How COVID-19 Affected the Tertiary Education System of Bangladesh: The Students' Perspective

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Authors' contributions

Original Research Article

ABSTRACT

Aim: The main goal of the study is to comprehend how the new virtual mode of education has affected Bangladeshi students studying at the tertiary level and how they perceive its viability.
Design: This paper is based on a questionnaire survey consisting of 15 questions and the responses of 500 students from four different universities in Dhaka (125 students from every university) were collected.
Place and Duration of the Study: The universities involved were the Islamic University of Technology (IUT), Bangladesh University of Engineering and Technology (BUET), University of Asia Pacific (UAP), and Stamford University and the duration was from July 21, 2020 to November 23, 2021.
Methodology: The survey was conducted using both online and offline methods. While the campus was under strict lockdown, 167 participants responded via Google Form between July 2020–July 2021. The remaining data were collected using questionnaire forms when the campus reopened (between October 2021–November 2021).

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Results: Bangladesh initiated a new virtual mode of study that has had an enormous impact on the learning pattern of students studying at different levels, particularly tertiary learners. According to the study, 25.5% of learners received no backup facility for missed classes. Regarding internet reliability, mobile data users (23.2%) found internet connection to be less reliable compared to wi-fi users (73.1%). Furthermore, the Chi-square analysis showed that internet reliability increased with internet cost, with the all-time stable internet connection being found at a monthly internet cost of 1500 BDT and above, which was not affordable for all students. In addition, respondents reported several negative health impacts due to using digital devices for an extended period of time. In the context of feasibility, only 13% of the respondents in this study believed that online education was feasible for implementation in Bangladesh.

Conclusions: The study pointed out several shortcomings of the adapted online medium of education among tertiary-level Bangladeshi students. Considering them, some recommendations have been provided including the suggestion to develop an integrated education system combining both the online and traditional medium.

1. INTRODUCTION

The COVID-19 pandemic, also known as the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), originated in Wuhan, China, and has since spread throughout the world, posing serious hazards to public health and lives. As of June 24, 2022, this extremely infectious virus has had a substantial impact on over 224 countries, infecting about 547.7 million people and resulting in around 6.3 million fatalities [1]. Many nations have employed physical isolation or quarantine policies to reduce the spread of disease and limit infection contamination. Short- to medium-term lockdowns, closure of educational institutions, discretionary home restraints, deferrals of public and social events, and travel restrictions were all introduced during the quarantine period [2]. These precautionary measures have substantially challenged many aspects of life worldwide, particularly the medium of education. Recognizing the impact of the new online-based mode of education on Bangladesh's age-old educational system was crucial given the aftermath of the COVID-19 outbreak. So, the primary goals of this study were to gather information about the feasibility of the adapted medium of education and the change in study habits along with its health impacts among university students as a result of the pandemic and to assess the outcomes in order to gain a better comprehension.

2. LITERATURE REVIEW

The COVID-19 pandemic has impaired conventional educational systems in the majority of nations, limiting learning opportunities for many students at all levels. The situation was worse, particularly for the underprivileged and disabled students. In the year 2020, globally more than 1.7 billion learners were affected by the pandemic, where 99 percent of them were from low- and lower-middle-income countries [3]. Additionally, expertise loss is predicted to result from learning loss, and owing to the link between skill levels and productivity/income, GDP is expected to be on average 1.5% lower for the rest of the century, compared to the pre-covid years [4]. The World Bank projected that the present generation of students could lose 10 trillion USD (approx. BDT 10,87,315 hundred crores) in wages in the long run as a result of the interruption to education [5]. Moreover, abruptly closing educational institutions for an indefinite period of time has increased the dropout rate globally. Studies also found that during the time when educational institutions were closed, most governments developed substitute education delivery models using a variety of media, including digital platforms. [6]. Consequently, there are many varying impacts (both positive and negative) of these alternative educational systems on learners worldwide.

