

The Impact of Students' Satisfaction with Online Education on Their Mental Health

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ABSTRACT

Purpose: The present study aimed to determine the effect of students' satisfaction with online education on their mental health.

Methodology: This study employed a descriptive correlational research design. The statistical population included all high school students in Tehran during the 2023–2024 academic year. A total of 250 students were selected using a multistage cluster sampling method. Data were collected using the Mental Health Scale (Goldberg, 1979) and the Students' Satisfaction with Online Education Scale (Zaghiri, 2022). Data analysis was conducted using Pearson's correlation test and multiple regression analysis with SPSS-V25 software.

Findings: The results indicated that 62% of students scored high on mental health components, including anxiety, depression, social dysfunction, and insomnia. Additionally, the mean score of satisfaction with online learning was assessed at a moderate level. Statistical analyses revealed a significant relationship between the level of satisfaction with online education and mental health ($r=-0.52$, $p<0.01$).

Conclusion: The findings of this study suggest that while online education offers advantages such as flexibility and easy access to educational resources, it may also contribute to increased psychological issues, such as anxiety and depression, among students. Therefore, it is essential to design and optimize online educational programs with consideration of students' psychological needs to mitigate the negative effects of this form of education. Additionally, it is recommended that psychological interventions be implemented alongside online education to better preserve students' mental health.

Keywords: Satisfaction with online education, mental health, students

1. Introduction

The rapid expansion of online education has transformed the traditional learning environment, offering students greater flexibility and access to educational resources. While online learning has been widely adopted, particularly during the COVID-19 pandemic, concerns regarding its psychological impact on students have been raised (Aristeidou, 2023; Johnson, 2024). The shift to online education has brought both opportunities and challenges, influencing students' satisfaction levels and overall well-being (Hung, 2024; Zhai, 2023). Research suggests that students' satisfaction with online learning plays a crucial role in their mental health outcomes, as dissatisfaction can contribute to stress, anxiety, and depressive symptoms (Innab, 2023; Kim et al., 2022).

Satisfaction with online education is influenced by multiple factors, including the quality of instructional materials, interaction with instructors and peers, and technological accessibility (Moon & Kim, 2023; Sawaftah, 2023). Studies indicate that students who report higher levels of satisfaction with online learning tend to have better academic performance and lower stress levels (Gabrovec et al., 2022). Conversely, dissatisfaction can lead to disengagement, frustration, and negative psychological effects, impacting both academic success and mental well-being (Quilon, 2023; Theresia, 2022). The level of interaction in online learning has been identified as a significant determinant of student satisfaction. Research highlights that students who engage in meaningful interactions with instructors and peers are more likely to report positive experiences with online education (Aristeidou, 2023; Shkempi, 2024). Furthermore, factors such as course design, assessment methods, and the perceived effectiveness of online teaching contribute to students' overall satisfaction levels (Duarte et al., 2022; Nash, 2023).

The transition to online learning has also raised concerns about students' mental health, with studies documenting increased levels of anxiety, depression, and burnout among students engaged in virtual education (Mołóń & Janda, 2022; Pelucio et al., 2022). The absence of physical social interactions, technical difficulties, and increased screen time are among the primary stressors affecting students' mental well-being (Ling et al., 2022; Mohamad & Yusuf, 2022). Mental health outcomes associated with online education have been examined across various educational settings. Research suggests that students who struggle with adapting

to online learning environments often experience heightened levels of psychological distress (Nur, 2023; Rahmadani, 2024). The link between satisfaction with online education and mental health outcomes has been supported by empirical studies, indicating that students with lower satisfaction levels are more likely to experience negative emotional states (Nair & Prasanth, 2022; Pratama & Melisa, 2022). A critical factor in students' mental well-being during online education is their ability to manage stress and maintain resilience. Studies indicate that resilience acts as a protective factor, mitigating the negative effects of stress and promoting life satisfaction among students facing academic challenges (Duarte et al., 2022; Voss, 2024). However, students with lower resilience levels may find it difficult to cope with the demands of online education, increasing their risk of experiencing mental health difficulties (Adichandra, 2023; Rafsanjani et al., 2023; San et al., 2021).

