



Psychological Impact of Online Education on University Students

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Abstract

BACKGROUND: Stressful events like the COVID-19 pandemic can significantly impact education. Online learning has become crucial in educational institutions such as schools, institutes, and universities.

AIM: This study's purpose is to evaluate the psychological impact of online education on university students in Al-Madinah Al-Munawara.

METHODS: A cross-sectional study using a self-administered survey is designed based on previous studies and frameworks to assess the psychological impact of online education.

RESULTS: The present study showed that 21.8% of students always had trouble concentrating through the online learning process. About 23.4% had thoughts that their ability to study is impaired. About 19.8% found it difficult to work up. There is a negative impact on psychological health because 13.9% feel agitated, 20.8% become nervous, 20.6% become watchful and on guard, and 21.8% are usually distressed and find it difficult to relax. The sleep mode was also affected in 19.0% of participants, besides lack of interest which was noted in 17.7%. Hence, students experienced harmful and unwanted psychological impacts during the COVID-19 pandemic and lockdown period.

CONCLUSION: Results of the present study suggest a relation between online education and the negative psychological status of students. Students experienced increased depression, anxiety, and stress that had a negative effect on their daily schedule and social well-being during the COVID-19 pandemic.

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Introduction

The coronavirus disease 2019 (COVID-19) is a novel threatening viral infection caused by the strains of acute severe respiratory syndrome Type 2 coronavirus SARS-CoV-2 [1]. The first outbreak of this disease was detected in December 2019 in Wuhan, China, when a group of people complained of severe pneumonia of unknown cause. Those people suffered from many complications up to death [2]. The World Health Organization (WHO) considered this outbreak a public health emergency of worldwide concern on January 30 and a pandemic on March 11, 2020 [3].

The first case was brought to light in Saudi Arabia on March 7, 2020. Then, the number of infected cases increased in KSA and worldwide, especially in the United States, Brazil, and Russia [4]. After KSA had reported the first case, the government responded quickly to prevent more infections by launching a social media campaign encouraging people to stay at home

and follow the ministry of health's instructions regarding this disease [5]. One of these instructions on March 23 was a lockdown in cities such as Mecca, Medina, and Riyadh. In addition, travel was restricted all over the country. Then, the curfew was extended to 24 h. Many outbreaks, such as the SARS epidemic and historically caused respiratory stress in the affected areas [6]. In the swine flu outbreak, a study reported that about 9.6% and 32.9% of the general population were worried about this disease's infection [7].

It was reported that Ebola, MERS, and SARS epidemics impacted mental health, causing psychological complications such as depression and anxiety [8]. Another study reported a significant correlation between anxiety and avoiding behaviors during the MERS outbreak in Jeddah and Western Saudi Arabia [9].

The Saudi government ensured that all sectors worked together in a cooperative network to prevent the spread of COVID-19. Thus, the terminus among educational sectors in Saudi Arabia was decided by

the Ministry of Education (MoE), on the suggestion of the Ministry of Health (MoH), instead of the student's regular attendance.

Online education or "E-learning" describes an organization-based official education where the students and tutors are isolated. It uses video conferencing systems to connect instructors, students, and other learning materials [10]. E-learning in the era of COVID-19 was the most viable way to maintain the educational process. Hence, most countries worldwide led educational organizations to establish online learning at all levels as a preventive measure against the propagation of COVID-19 and assisted in the permanence of the educational process during the pandemic [11].

Undoubtedly, online education played a significant role in overcoming the negative consequences of the COVID-19 pandemic, mainly full lockdowns. Nevertheless, online education might have some adverse effects on the psychological status of students. Hence, the present study aimed to assess the psychological impact of online education on University Students in Al-Madinah Al-Munawara, during the COVID-19 pandemic.