Similar to many other nations, Bangladesh also encountered extreme social, educational, economic, and other consequences from the COVID-19 pandemic. The Institute of Epidemiology, Disease Control and Research discovered the first three cases in Bangladesh on March 8 (2020) [7], and as of June 24 (2022), 1.96 million people had contracted this highly contagious virus, causing 29,135 fatalities. [1]. The closure of educational institutions was first announced by the government of Bangladesh on March 17, 2020, and it was repeatedly extended

till the end of that year [8]. Additionally, school closures persisted even in the first few months of 2021, affecting close to a million teachers and 38 million students. As a result of the closure of universities, four million tertiary-level students from affiliated colleges, and professional colleges, experienced hardship [9].

This crisis also brought about a few noteworthy modifications in the conventional educational system of Bangladesh, including the adoption of online-based technical approaches. The government of Bangladesh introduced remote TV-based programs to continue primary and secondary level education. Nevertheless, it was not very efficacious, especially among rural, underprivileged, and poor students. In 2020, Public and private universities in Bangladesh were permitted to start online classes by the University Grants Commission (UGC) [10]. But both students and educators encountered challenges during online classes because the method was new and unfamiliar to them [11]. Furthermore, a study revealed innumerable, previously undiscovered disruptions in students' learning, a decline in motivation and study time, as well as various physical, mental, and financial issues faced by the students. That study also revealed the lack of electronic devices, and slow internet associated with higher data usage costs, as some of the challenges faced by students while pursuing online education [12].

3. METHODOLOGY

3.1 Study Area

This paper is a qualitative survey-based study conducted among 500 students of four different universities in Dhaka, Bangladesh. The respective universities were the Islamic University of Technology (IUT), Bangladesh University of Engineering and Technology (BUET), University of Asia Pacific (UAP), and Stamford University.

3.2 Data Collection Methods

A mixed method of study was conducted combining both online and offline surveys. As it was impossible to conduct in-person interviews during the stringent lockdown period to gather information, a google doc file was shared with the students of the selected universities where they were asked to fill up a questionnaire form. This online part of the survey was conducted from July, 2020- July, 2021. The remaining responses were gathered through in-person interviews with the help of hard copy questionnaire forms between October 2021 to November 2021, when the universities reopened. Consents were taken from the students before their participation in the study. The sample groups' age range was between 18-25 years. Participants were asked a wide variety of questions regarding the current delivery mode of lectures, and the provision of alternative learning resources in case of missed classes etc. Furthermore, the reliability and affordability of internet sources, the increased use of digital devices and related health impacts, were also queried. Finally, the opinion of the participants related to the feasibility of online education was also included in the study.

4. RESULTS AND DISCUSSION

4.1 Impact of COVID-19 on Educational Institutions

Fig. 1 depicts the condition of the studied universities during peak infectious period of COVID-19. It can be observed that classes were taken via online platforms for 88.4% of the participants, among which 22.4 percent responded that their institutions did not allow any virtual examinations. The lectures were delivered via a wide range of online platforms such as Zoom (BdRen/Unlimited minutes), Zoom (Basic), g-meet, Microsoft Teams etc. Fig. 2 shows that the studied institutions mostly preferred zoom (55% unlimited version and 22% basic), whereas Microsoft Teams was the least preferred (only 3%) among the four online platforms.

To take into account the possibility of class-interruptions, most of the universities also offered additional alternatives to assist the participants (Fig. 3). However, recorded lectures were given to 63.6% of the respondents whereas 25.5% participants reported having no provisions of any facilities for missed classes.