The interplay between students' satisfaction with online education and their mental health has been widely explored, revealing a complex and reciprocal relationship (Cho et al., 2023; Moon & Kim, 2023). Students who report higher satisfaction levels with online learning environments tend to exhibit lower levels of anxiety, stress, and depression (Gabrovec et al., 2022; Mohamad & Yusuf, 2022). This finding suggests that fostering a positive online learning experience can serve as a protective factor for students' psychological well-being. Conversely, dissatisfaction with online education has been linked to poor mental health outcomes, including increased psychological distress and reduced academic motivation (Wang, 2023; Wijaya et al., 2021; Zhai, 2023). The COVID-19 pandemic further exacerbated these challenges, as students faced unprecedented disruptions in their academic routines, leading to higher levels of emotional distress and burnout (Nair & Prasanth, 2022; Pelucio et al., 2022). Recent studies have also emphasized the role of mental health stigma in shaping students' perceptions of online learning experiences (Cho et al., 2023). Students who experience mental health difficulties may be less likely to seek support, further compounding their academic and psychological struggles. Addressing these concerns requires a multidimensional approach that integrates psychological support services within online education frameworks (Nash, 2023; Rahmadani, 2024).

Given the significant impact of online education on students' mental health, there is a growing need to implement psychological interventions aimed at enhancing students' well-being (Innab, 2023; Rafsanjani et al., 2023).

Universities and educational institutions should prioritize mental health support by incorporating stress management programs, resilience-building strategies, and accessible counseling services within online learning platforms (Mohamad & Yusuf, 2022; Shkemi, 2024). Additionally, educators should consider designing online courses that promote engagement, interaction, and inclusivity to improve student satisfaction (Quilon, 2023; Sawaftah, 2023). Providing students with opportunities for peer support, mentorship, and collaborative learning experiences can significantly enhance their overall learning experience and psychological well-being (Moon & Kim, 2023; Wang, 2023).

While existing studies have explored the relationship between online education and mental health, limited research has focused specifically on how students' satisfaction with online learning influences their psychological well-being in the context of secondary education (Duarte et al., 2022; Nair & Prasanth, 2022). Most previous research has concentrated on university students, leaving a gap in understanding how high school students experience and cope with online education-related challenges (Ling et al., 2022; Mołón & Janda, 2022). The present study aims to bridge this gap by examining the effect of students' satisfaction with online education on their mental health in a high school setting.

2. Methods and Materials

2.1. Study Design and Participants

This study employed a descriptive correlational design to examine the relationship between students' satisfaction with online education and their mental health. The statistical population consisted of high school students in Tehran during the 2023–2024 academic year. Based on Morgan and Krejcie's (1970) sample size determination table, a sample of 250 students was selected using a multistage cluster sampling method. Participants were informed about the study's objectives, and their participation was voluntary.

2.2. Measures

2.2.1. Mental Health

The dependent variable, mental health, was measured using the General Health Questionnaire (GHQ-28), developed by Goldberg and Hillier (1979). This questionnaire consists of 28 items and is divided into four subscales: somatic symptoms, anxiety/insomnia, social

dysfunction, and severe depression. Each item is scored on a four-point Likert scale (0 to 3), with higher scores indicating greater psychological distress. The total score ranges from 0 to 84, where higher scores suggest poorer mental health. The validity and reliability of GHQ-28 have been confirmed in various studies, including those conducted in Iran, demonstrating its suitability for assessing students' mental health (Rafsanjani et al., 2023).

