Digital Exposure and Mental Health: Investigating the Link between Screen Time, Anxiety, and Depression among University Students.

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Abstract

Background: The use of digital devices has increased dramatically; as a result, physical activity has decreased tremendously, affecting mental health, leading to psychological problems, especially anxiety and depression. **The study aimed to** investigate the relationship between screen time, anxiety, and depression among university students. **Design:** A descriptive correlational study design was used from February 2025 to May 2025. **Setting**: The study was carried out at four faculties (2 practical and 2 theoretical) at Shebin El-kom, Menoufia University, Menoufia Governorate, Egypt. **Subjects**: A convenience sample of 500 students was selected from the above-mentioned settings. **Tools of data collection:** Three tools were used: **tool 1**: A structured interviewing questionnaire, **tool 2:** The Generalized Anxiety Questionnaire (GAD-7), and **tool 3:** The Patient Health Questionnaire (PHQ-9). **Results:** The mean average screen time per day among university students was 8.03 ±4.50, there was a statistically significant relation between anxiety, depression level and more screen time (hours) use per day. Moreover, there was a highly statistically significant relation and positive correlation between anxiety and depression. **Conclusion:** It was concluded that there was a relationship between screen time, anxiety, and depression among university students. **Recommendation:** A Psycho-educational stress management program should be given to the university students, helping them to understand their needs and problems, how to overcome these problems, and reduce screen time use per day.

Keywords: Screen time, anxiety, depression, university students.

Introduction

Most people around the world rely on technology and digital devices in their professional, academic, and social daily lives. Individuals are using digital screens most of the time, such as smartphones, tablets, etc. As for academic matters, to get work done, watch a movie, and most commonly, scroll through social media applications. Much more can be done in a short time, with less effort, less cost, and perhaps better quality **(Nabung, 2024).**

Screen-based devices have grown ingrained in the culture and are used by the majority daily. Young people use screen-based devices more frequently than other age groups **(Muppalla et al., 2023).** Identifying the consequences of extended screen exposure in this demographic becomes paramount. It might influence stress levels, academic performance, and the overall well-being of future professionals. It obstructs professional and academic achievement, or in advanced cases, increases the risk for obesity and trouble sleeping. This has raised concerns about the potential impact of excessive screen time on mental health as well, which may develop into some psychological disorders, particularly anxiety and depression **(Priftis & Panagiotakos, 2023).**

Students experienced excessive digital screen time (DST), defined as >8 hours per day for smartphones, >6 hours for tablets, and >5 hours for computers. At present, there are no standardized guidelines for appropriate DST limits. Although the definitions of excessive DST differ, previous research generally

classifies 4–6 hours as high **(Devi, & Singh, 2023).**

Recommendations, like those from the Canadian Society for Exercise Physiology, advise adults to limit recreational screen time to a maximum of 3 hours per day. However, the increasing reliance on digital devices for purposes beyond entertainment highlights the need for more guidelines. Mirrors findings from a study by **Naz & Qamar (2025)** which reported an average daily screen time of 7–8 hours among a large adolescent population. That study explored the relationship between DST, depression, and anxiety, highlighting instances where DST exceeded 8 hours per day. Moreover, the research emphasized that extended overall screen time was significantly associated with more severe symptoms of anxiety and depression **(Kaewpradit et al., 2025).**

Social media use, a common form of screen time, can lead to social comparison and exposure to cyberbullying, both of which can exacerbate anxiety. The nature of the content viewed on screens can also play a role. Exposure to violent or negative content can increase anxiety, while content that promotes unrealistic standards can lead to feelings of inadequacy and anxiety. Some research suggests that excessive screen time can lead to changes in brain development that are associated with anxiety and other mental health issues. Constant exposure to screens can induce a state of hyperarousal and increase stress hormones, contributing to anxiety symptoms **(Mohd Saat et al., 2024).**

Excessive screen time, particularly on social media, gaming, and watching videos, is associated with an increased risk of depression, especially in adolescents and young adults. While the relationship is not fully understood, several factors contribute to this association, including social isolation, sleep disruption, and reduced physical activity. However, some studies also suggest that screen time, particularly video chatting, texting, and watching videos, can have a positive association with mental health symptoms like depression. Moreover, Excessive screen time, especially social media, can lead to less face-to-face interaction, potentially increasing feelings of loneliness and isolation, which are risk factors for depression **(Li et al., 2022).**

Studying the relationship between screen time and anxiety/ depression in young adults is crucial because spending too much time on screens, especially on social media, can have harmful effects on mental well-being. Understanding this connection can inform public health interventions aimed at promoting healthier digital habits and improving well-being. Excessive screen time has been linked to increased symptoms of anxiety and depression in young adults. This can manifest as heightened stress levels, feelings of loneliness, and a decline in overall psychological well-being **(Xu, et al., 2025).**