4.2 Reliability of Virtual Platforms from Learners' Perspective

Fig. 4 displays the proportion of participants who use mobile data and Wi-Fi for educational purposes. 64.7% of all correspondents use wi-fi, but only 1.8% of internet users have access to both. Fig. 5 depicts respondents' perceptions on the reliability of online sources. As can be seen, 73.1% of wi-fi users reported that their connections were generally reliable, compared to only 23.2% of mobile data users.
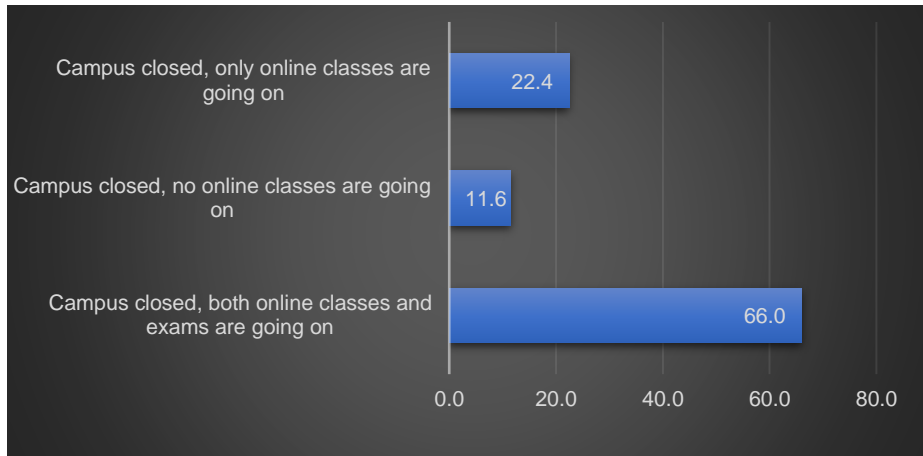
Fig. 1. Condition of educational institutions during peak infectious period of the pandemic
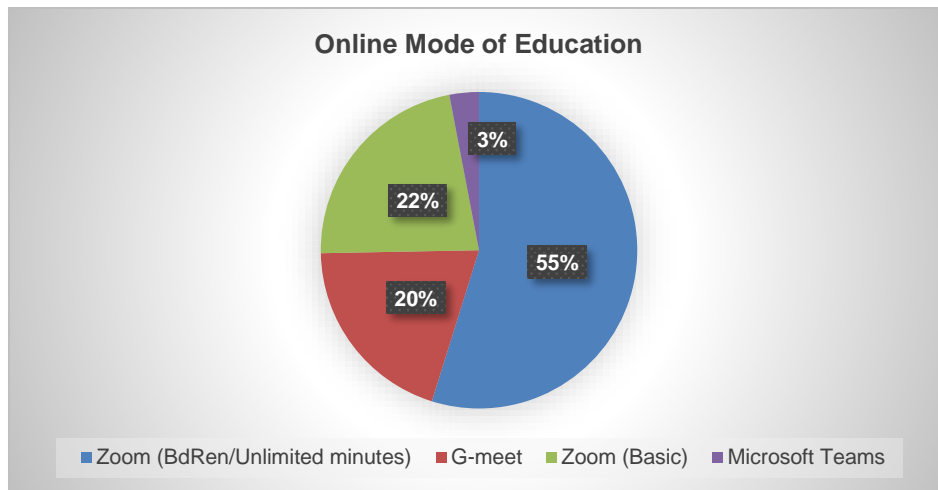

Fig. 2. Different proportions of online platforms used by the institutions
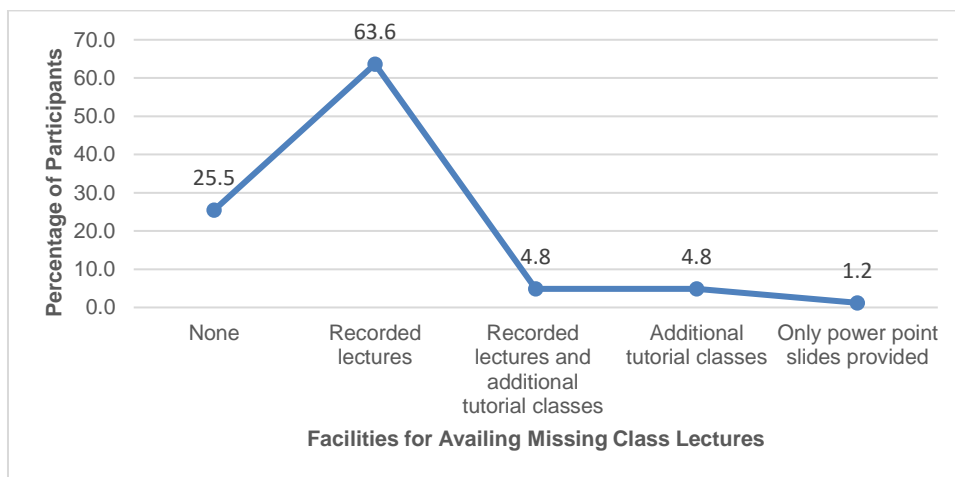