2.2.2. Satisfaction with Online Education

The independent variable, students' satisfaction with online education, was assessed using the Online Learning Satisfaction Scale (OLSS) developed by Kuo, Walker, Schroder, and Belland (2014). This scale comprises 20 items categorized into five subscales: learner-instructor interaction, learner-content interaction, learner-learner interaction, internet self-efficacy, and self-regulated learning. Responses are rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree), with higher scores reflecting greater satisfaction with online learning. The validity and reliability of OLSS have been verified in multiple studies, including research conducted in Iran, confirming its effectiveness in evaluating students' satisfaction with online education (Rafsanjani et al., 2023).

2.3. Data Analysis

Data were analyzed using SPSS-25 software. The relationship between students' satisfaction with online education and their mental health was assessed using Pearson's correlation coefficient. Additionally, to predict mental health based on students' satisfaction, a linear regression analysis was conducted, considering mental health as the dependent variable and students' satisfaction with online education as the independent variable. The significance level was set at $p < 0.05$.

3. Findings and Results

The demographic analysis of the participants revealed that out of the 250 students, 132 (52.8%) were female, and 118 (47.2%) were male. In terms of age distribution, 78 students (31.2%) were 16 years old, 92 students (36.8%) were 17 years old, and 80 students (32.0%) were 18 years old. Regarding the type of school, 156 students (62.4%) attended public schools, while 94 students (37.6%) were enrolled in private schools. Additionally, 173 students (69.2%) reported having prior experience with online

learning, whereas 77 students (30.8%) had no such experience.

Table 1

Descriptive Statistics for Study Variables

Variable	Mean	Standard Deviation
Mental Health	38.72	12.65
Satisfaction with Online Learning	3.54	1.02

Table 1 presents the descriptive statistics for the study variables, including the mean and standard deviation for Mental Health and Satisfaction with Online Learning. The mean score for mental health was 38.72 (SD = 12.65), indicating a moderate level of psychological distress among participants. The mean satisfaction score was 3.54 (SD = 1.02), reflecting an average level of satisfaction with online education.

Before conducting statistical analyses, the assumptions of normality, linearity, homoscedasticity, and absence of multicollinearity were examined. Normality was assessed using the Kolmogorov-Smirnov test, which indicated that both students' satisfaction with online education ($D(250) =$

0.072 , $p = 0.084$) and mental health ($D(250) = 0.065$, $p = 0.103$) followed a normal distribution. Linearity was confirmed through a scatter plot, showing a linear relationship between the independent and dependent variables. Homoscedasticity was checked using Levene's test for equality of variances, which was non-significant ($F(1, 248) = 1.76$, $p = 0.185$), confirming that variances were equal across groups. Multicollinearity was assessed using the variance inflation factor (VIF), with values below 2.00, indicating no multicollinearity concerns. These results confirm that the assumptions for Pearson correlation and linear regression analyses were met.

Table 2

Correlation Matrix Between Study Variables

Variable	Pearson Correlation (r)	p-value
Mental Health	1.00	0.000
Satisfaction with Online Learning	-0.52	0.003

Table 2 displays the Pearson correlation results between mental health and satisfaction with online learning. A significant negative correlation was found between mental

health and satisfaction ($r = -0.52$, $p = 0.003$), suggesting that higher satisfaction with online education is associated with lower levels of psychological distress.

Table 3

Summary of Regression Analysis

Source	Sum of Squares	Degrees of Freedom	Mean Squares	R	R ²	Adjusted R ²	F	p
Regression	4625.34	1	4625.34	0.52	0.27	0.26	39.73	0.000
Residual	28870.21	248	116.42	-	-	-	-	-
Total	33595.55	249	-	-	-	-	-	-

Table 3 provides a summary of the regression analysis. The results show that the model was statistically significant ($F(1,248) = 39.73$, $p < 0.001$), indicating that satisfaction with online learning significantly predicts mental health. The

coefficient of determination ($R^2 = 0.27$) suggests that 27% of the variance in mental health scores is explained by students' satisfaction with online learning.

