS	81%	19%	
Student-teacher interaction is satisfactory	MBBS	24.5%	75.5%	**.003**
	BDS	40%	60%	
Usefulness of E-teaching regarding clinical and practical demonstration is satisfactory	MBBS	8%	92%	**.009**
	BDS	18%	82%	
Blending of E-learning will beneficial in future	MBBS	57%	43%	**.003**
	BDS	73%	27%	

Table 4: Majority of respondents from both MBBS and BDS perceived that, traditional teaching is better than e-learning. But the BDS students gave more positive response about the satisfaction in quality of e-learning rather than MBBS student (p-value=0.003), which is significant. Again, most of the MBBS and BDS students responded that, e-teaching has less impact. About student-teacher interaction, majority of both group perceived that, the interaction is not satisfactory, but the MBBS students significantly responded more negative than that of BDS students (p-value=0.003). Again, the BDS students gave less negative response regarding the satisfaction in usefulness of e-teaching in clinical and practical demonstration rather than the MBBS students, which was statistically significant (p-value=0.009). Moreover, the BDS students gave significantly more positive response regarding the future benefit of blending method of e-learning than that of MBBS students (p-value=0.003).

Table-5- Factors considered to be supportive or inhibitory for E-learning

Factors	Agree		Disagree	
	Number	Percentage	Number	Percentage
Supportive				
Time flexibility	239	72%	93	28%
Location flexibility	246	74.1%	86	25.9%
No specific preparation is needed	196	59%	136	41%
Low cost (except for cellular data)	200	60.2%	132	39.8%
Inhibitory				
Lack of concentration	272	81.9%	60	18.1%
Lack of understanding	245	73.8%	87	26.2%
Lack of interaction	266	80.1%	66	19.9%
Lesson material piling up	257	77.4%	75	22.6%
Cost of additional cellular data	282	84.9%	50	15.1%
Signal dependent	309	93.1%	23	6.9%

Table-5: Results shows that, Majority of the respondents did agree that, the factors-Time flexibility, Location flexibility, No need of specific preparation and Low cost (except for cellular data) are the supportive factors for e-learning. And, in the other hand, most of the respondents agreed that, the factors-Lack of concentration, Lack of understanding, Lack of interaction, Cost of additional cellular data and the dependency on network signal are the inhibitory factors for e-learning.

DISCUSSION:

The COVID-19 pandemic has resulted in the unprecedented closure of universities, medical and dental colleges, affecting millions of students worldwide. The abrupt conversion of teaching and learning activities into virtual modalities was carried out to maintain academic courses while minimizing crowding and the potential for infection transmission. Since March 16, 2020, the current study has documented the student's viewpoint on distance learning.

In our study, 92.8% of medical and dental students use mobiles as a gadget for E-learning. In a study in India, 57.6% of medical students use mobile phones, and the remaining 43.7% use laptops as their gadgets for E-learning[1]. Compared to computers, most students were utilizing mobile devices as their primary electronic devices. This feature is congruent with the study in Spain done by Martinez IG et al., which found that mobile devices were chosen over laptops for E-learning, because student-teacher interaction via mobile was relatively more accessible than other devices[9]. In an Indonesian study, it was shown that 34.86 % of medical students utilized a mixed or combined internet connection, as opposed to those who resided outside of the city, who relied more on cellular data, that is 8.44%. Perhaps the choice to have a Wi-Fi connection is more limited for those living outside of cities due to internet network limitations in some regions of Indonesia, or perhaps due to financial constraints that prevent them from having a subscribed Wi-Fi connection. If some students rely only on cellular data with no backup (e.g., Wi-Fi), they will all be highly dependent on the reliability and continuity of cellular phone signals[5]. In our study, most students used Wi-Fi and a combination of Wi-Fi and cellular data after that.The information on internet connectivity also pointed us to the possibility of implementation of long distance learning, even at higher levels of education, particularly medical education, as has occurred globally. Singh A and Min AK researched the effectiveness of providing digital lectures on gross anatomy.The survey looked at students ' satisfaction with e-learning and discovered that the vast majority of students favored it[10]. In his study, Raymond Selorm also said that when compared to face-to-face learning, students preferred e-learning[11]. According to a study conducted in Pakistan, students prefer face-to-face teaching over virtual learning, with 85 % preference[8]. Like in our study, 88.4% of MBBS and 87.6% of BDS students prefer traditional teaching over E-learning. In a survey of Polish medical students, the absence of interactions with teachers and patients was reported by the majority of respondents (70 percent)[12]. According to a survey conducted in Pakistan, 84 percent of MBBS students believe that e-teaching decreases student-teacher interaction[5]. This coincides with our study where 75.5% of MBBS students and 60% of BDS students were not