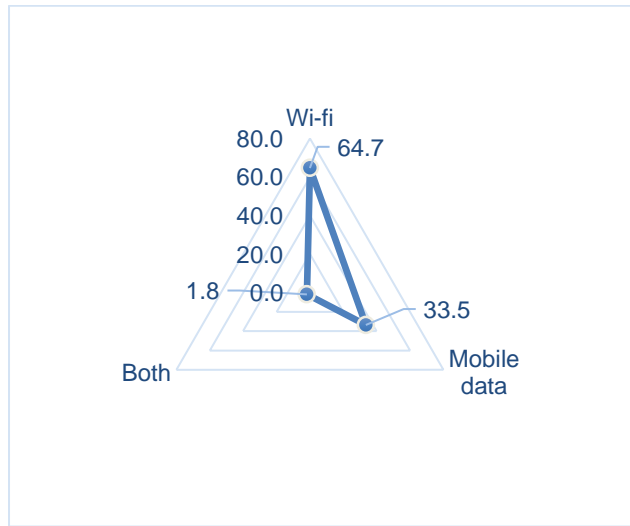**Fig. 3. Provision of additional alternatives for missed classes by the institutions in percentage**

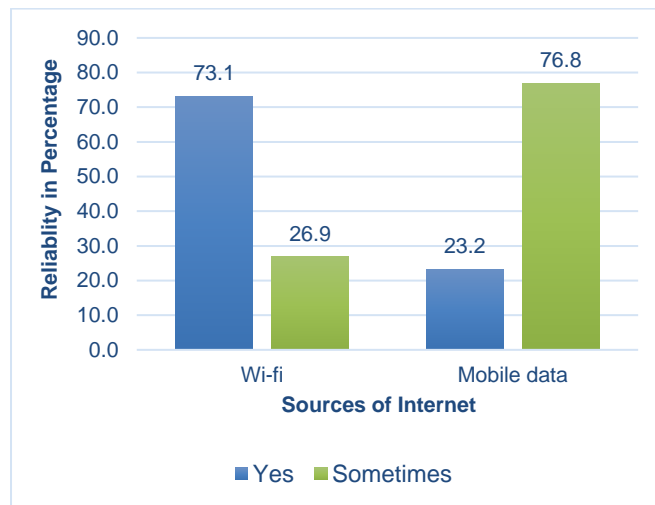**Fig. 4. Different types of internet connections used by students**

Fig. 5. Reliability of different sources of internet in percentage among the respondents

4.3 Increase in Internet Cost and Affordability of Virtual Platforms from Learners' Perspective

Fig. 6 shows how internet costs increased for people during the pandemic compared to the pre-COVID period. The percentage of participants who experienced an increase in cost from each of these ranges during the pandemic is represented by the vertical axis, while the horizontal axis shows the range of internet cost before the outbreak. It is apparent that most of the cost group experienced a rise in expense, however, 94.6% of participants from lower expense group (100 BDT-200 BDT) encountered the maximum in expense. It can also be acknowledged that individuals with higher internet expense before the pandemic experienced lower rise in cost during COVID period. Unfortunately, this increase in expense was not affordable at all among 20.5% of the individuals, and 31.1% of the participants faced difficulties while affording it (Fig. 7).