Methods

Study design and setting

A cross-sectional study was established from April 2021 to March 2022 at Alrayan College, Algad International Colleges, Taibah University, Islamic University, University of Prince Mugrin, and international technical colleges. The inclusion criteria were university students, including adults of both genders above 18 years old and those who studied online during the COVID-19 pandemic. Meanwhile, the exclusion criteria were students below 18 years old and previously diagnosed with mental illness. Descriptive statistics (frequencies, percentages) will be conducted to generate summary tables and graphs for the study variables of the 504 responses. The sample size calculated was 400, with a confidence level of 95% and a significant margin of error is 5%.

Development of the questionnaire

A self-administered questionnaire following the depression anxiety stress scales (DASS-21) to measure depression, anxiety, and stress was designed based on the previous studies and frameworks to assess the psychological impact of online education on university students. The questionnaire was developed based on the information from earlier studies and modified to match the objectives in our area. The first segment

was concerned with the sociodemographic data, the second segment described the knowledge regarding online education, and the third was concerned with the psychological impact and mental health status. The electronic questionnaire was designed as short in length to be completed quickly and efficiently; the survey link was distributed and shared on social media (WhatsApp, Twitter, and Telegram channel) and through emails.

Ethical considerations and consent

Institutional Review Board (IRB) approved this study, General Directorate of Health Affairs in Medina. IRB number is 015-22, Date March 3, 2022. Voluntary participation was ensured by requiring all participants to provide informed consent. The consent form was evident, indicating the study's purpose and the participant's right to draw out at any time without any obligations toward the study team. Participants' anonymity was ensured by assigning each participant a code number for analysis only. No incentives or rewards were given to participants.

Statistical analysis

The statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS, version. 25.0, IBM Armonk, NY). Descriptive statistics (i.e., mean, standard deviation, frequencies, and percentages) were used to describe the study's outcome variables. Pearson's correlation was used to quantify the linear relationship between two related quantitative variables. Student's t-test for independent data was used to compare the mean values of quantitative variables between university students and adults. A $p \leq 0.05$ was used to report the statistical significance of the results.

Results

According to the present study results, 12.5% of participants suffer from different medical conditions. For example, diabetes mellitus represents the highest prevalence rate (85.5%). Regarding mental health status, 4.8% of participants were diagnosed with mental health conditions such as major depressive disorders, considered the most common disorder (Table 1). The mental health status of the participants was assessed using the Impact of Event Scale-Revised (IES-R) in addition to the Depression, Anxiety, and Stress Scale (DASS-21). Both scales were used previously in assessing the psychological impact related to COVID-19.

Regarding the duration of online education, 96% of the participants were studying online. Thirty-five

Table 1: The studied participants' sociodemographic, medical, and mental history

Items	Variable	Frequency (n = 504), n (%)
Gender	Female	357 (70.8)
	Male	147 (29.2)
Age	18–22	297 (58.9)
	23–27	155 (30.8)
	28–32	8 (1.6)
	≥ 33	44 (8.7)
University	Taibah university	390 (77.4)
	Al-Rayan medical colleges	55 (10.9)
	University of Prince Mughrin	17 (3.4)
	Al-gad international colleges	5 (1.0)
	Islamic university	1 (0.2)
	Others	36 (7.2)
	Others	8 (1.6)
Preexisting medical health conditions	Diabetes	8 (1.6)
	Heart diseases	6 (1.2)
	Irritable bowel disease	28 (5.6)
	Thyroid diseases	10 (2.0)
	Heart diseases	1 (0.2)
Preexisting mental health condition	Other	20 (4.0)
	Major depressive disorder	8 (1.6)
	Major depressive disorder and bipolar disorder	1 (0.2)
	Obsessive-compulsive disorder	3 (0.6)
	Posttraumatic stress disorder	3 (0.6)
	Schizophrenia	1 (0.2)
	Anxiety disorder	7 (1.4)
Anxiety disorder and posttraumatic stress disorder	2 (0.4)	

percent (35.1%) continued studying online for 18 months, and 66.8% of the participants still study online (Table 2). In terms of the relationship between online education and digital technologies, the result shows that 43.5% of the participants felt that online education leads to excessive usage of digital technologies. Moreover, 42.3% agreed that online education negatively affected their quality of life (Table 3). Regarding the COVID-19 pandemic's impact on relationships, 50.8% of the participants believe online education severely affects their relationships (Figure 1).