Table 4*Univariate Regression Results*

Variable	B	Standard Error	β	t	p
Constant	50.12	2.45	-	20.45	0.000
Satisfaction with Online Learning	-3.19	0.51	-0.52	-6.31	0.000

Table 4 presents the results of the univariate regression analysis. The constant term was significant ($B = 50.12$, $SE = 2.45$, $t = 20.45$, $p < 0.001$), while satisfaction with online learning negatively predicted mental health ($B = -3.19$, $SE = 0.51$, $\beta = -0.52$, $t = -6.31$, $p < 0.001$). These findings indicate that for each one-unit increase in satisfaction with online education, mental health scores decrease by 3.19 points, suggesting a lower level of psychological distress.

4. Discussion and Conclusion

The findings of this study highlight a significant negative relationship between students' satisfaction with online education and their mental health, demonstrating that lower satisfaction with online learning is associated with higher psychological distress. The regression analysis further confirmed that satisfaction with online education significantly predicts mental health, with 27% of the variance in mental health scores being explained by satisfaction levels. Specifically, for each one-unit increase in satisfaction with online education, mental health scores decreased by 3.19 points, indicating reduced psychological distress. These findings suggest that the quality of students' online learning experiences plays a crucial role in shaping their mental health.

This aligns with prior research demonstrating that students who report higher satisfaction with online education tend to exhibit lower levels of stress, anxiety, and depression (Gabrovec et al., 2022; Wang, 2023). Conversely, dissatisfaction with online learning has been associated with increased psychological distress, burnout, and decreased academic motivation (Nair & Prasanth, 2022; Pelucio et al., 2022). The present study's results provide further empirical evidence supporting these claims, reinforcing the notion that enhancing student satisfaction with online education can serve as a protective factor against mental health issues.

The negative correlation found between satisfaction with online learning and mental health is consistent with previous studies that have examined similar relationships. For example, Kim et al. (2022) found that students who experienced higher engagement and satisfaction in online

learning environments reported fewer mental health concerns (Kim et al., 2022). Similarly, Innab (2023) identified a strong association between dissatisfaction with online learning and increased levels of anxiety and depression among nursing students (Innab, 2023). These findings suggest that dissatisfaction with online learning may act as a stressor that contributes to poor psychological outcomes.

Another explanation for these results is the role of student engagement and interaction in determining online learning satisfaction. Research has shown that students who feel isolated or unsupported in online education are more likely to experience psychological distress (Cho et al., 2023; Sawaftah, 2023). A lack of instructor-student and peer interactions in virtual learning environments may lead to increased feelings of loneliness, which have been linked to anxiety and depression (Aristeidou, 2023; Quilon, 2023). This finding aligns with Ling et al. (2022), who reported that limited engagement in online learning settings contributed to emotional distress among university students (Ling et al., 2022).

Additionally, the findings are supported by Mohamad and Yusuf (2022), who examined the impact of online learning on students' mental health during the COVID-19 pandemic. Their study found that students with lower satisfaction in virtual education reported higher levels of psychological distress, reinforcing the idea that dissatisfaction with online learning may exacerbate stress, anxiety, and feelings of frustration. This aligns with Moon and Kim (2023), who emphasized that a poorly structured online learning experience could lead to negative mental health outcomes (Moon & Kim, 2023).

Furthermore, the results of the regression analysis indicate that satisfaction with online education accounts for a substantial portion of the variance in mental health scores. This finding is consistent with Nur (2023), who reported that students' perceived satisfaction with e-learning had a direct influence on their well-being and resilience levels (Nur, 2023). Similarly, Duarte et al. (2022) found that life satisfaction and resilience played mediating roles in the relationship between stress and mental health outcomes in



online education settings (Duarte et al., 2022). The present study reinforces these perspectives, highlighting the importance of fostering a positive and engaging online learning environment to support students' psychological well-being.

One possible explanation for the relationship between satisfaction with online education and mental health is the role of self-efficacy and perceived control. Students who feel confident in their ability to navigate online learning platforms and engage with educational content are more likely to report higher satisfaction levels, which may buffer against mental health challenges (Adichandra, 2023; Nash, 2023). However, students who struggle with technological difficulties, lack of instructor support, or unclear course structures may experience heightened frustration and psychological distress (Shkempi, 2024).