4.4 Statistical Analysis to Determine the Correlation between Internet Cost after Covid-19 and Reliability of the Internet Connection

Chi-square analysis was performed and Cramer's co-efficient (V) was determined to assess whether there is any existing correlation between the monthly cost of internet connection and its reliability (Tables 1, 2).
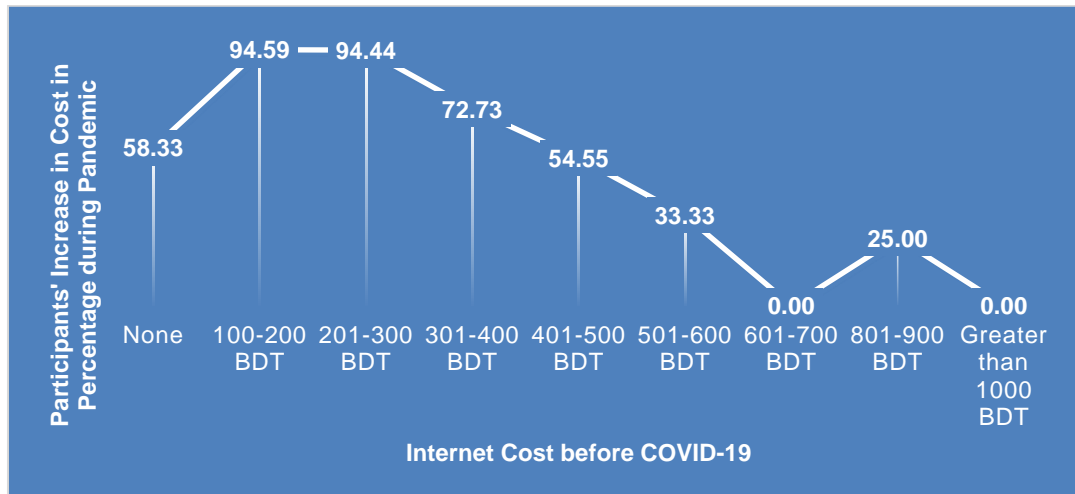
Fig. 6. Rise in internet cost during covid-19 among the respondents from different cost groups
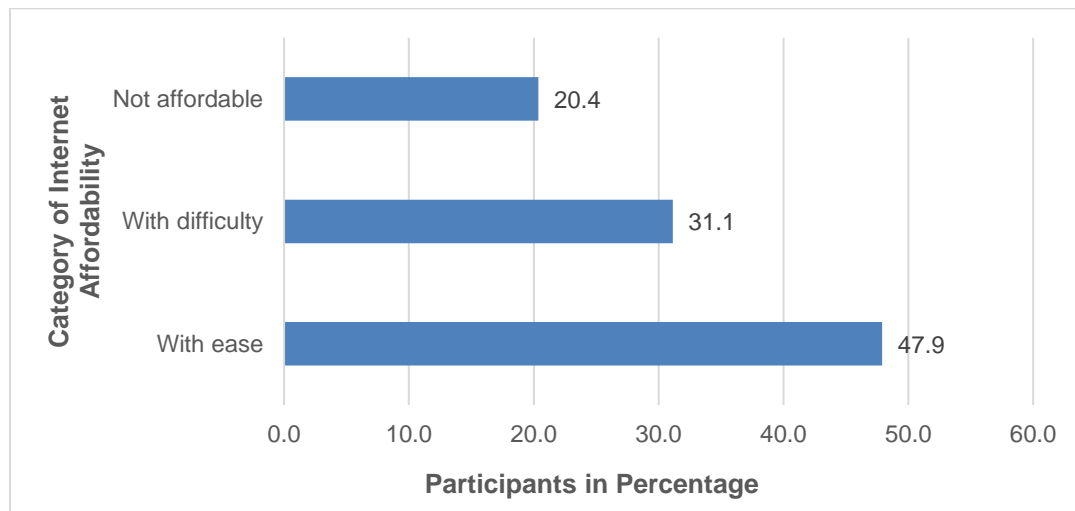