Table 2: Duration of online education

Items	Variable	Frequency (n = 504), n (%)
Online education	No	20 (4.0)
	Yes	484 (96.0)
Duration of online education (months)	6–9	110 (21.8)
	> 12–18	177 (35.1)
	> 18–24	99 (19.6)
	> 9–12	118 (23.4)
	> 24	0 (0.0)

Regarding the psychological impact of online education, 21.8% of the participants always had trouble concentrating. About 23.4% experienced impairment in their ability to study. In comparison, 19.8% found it difficult to work up. There was a negative impact of online education on psychological well-being in the form of agitation (57.8%), nervousness (46%), hopelessness 72.8%, worrying (74%), and loss of interest (69.6%); suicidal thoughts represent 19.7%. The sleep mode was also affected by 70.8% and 73.4% mentioned a change in weight (Figure 2).

Discussion

During the COVID-19 pandemic, the learning process around the world has been transferred to become online studying and it has become a challenge

Table 3: Relation between online education and digital technologies' associated stress and anxiety among the studied participants during the coronavirus disease 2019 pandemic

Item	Variable	Frequency (n = 504), n (%)
Online education and overuse of digital technologies	Neither satisfied nor dissatisfied	64 (12.6)
	Dissatisfied	38 (7.5)
	Very dissatisfied	30 (6.0)
	Satisfied	153 (30.4)
Online education and its harmful effect on the quality of life	Very satisfied	219 (43.5)
	Neither satisfied nor dissatisfied	73 (14.4)
	Dissatisfied	58 (11.5)
	Very dissatisfied	30 (6.0)
Online assessment creates more anxiety than traditional forms of assessment	Satisfied	130 (25.8)
	Very satisfied	213 (42.3)
	Neither satisfied nor dissatisfied	92 (18.3)
	Dissatisfied	91 (18.1)
	Very dissatisfied	81 (16.1)
	Satisfied	94 (18.7)
	Very satisfied	146 (29.0)

for students. This change in the education process could impact student behavior and acceptance of the change. Hence, it is proposed to study online education's psychological impact on these students [12], [13], [14].

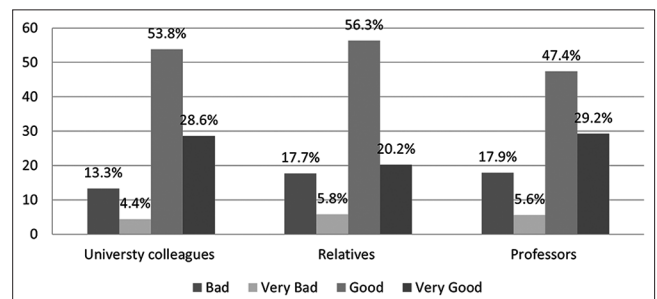


Figure 1: The COVID-19 pandemic's impact on relationships with colleagues, relatives, and professors

This study aimed to evaluate online education's psychological impact on university students in Al-Madinah Al-Munawara and to measure their response to online education. A cross-sectional study using a self-administered survey was designed based on the previous studies and frameworks to assess the psychological impact of online education. The study variables were summarized as graphs and tables using descriptive statistics (frequencies and percentages).

Most of the literature has shown that medical students are more likely to experience depressive symptoms, which is also common in the female gender [15], [16], [17] compared to the general population. The results showed that females participated in this study more than males (70.8% and 29.20%, respectively). This finding agreed with the previous studies of Azad *et al.* [18] and Mirza and Jenkins [19]. These results indicate that females are likelier to share their feedback about any educational activity.