satisfied with student-teacher interaction in E-learning and majority of our MBBS students are not satisfied with quality of E-learning (p<0.01). In a study in India, 61.7% MBBS students realize the importance of E-learning but prefer a blended learning approach[1]. In our study, both MBBS and BDS students prefer the blending of E-learning with traditional methods in the future (p<0.01), among them, female students are more positive. A study conducted in Indonesia found that "Location flexibility" was the most supportive factor, 87.9%, but the lowest level of agreement among respondents on factors considered to be supportive was on the issue of "no specific preparation is required," 57.6%. The most significant inhibitory factor for E-learning implementation is "signal-dependent," accounting for 80.2 percent of the total[5]. Our study supports it. The most supporting element is "location flexibility," with 74.1 percent of respondents agreeing, while the most negligible supportive factor is "no special preparation is necessary," with 59 percent of respondents agreeing. Our study's significant barrier to E-learning adoption is "signal-dependent," accounting for 93.1 percent of the total.

CONCLUSION:

Despite some challenges, MBBS and BDS students were able to adjust to the new E-learning techniques, and the majority believed that blended learning, which combines classroom and distance learning, should be utilized in the future. This present COVID-19 pandemic affects not just the use of technology in education but also future pedagogy initiatives.

RECOMMENDATION:

In medical and dental education, E-learning is a way to get to a goal, not its goal. Using E-learning can give students more ways to learn and improve the effectiveness and efficiency of teachers at the same time. However, for e-learning to reach its full potential, it needs a certain level of institutional readiness regarding people and infrastructure, which is not always present in low and middle-income countries like Bangladesh. Institutional readiness for e-learning adoption makes sure that new tools meet the educational and economic context(13).Policymakers, authorities, teachers, and students in medical colleges need to be encouraged to use and practice e-learning. Providing structured computer and Information Technology (IT) training and including it in the MBBS and BDS curriculum, setting up an IT lab, an e-library, and Wi-Fi facilities, among other things, would give them the skills they need to have up-to-date knowledge and practice in real life in the future which is vital to improving the quality of medical care.

LIMITATIONS OF THE STUDY:

In our study, there is selection bias, students without internet access and those who were severely affected by the pandemic may not be able to be included in our study. We utilized a self-designed survey instrument due to the severity of the situation, restrictions on movement, and the availability of limited resources to us. The sample was obtained from two private medical and two private dental colleges. It would be better if we could collect the sample from public medical and dental colleges.

CONFLICT OF INTEREST: The authors declare no conflict of interest.

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INSTITUTIONAL REVIEW BOARD STATEMENT AND ETHICAL APPROVAL: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Research Ethics Committee of Sapporo Dental College and Hospital, Dhaka, Bangladesh on 27 October 2021 (Reference Number: Ref. No. : SDC/C-7/2021/831).

INFORMED CONSENT STATEMENT: Informed consent was obtained from all participants involved in the study.

DATA AVAILABILITY STATEMENT: The data presented in this study are available on reasonable requestfrom the corresponding author.

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