Significance of study:

The 21st century has seen numerous technological breakthroughs that have transformed our lives, with smartphones emerging as one of the most significant innovations. Research indicates that 54% of individuals in developing nations either use the Internet or own a smartphone, while 87% of individuals in developed countries reported similar usage. However, due to the extended integration of smartphones into daily life, their negative effects have been noticed. Smartphones have been associated with risks to both physical and mental health; for example, smartphone use is associated with neck pain, hand dysfunction, increased car accidents, depression, anxiety, insomnia, and suicide **(Okasha et al., 2022).**

In Egypt, adolescents exhibit a high prevalence of screen time usage, particularly on smartphones, often for social media and educational purposes. Studies indicate that excessive digital screen time (EDST) is common among university students, with younger students and those in health sciences being more susceptible. Furthermore, there's a significant correlation between screen time and factors like academic performance, sleep quality, and mental health conditions **(Begum et al., 2022).**

Psychiatric nurses play a big role in teaching teens and their families about the negative impacts of excessive screen time on mental health, such as stress and anxiety, and in promoting healthy digital habits. This comprises boosting awareness, providing practical solutions to decrease screen usage, and supporting activities that increase well-being. Explaining how using screens too much can make students feel bad, sleep poorly, and slow down the brain growth, which can make them more stressed and anxious **(Kaur et al., 2024).**

It is crucial to restrict recreational screen time and establish a balance with other activities. Promote discussions regarding responsible online activity and the possible consequences of social media on self-esteem and mental health. Work with teens and their families to come up with personalized plans to cut down on screen usage that take into consideration their unique needs and wants. Set clear limits on screen time by using timers and setting rules for how devices can be used **(Gull & Sravani, 2024).**

Psychiatric nurses can help students identify symptoms of anxiety and depression associated with excessive screen time. Encourage them to engage in regular physical activity, which can improve mood and reduce symptoms of depression and anxiety. Facilitate face-to-face interactions and social support, as these can be protective against mental health problems **(Naslund et al., 2020)**.

Teach mindfulness techniques and relaxation exercises to help students manage stress and anxiety related to screen use. Suggest engaging in hobbies, creative activities, and other enjoyable pastimes that can help reduce screen time and improve mood. Work with students to develop strategies for managing emotions and coping with difficult feelings that may lead to excessive screen time. Encourage them to foster meaningful social relationships and reach out for support from friends, family members, or support groups when needed **(Nagata et al., 2024).**

It is important to understand the connection between screen time, anxiety, and depression among university students because their studies and work depend largely on screens, and there are concerns that this could affect their psychological health, especially after being at potential risk for developing anxiety and depression symptoms. Furthermore, it offers valuable insights that can assist educational institutions in creating a healthier and more productive learning environment. In addition, understanding the relationship between screen time and the risk of depression is important to the development of prevention and intervention strategies.

Theoretical and operational definitions

Screen time is theoretically defined as the total amount of time an individual spends interacting with devices that have screens, such as smartphones, computers, tablets, and televisions. It includes both recreational and non-recreational use **(Ding et al., 2024).** In the present study it is operationally measured in hours per day, based on self-reported responses to a questionnaire asking participants to estimate the average number of hours spent daily on screen-based activities

(e.g., social media, streaming, studying, and gaming) over the past 7 days.

Anxiety: is theoretically defined as an aversive feeling of unease, worry, nervousness or fear about something that is happening or might happen **(Aleem, 2020).** In the present study it is operationally defined as the student anxiety score that will be measured by Generalized Anxiety Disorder-7 Questionnaire (GAD-7 which developed by **Spitzer et al. (2006).**

Depression: is theoretically defined as a common mental disorder involving biological, psychological and social aspects have a serious functional impact on the lives of individuals of all ages **(WHO, 2012).** In the present study it is operationally defined as the student depression score that will be measured by Patient Health Questionnaire depression scale (PHQ-9) which was developed by **Kroenke et al. (2001).**

Subjects and Methods

The aim of the study: To investigate the relationship between screen time, anxiety, and depression among university students.

Sub-objectives:

1. To assess the average daily screen time among university students?
2. To measure the levels of anxiety and depression among university students?
3. To investigate the link between screen time and anxiety/depression?

Research Questions:

1. What is the average daily screen time among university students?
2. What are levels of anxiety and depression among university students?
3. Is there a relationship between screen time and anxiety/depression?

Research design:

A descriptive correlational research design was utilized to investigate the relationship between screen time, anxiety, and depression among university students.