Regarding mental health, the most common disorder was major depressive disorder which represented 16.8%. A significant percentage like this emphasizes the importance of regularly assessing students' psychological well-being, especially during any pandemic. Regarding the relationship between COVID-19 and online education, it was emphasized that the COVID-19 pandemic affected the educational process because nearly 96% of the participants studied

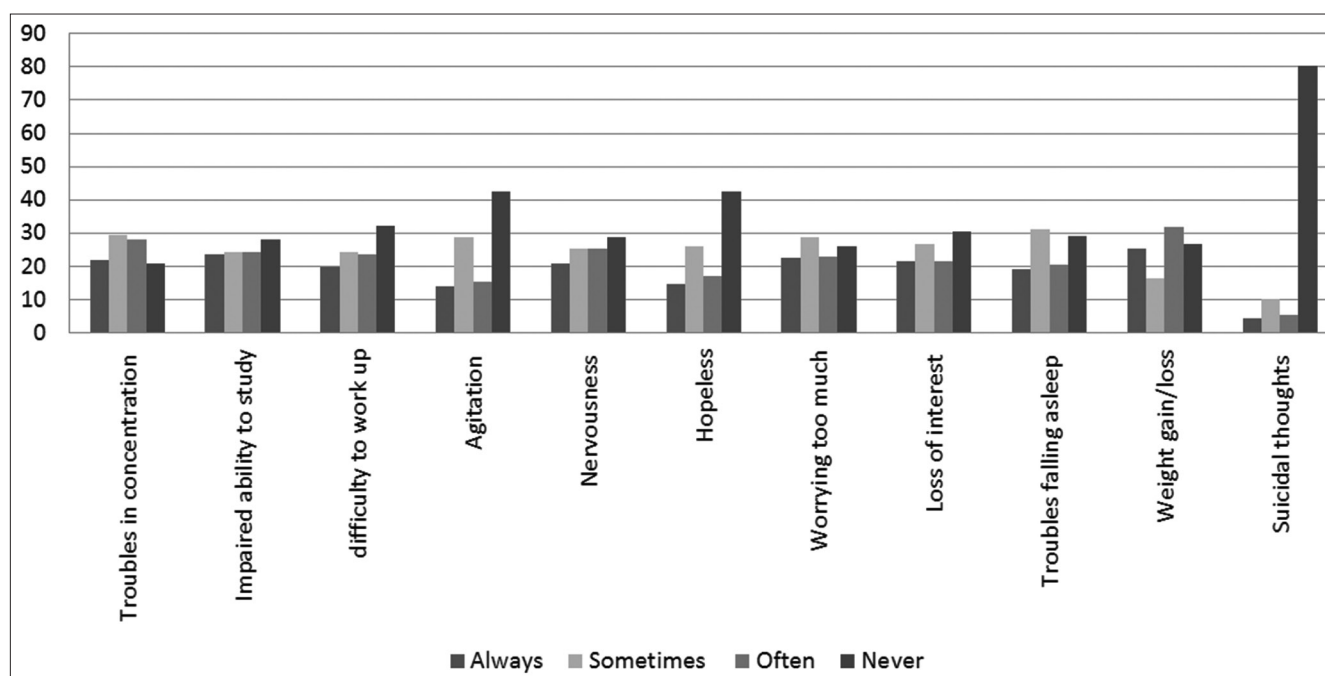


Figure 2: Shows common psychological problems associated with online education during the COVID-19 pandemic.

online. It was found that 41.8% of our participants were dissatisfied with the online study. Compared to regular education, online education has lower acceptance among students.

On the other hand, the participants noticed that the study materials were inadequate and were not easily accessible, which made student-teacher interaction difficult and, generally, led to a loss of communication. Many of our students were highly alarmed that the academic studying experience needs to be changed because their academic performance has decreased compared to regular educational activities. Students' relationship was affected because they were forced to spend more time online studying, so it is necessary to revise the education plan, using blended learning, for example.

These findings agree with a study conducted during the pandemic period in Saudi Arabia. This study reported that 23.6% of respondents experienced moderate-to-severe psychological impact of the outbreak, and severe symptoms of stress were experienced by 13.7%, similar to the 13.9% who experienced severe symptoms of anxiety and 16.4% who experienced severe symptoms of depression [5].