Fig. 7. Internet Affordability of the Participants in Percentage

Table 1. Monthly internet cost with connection reliability

Internet Cost After COVID-19 During online Classes (BDT)	Reliability of internet service		
	Yes	No	Sometimes
101-200	13	3	3
201-300	5	3	3
301-400	3	5	13
401-500	53	10	0
501-600	38	15	23
601-700	28	10	8
701-800	25	10	8
801-900	8	8	10
901-1000	23	20	10
1001-1500	43	13	5
1501-2000	60	0	0
More than 2000	30	0	0

.

Table 2. Chi-square analysis

Internet Cost After COVID-19 During online Classes (BDT)	Reliability of internet service		
	Yes	No	Sometimes
Less than 500 BDT	0.014	0.039	0.001
501-1000 BDT	8.308	6.263	9.500
More than 1000 BDT	12.564	8.982	130.667
Chi aquare Sum	176.338		
Crammer's V	0.511		

It is evident from the analysis that the reliability of the internet increased with increased internet cost where an all-time stable internet connection was found at a monthly internet cost of 1500 BDT and above. As this high cost of internet is not affordable for all, universities should offer financial support to their students, particularly those who are not financially solvent, in order to ensure the effectiveness of online classes with significant participation of the students.

4.5 Increased Use of Digital Devices and Related Health Impact

As evident from Fig. 8, 83.2% of participants had to depend on soft copies of notes and books during the pandemic (more than three times compared to the pre-COVID period) for their learning purposes due to bookstores being closed during consecutive lockdowns and safety restrictions. Fig. 9 represents how the use of digital devices varies among the respondents during a pandemic. 66% of participants observed frequent use of electronic devices, whereas this use decreased for only 8% of surveyors.

Furthermore, respondents complained about a wide range of adverse health impacts due to their prolonged exposure to digital devices. Some of these health effects included pain and irritation in the eye (23.10%), lack of concentration (21.07%), headache (20.30%), and lack of sleep (15.99%) (Fig. 10).

4.6 Perceptions of the Individuals Regarding Feasibility and Efficiency of the Online Education in Bangladesh

Majority of the participants shared their thoughts and opinions regarding the feasibility and efficacy of this new virtual mode of education. Some students urged to provide training to teachers and students to make online learning more fruitful. Some of the participants were not satisfied with this distance learning method. One of the respondents commented: "It is not possible to learn properly without person-to-person interaction". Again, the slow speed of the internet and frequent loss of connection were among the major barriers faced by most of the
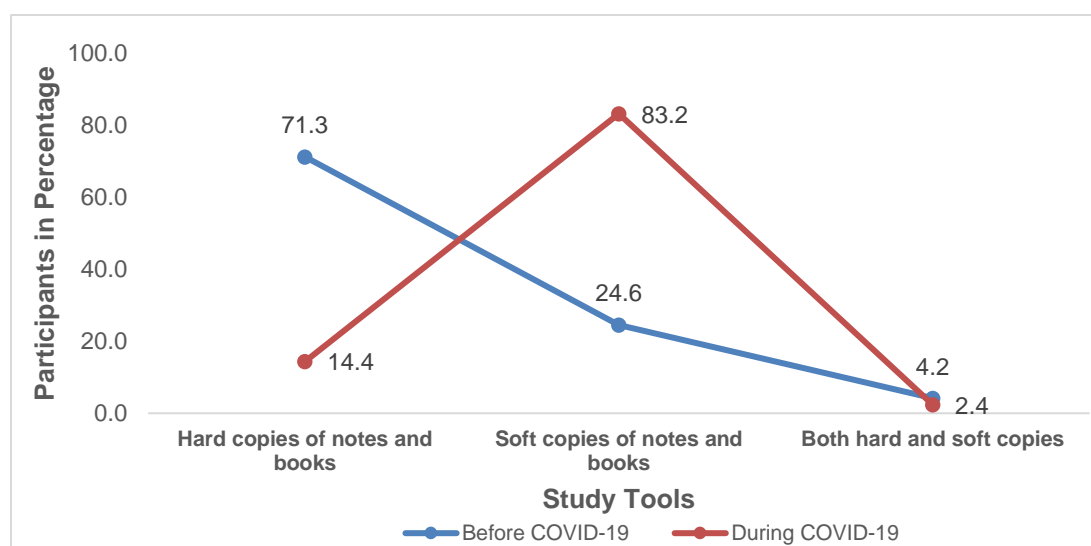