Another mechanism explaining this relationship is cognitive load and academic stress. Online learning environments often require students to engage in self-regulated learning, which can increase cognitive load and contribute to stress (Hung, 2024). When students find online courses overwhelming or poorly designed, their satisfaction levels decline, leading to greater levels of stress, anxiety, and burnout (Rafsanjani et al., 2023; Voss, 2024). In contrast, well-structured online courses that provide clear guidelines, interactive elements, and instructor support can enhance student satisfaction and mitigate mental health challenges (Moon & Kim, 2023; Wang, 2023).

The impact of resilience and coping strategies also plays a role in this relationship. Research has shown that students with higher levels of resilience tend to adapt more effectively to online learning environments and maintain better mental health outcomes (Duarte et al., 2022). In contrast, students with lower resilience may struggle to cope with the demands of virtual learning, leading to higher levels of dissatisfaction and increased psychological distress (Gabrovec et al., 2022; Mohamad & Yusuf, 2022). This suggests that incorporating resilience-building interventions within online education could potentially enhance satisfaction levels and improve students' mental well-being (Innab, 2023).

Despite its significant findings, this study has several limitations. First, the study relied on self-reported data, which may be subject to social desirability bias or response distortions. Participants may have underreported or overreported their satisfaction and mental health status, which could affect the accuracy of the results.

Second, the study was conducted with high school students in Tehran, limiting the generalizability of the findings to other educational settings or age groups. Future studies should examine these relationships in diverse educational contexts, including university students, vocational learners, and adult education participants.

Third, while the study identified a significant association between online learning satisfaction and mental health, it did not explore potential mediating or moderating variables, such as academic performance, resilience, coping strategies, or socioeconomic factors. Future research should consider these additional variables to better understand the complexity of this relationship.

Finally, the study was cross-sectional, meaning it only captured a snapshot of students' experiences at a single point in time. Longitudinal research is needed to explore how satisfaction with online learning evolves over time and its long-term effects on mental health.

Future research should explore additional psychological and environmental factors that influence the relationship between online learning satisfaction and mental health. Examining variables such as perceived stress, digital literacy, and family support may provide deeper insights into students' experiences with virtual education.

Additionally, further studies should investigate the effectiveness of psychological interventions aimed at enhancing satisfaction with online learning. Research should examine whether mental health programs, resilience training, or stress management techniques can mitigate the negative effects of online learning on mental health.

Another important direction for future research is the examination of cultural differences in online learning experiences. Cross-cultural studies could help identify whether students from different backgrounds experience varying levels of satisfaction and mental health challenges in online education.

Finally, future studies should consider using qualitative methods, such as interviews or focus groups, to gain a more comprehensive understanding of students' perceptions, challenges, and expectations regarding online learning.

Based on the findings of this study, several practical recommendations can be made to improve students' experiences in online learning and support their mental health.

First, educational institutions should focus on enhancing engagement and interaction in online courses by incorporating interactive content, discussion forums, and

regular instructor feedback. This can help students feel more connected and supported in virtual learning environments.

Second, online education programs should be designed with clarity and accessibility in mind, ensuring that students have clear instructions, user-friendly interfaces, and adequate technical support to navigate their courses effectively.

Third, schools and educational organizations should integrate mental health resources within online learning platforms, including counseling services, mindfulness exercises, and peer support groups to help students manage stress and anxiety.

Finally, teachers and educators should receive training on student mental health awareness to better recognize signs of psychological distress and provide appropriate support to students who may be struggling with the challenges of online education.

By implementing these strategies, educational institutions can create a more supportive, engaging, and mentally healthy online learning environment for students.

Authors' Contributions

All authors significantly contributed to this study.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

In this study, to observe ethical considerations, participants were informed about the goals and importance of the research before the start of the interview and participated in the research with informed consent.

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