Journal of Social Sciences Integration

Article

Internet Usage Patterns and Their Determinants among Youth during COVID-19: Evidence from Dhaka, Bangladesh

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Received: 12 April 2025; Accepted: 10 June 2025; Published: 20 June 2025.

Abstract: As the COVID-19 pandemic continues to spread and become more contagious, people have been staying home more frequently and facing various mental health challenges such as anxiety, fear, nervousness, and loneliness. Students, in particular, are using the internet heavily for their studies, while jobholders rely on it for their professional responsibilities. At the same time, internet use can serve as a coping mechanism to relieve mental distress. This study examines the correlation between daily internet usage before and during the COVID-19 pandemic, finding a strong positive association (r = 0.606). Furthermore, we identify potential factors affecting daily internet usage during the pandemic among Bangladeshi students and jobholders residing in Dhaka using an ordinary least squares (OLS) regression model. The results show that the type of internet connection, regular internet usage before COVID-19, and the perceived impact of the pandemic significantly influence current internet usage patterns.

Keywords: COVID-19; Bangladesh; Daily internet usage; Type of internet; Mental health challenge.

1. Introduction

In December 2019, a pneumonia-like infectious disease was first identified in Wuhan, Hubei Province, China, and was later confirmed to be caused by a novel coronavirus (2019-nCoV). The disease, now known as coronavirus disease 2019 (COVID-19), rapidly spread across mainland China and subsequently the rest of the world. The World Health Organization (WHO) declared COVID-19 a pandemic and an international public health emergency in March 2020.

As of September 22, 2020, over 31.6 million COVID-19 cases and approximately 972,625 deaths had been reported globally. Patients infected with the virus commonly experience severe respiratory complications and cardiovascular issues [1]. Additionally, COVID-19 has been linked to increased mental health problems, such as anxiety and depression. A medical study in China revealed that about 23% of infected individuals experienced mental distress, including anxiety and nervousness [2].

These mental health concerns can escalate to severe psychological outcomes, including suicidal behavior. Research has shown that approximately 90% of suicide cases worldwide are associated with depression or other mental health conditions [3,4]. For instance, in Bangladesh, a university student reportedly committed suicide due to fear and anxiety related to COVID-19 [3]. Similarly, during the SARS outbreak in Hong Kong, a rise in suicides among older adults was documented [5].

Since there were no effective vaccines or antiviral treatments available during the early stages of the pandemic, governments relied on preventive measures such as social distancing, isolation, and quarantine to slow infection rates. However, these restrictions also led to social isolation, loneliness, and mental exhaustion among the population. Extended periods of home confinement contributed to feelings of helplessness and uncertainty, resulting in widespread mental health challenges, including anxiety, stress, and depression [6].

Given this context, it is critical to investigate the psychological and behavioral impacts of the pandemic. This study focuses on understanding how daily internet use among Bangladeshi students and jobholders during COVID-19 relates to mental health challenges, exploring internet behavior as both a coping mechanism and a potential indicator of mental well-being.

Young people are experiencing heightened mental health crises compared to adults, as many have lost their jobs or faced disruptions in their studies during the pandemic. Limited access to mental health services—often due to social stigma or misinformation—has worsened these conditions [7,8]. Studies have shown that approximately 72.4% of respondents reported using the internet for mental health support, with the majority seeking information online about anxiety, depression, or related issues [7]. However, only 7.9% of participants stated that they would seek professional help if needed, underscoring the low level of engagement with formal mental health care systems.

The government of Bangladesh has recognized this issue and encouraged the development of online health platforms and telemedicine systems to improve access to psychiatric care and psychological counselling. During the COVID-19 lockdown, many individuals turned to these online resources to manage stress and anxiety while avoiding in-person visits due to infection concerns. Consequently, internet usage surged across all demographics, with platforms like Skype, Zoom, and Microsoft Teams becoming crucial for education and employment continuity [9–11].

In Bangladesh, all educational institutions were closed starting from March 26, 2020, leading to the immediate relocation of students from their dormitories back to their homes [9]. Many of these students relied heavily on private tutoring (PT) as a source of income, which was significantly disrupted during the lockdown. The shift to remote learning environments posed additional challenges, especially for students in low-income households or rural areas with poor internet connectivity.

Our findings revealed that 58.8% of participants believed that increased internet usage affected their study and job efficiency, while 63.2% reported that social distancing had a negative impact on their academic or professional productivity. This highlights the dual nature of internet use—serving as both a coping mechanism and a potential stressor during prolonged isolation [12].