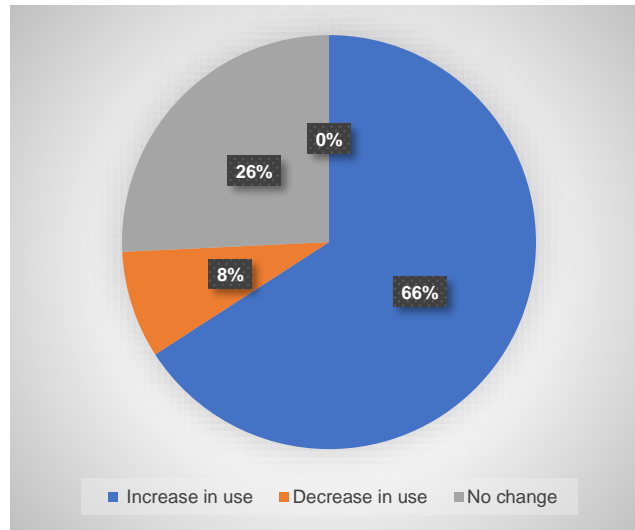**Fig. 8. Comparison of the usage of study tools by the participants**

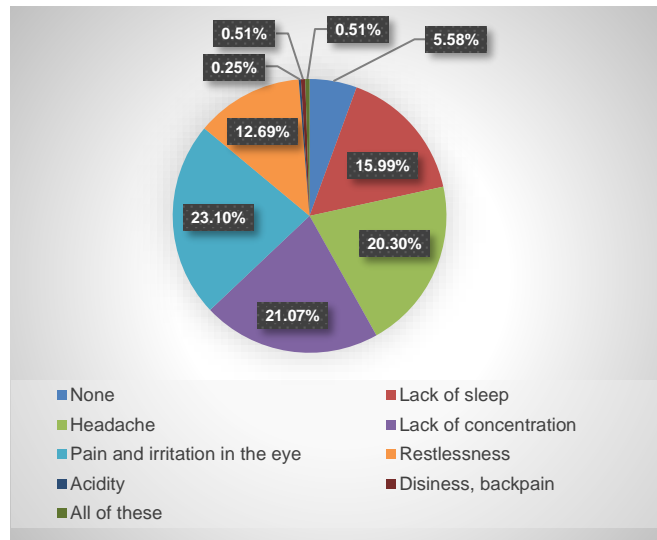**Fig. 9. Digital device usage of the participants**

Fig. 10. Adverse health impacts related to the increased use of devices among the participants

students. Many of the participants asked to ensure better internet connection across the whole country. One such response was "Before taking online classes, there has to be a solid network all around the country. Trained Personnel and adequate equipment are also a must for this kind of approach."

Many respondents showed their concerns regarding the high internet cost. One of the participants wrote, "Do something for village people. They cannot bear the cost of the internet. Village students cannot access Wi-Fi in most cases and mobile data cost has also increased." Moreover, a respondent recommended that the sim operating companies make some special internet bundles for students attending online classes and that amount of internet should be specifically used in platforms like g-meet, zoom, and other apps. So, students who do not have Wi-Fi service in their area will be able to buy internet at a lower cost. Moreover, online modes of education and detachment from the classroom environment have been reported to have a negative impact on the students' mental health as well.