Another study in Kuwait found that the mean depression scores were significantly higher among students in the health sciences center (20%) [20]. Meanwhile, a study conducted in the United Arab Emirates showed that the prevalence of anxiety is 16%, and psychological distress is 51% [21]. Contrary, a study in Bangladesh endorsed no significant effect of online class duration on fear of academic delay (FAD) and symptoms of severe psychological stress among Bangladeshi university students. Nevertheless, the same study reported that over half of the respondents

suffered from severe FAD and psychological stress after 1 year of the COVID-19 epidemic. The findings ascertained that the present psychological distress was significantly mediated by FAD, where online education might have potentially displayed a catalytical role in the present emotionally damaged situation [22].

The present study reported that 42.3% of respondents agreed that online education negatively affected their quality of life. This result agreed with Kedraka [23], who conducted a study about e-Learning assessment which showed that about 80% of respondents were unhappy and dissatisfied with ongoing online educational programs. In addition, according to the present study, about 29% of students answered that online assessment creates more anxiety than traditional forms.

Another query conducted by Wilson *et al.* [24] supported the result of the present study regarding the negative effect on the quality of life and fear of unclear educational and assessment procedures during online education. The study showed that more than 82% of students answered that they were suffering from fear of their examination assessment system. Besides, around 85% of respondents did not know about their potential final examination date, and approximately 90% of students suffered from job instability. These critical parameters, the skepticism of the final exam, session crowdedness, graduation delay, and unsubstantial jobs for university students, are the worst catalysts for worsening depressive symptoms and psychological feelings during the COVID-19 outbreak [24].

According to a study held by Hossein *et al.* [22], the cause behind this fear and disturbing quality of life may be due to unprecedented disruptions in academia, quick-shifting for e-Learning, technophobia, and

imbalanced internet access are the major causes of this dissatisfaction with online education.

Regarding the results of the present study, it was found that online education had some adverse effects, such as depression, anxiety, stress, and sleep disturbances. This result was in parallel with Cao *et al.* [25], Wang *et al.* [14], and Zhang *et al.* [26] who reported severe to extreme levels of anxiety among university students in China (23.8%), Indonesia (7.4%), and Malaysia (9.5%). This finding was noted in many studies similar to Cao *et al.* [25], Wang *et al.*, and Zhang *et al.* [26]. A cross-sectional study on University Students in Jordan Using Kessler Psychological Distress Scale found that most students (92.9%) suffered from different psychological distress ranging from mild to severe levels during the COVID-19 pandemic [27]. These psychological responses are more likely to happen and worsen due to the lack of interpersonal communication during social distancing. One of our findings was the association between anxiety and the online study because most participants did not feel good during the online study [28]. The study found that students in online education were at a higher risk of developing psychomotor problems, such as depression, anxiety, and stress, since some exhibited symptoms of these disorders, such as feeling insecure and unable to relax. In addition, chronic stress is known to impair memory and contribute to the development of anxiety [29].

Study limitations

The study's limitations include the time of data collection, which was at the termination of the acute phase of the pandemic in Saudi Arabia and when online education was coming to an end. This may have underestimated the psychological impact of online education itself, regardless of the pandemic. Because the outcome and the exposure are investigated simultaneously, the temporal link between them cannot be determined. The main confounding factor in the present study may be gender as the majority of participants were females ($n = 357$, 70.8%) who are more likely to experience depressive symptoms.

Conclusion and Recommendations

The COVID-19 pandemic left a notable distressful impact on many aspects involving physical and mental health and various human life activities, including the education process.

The university students in this study experienced some harmful psychological effects of online education in the form of increased depression, anxiety, and stress that affected their daily schedule and social well-being during the COVID-19 pandemic.

Accordingly, steps should be taken to improve the online education experience and alleviate associated stress. In light of the present study, we recommend continuing psychological guidance, counseling, and assistance for students during stressful events, including the pandemic. Furthermore, it is necessary to motivate the students using different teaching strategies and modalities, such as blended education. Finally, we recommend further studies on large-scale populations using different parameters.

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