2. Materials and Method

Data for this study were collected through Google Forms from respondents currently residing in Dhaka, Bangladesh. The population sample was divided into three sub-groups based on age: under 16, 16–61, and above 61 years. However, as individuals younger than 16 and older than 61 rarely use the internet, the primary analysis focused on the 16–61 age group.

A total of 250 responses were collected, comprising 59.4% students and 25.1% jobholders, with a mean age of 25.13 years. The gender distribution showed that 61.6% of respondents were male, 36.3% were female, and 2.4% identified as other. Most participants (42.8%) resided in rental housing, while 6.4% lived in institutional housing provided by their employers or universities. Approximately 30.6% used broadband connections, 33.1% mobile internet, and 36.3% used both types of services.

The survey gathered data on demographic variables (age, gender, occupation, and education), as well as behavioral factors (internet usage before and during COVID-19, handwashing frequency, and frequency of leaving home). The dependent variable was daily internet usage time (in hours), while independent variables included social distancing, feelings of isolation, hygiene behavior, and employment status.

Descriptive and inferential statistical analyses were conducted to identify relationships between variables. Ordinary least squares (OLS) regression was applied to examine the determinants of daily internet use, while correlation analysis was performed to assess relationships between internet use before and during the pandemic.

Before the COVID-19 pandemic, the mean internet usage per respondent was 4.21 hours per day. However, during the pandemic, this figure increased by more than 70%, with a new average of 7.42 hours per day. The internet became the primary medium for recreation, education, and employment activities during lockdown restrictions.

Educational institutions shifted to online learning platforms, while jobholders maintained office responsibilities remotely through work-from-home (WFH) arrangements. Among respondents, 19.5% strongly agreed and 39% agreed that increased internet use affected their study and work performance, while 36.5% reported that "Work from Home" and "Online Classes" were adequate coping mechanisms during the pandemic.

To identify relationships between daily internet usage before and during COVID-19, Pearson's correlation test was applied. Additionally, an Ordinary Least Squares (OLS) regression model was used to estimate the determinants of daily internet usage, based on respondents' demographic and behavioral characteristics. The dependent variable was continuous (daily internet use in hours), while the independent variables included both continuous and categorical predictors.

3. Results and Discussion

3.1. Correlation Between Daily Internet Usage Before and During COVID-19

Pearson's correlation coefficient measures the strength and direction of association between two continuous variables. In this study, the variables "daily internet usage before COVID-19" and "daily internet usage during COVID-19" were both treated as continuous. The correlation coefficient (r) is defined as:

$$r = r_{xy} = \frac{\text{cov}(x, y)}{S_x S_y}$$

where x and y represent the two continuous variables, and S_x and S_y are their corresponding standard deviations.

Figure **??** presents a scatter plot illustrating the relationship between daily internet usage before and during COVID-19. The majority of respondents reported using the internet for 5–12 hours daily, with an overall mean of 7.4 hours. The calculated correlation coefficient was $r = 0.66$, indicating a moderately strong positive linear relationship between internet usage before and during the pandemic.

This result suggests that individuals who were already active internet users before COVID-19 tended to further increase their online engagement during lockdowns, likely due to shifts in study, work, and entertainment patterns. The regression results in the following section further identify the demographic and behavioral determinants influencing this change.

4. Conclusions

This study employed the Ordinary Least Squares (OLS) regression model to predict daily internet usage during the COVID-19 pandemic. The results revealed that the type of internet connection, regular internet usage before COVID-19, and the effect of the pandemic on study habits were significant predictors of current daily internet usage.

Specifically, individuals using broadband internet were found to spend more time online compared to those relying on mobile data. This may be due to broadband's affordability, higher speed, and better reliability. Additionally, the shift of universities and workplaces to online platforms during lockdowns contributed to increased internet dependency among students and employees.

As the pandemic spread and became prolonged, many people faced various mental health challenges, including anxiety, fear, nervousness, and loneliness. The findings show that during lockdown, people spent an average of 7.42 hours online per day, with a standard deviation of 4.28 hours. Approximately 36.4% of respondents reported switching from mobile data to broadband internet after relocating to rural or suburban areas, where higher-speed connectivity was available.

The results indicate that internet use played a crucial role in maintaining daily routines, professional responsibilities, and social connections during the pandemic. However, overuse and digital fatigue may also contribute to mental strain if not managed properly. Therefore, the internet can be a valuable tool during crises if used responsibly and effectively.

Furthermore, it is recommended that the government establish virtual mental health support services, such as online counseling and telemedicine facilities, to assist individuals experiencing stress, anxiety, or mild psychological symptoms during public health emergencies. These initiatives would help alleviate the mental burden on citizens and reduce unnecessary visits to healthcare facilities, thus minimizing exposure risks.

Author Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflicts of Interest: "The authors declare no conflict of interest."

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