Fig. 11 illustrates the opinions regarding online education in Bangladesh among the correspondents and it can be observed that only 13% of the participants thought online education to be feasible in the country.
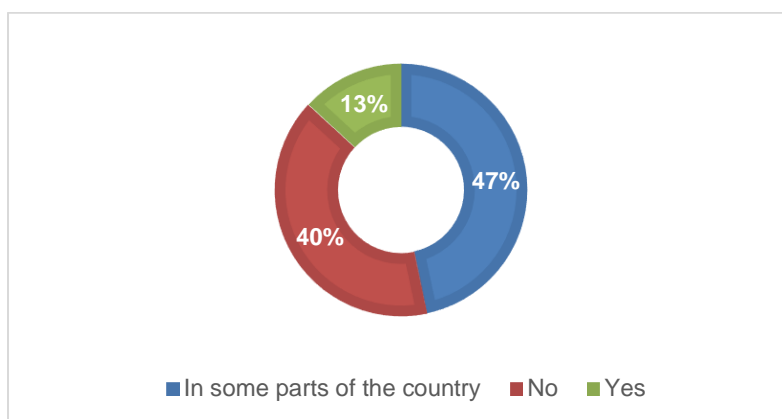
Fig. 11. Feedback of the participants regarding the feasibility of online education in Bangladesh

Similar feedback from the students was reported by different studies conducted among tertiary students and teachers in other countries as well. One study involved an online survey of 147 students and 76 teachers from Bangladesh and Nepal, and the results showed that both students and teachers thought that online classes were boring and uncomfortable. The main difficulties that participants encountered when learning online were a poor network, a lack of digital skills, a lack of institutional technological support, low student attendance and motivation, a lack of interaction, a power outage, and difficulty with a demonstration [13]. In addition, 158 teachers and 1468 university students in Bangladesh who took part in a study agreed that virtual education was ineffective across all levels. Participants conveyed concern for the disadvantaged students because of an absence of digital devices and poor internet connection [14]. On the other hand, a research study in Jordan involving 50 professors and 280 students discovered that participants thought virtual education would be beneficial in the event of a pandemic. It was nevertheless considered less successful than conventional classroom instruction [15].

5. CONCLUSION

The 44 public universities in Bangladesh are home to about 300,000 students, the majority of whom come from socioeconomically disadvantaged backgrounds and must pay for their education by themselves. However, about 75% of these students completely lost their income during the pandemic and are now grappling with an unimaginable economic crisis [16,17]. Additionally, the majority of Bangladesh's public universities lacked the necessary

resources to run successful online courses on their own, and as a result, most of these students gave up on the idea of receiving the institutional support they would have needed to do well in their studies [17]. As this study also incorporated participants' perceptions and opinions regarding the effectiveness of online education in Bangladesh. The results of this qualitative study are expected to aid those involved in Bangladesh's tertiary education, such as students, teachers, researchers, and government officials, in better understanding the several effects of COVID-19 on tertiary education. Finally, an integrated education system that includes both virtual teaching and learning tools and in-person learning can ensure the standard of the tertiary educational system in Bangladesh. From this study, some recommendations to ensure quality education among university students during and after the pandemic are outlined here-

1. The university should partially or completely revoke the student's tuition fees and offer financial aid. Also, installment-based tuition fees can be made available for poor students. taking these circumstances seriously, all departments and sectors involved in education must take care to eliminate all issues.

2. Many tertiary remote students are deprived of digital devices and stable internet connections. The university authority should provide interest-free loans to those disadvantaged students to aid them to buy smartphones and laptops. The university grant commission (UGC) can also negotiate with the sim companies to provide special data packages.

3. The educational institutions and government should arrange training on virtual teaching methods and provide interactive tools to the teachers for creating an efficient learning environment.
4. Recorded class lectures and materials should be made mandatory to reduce inequity among the students.
5. For mental well-being during a pandemic, universities should arrange frequent virtual workshops on improving mental health. Short courses on indoor exercises and meditation should also be encouraged.

CONSENT

The author(s) have obtained and preserved the participant's written consent in accordance with international or university standards.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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