Research setting:

Using stratified random sample, the study was conducted at four faculties at Menoufia University, Menoufia governorate, Egypt (two practical and two theoretical) from total 13 faculties to be representative of the target population. These four faculties were selected randomly from a container containing the names of practical faculties and another one containing the names of theoretical faculties. Then select randomly two from each container. The result of the selection was the Faculty of Law, the Faculty of Education, the Faculty of Agriculture, and the Faculty of Health Science.

Research subjects:

A convenience sample of 500 students was recruited in this study, it is estimated according to the total number of the students in the four faculties of the above mentioned settings, selected from each faculty according to the number of the student in each one using proportional allocation methods, students who fulfilling the following **inclusion criteria**: both genders, free from any psychiatric or chronic illness because it may have a negative effect on the results of the study and have mobile or any access to the digital screen daily. **Exclusion criteria:** have any psychiatric or chronic illness, not have a mobile or any access to a digital screen daily and not agreed to provide written consent.

Sample size calculation: The accurate sample size was determined using specialized software, depending on factors such as the desired level of confidence (95%) and margin of error (5%). To ensure feasibility and statistical power, the sample size was calculated using the following formula $n = [DEFF*Np(1-p)]/[(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$.

The total sample (n=500) ultimately contributed to the study.

Tools of data collection:

Three tools were used to collect the data for this study:

Tool (1): A structured interview questionnaire: Developed by the researchers to gather information about the students' socio-demographic characteristics including age, gender, name of the faculty, parents' education, place of residence, student's daily expenses, students lived with whom and duration of electronic device use in hours per day (average of the last week).

Tool (2): Generalized Anxiety Disorder-7 Questionnaire (GAD-7): Developed by **Spitzer et al. (2006)** and translated into Arabic by **El Khoury-Malhame et al. (2025)** to assess the severity of anxiety symptoms. It consists of seven items: nervousness, inability to stop worrying, excessive worry, restlessness, difficulty in relaxing, easy irritation, and fear of something awful happening. Each item is rated on a four-point Likert scale, with responses ranging from 0 (Not at all) to 3 (Nearly every day). The scores for all seven items are summed up, resulting in a total score ranging from 0 to 21. Starting from 0 to 4 indicates minimal anxiety, the score ranges from 5 to 9 indicates mild anxiety, the score ranges from 10 to 14 indicates moderate anxiety, and the last score ranges from 15 to 21 indicates severe anxiety.

Tool (3): Patient Health Questionnaire-9 (PHQ-9): The PHQ-9 is a self-reported questionnaire that was developed by **Kroenke et al. (2001)** and translated into Arabic by **AlHadi et al. (2017)** to measure the severity of depressive symptoms. It consists of nine items: little interest or pleasure, depressed or hopeless feelings, trouble falling asleep, feeling tired or having little energy, poor appetite or overeating, feeling bad about oneself, trouble concentrating, moving, or speaking slowly, and thoughts of self-harm. Each item is rated on four-point Likert scale. The scores for each item are summed, resulting in a total score ranging from 0 to 27. In which 0 to 4 indicates minimal depression, the score ranges from 5 to 9 indicates mild depression, the score ranges from 10 to 14 indicates moderate depression, the score ranges from 15-19 indicates moderately severe depression and the score ranges from 20-27 indicates severe depression.

Ethical consideration:

An official approval was obtained from the Research and Ethics Committee of the Faculty of Nursing, Menoufia University approved number was **(ERCNMA 1000/5/1/89/25).** Permission was granted by the dean of the Faculty of Law, the Faculty of Education, the Faculty of Agriculture, and the Faculty of Health Science to carry out this study. A written consent was taken from each student who was willing to participate in the study after explaining the purpose and the importance of the study. The subjects who agreed to participate in the study were assured of confidentiality and anonymity in the study. They were informed about their right to withdraw from the study at any time without giving a reason.

Validity and reliability:

Validity: Before starting, the data collection tools were re-tested for content validity by five experts in psychiatric nursing and psychiatric medicine to check the relevance, coverage of the content, and clarity of the questions. The required modification was carried out accordingly after the panel revision. The tools were considered valid from the expert's perspective.

Reliability: Test-retest reliability was applied by using Cronbach's alpha coefficient test. The tools proved to be strongly reliable (r. = 0.892) for tool 2 the GAD-7 scale, and strongly reliable (r. = 0.879) also for tool 3 the PHQ-9 scale.

Pilot study:

A pilot study was undertaken after the development of the tools and before starting the data collection. It was conducted on 50 students, which is 10% of the total sample size. The purpose of the pilot study was to test the applicability, feasibility, and clarity of the tools. In addition, it served to estimate the approximate time required for interviewing the students as well as to find out any problems that might interfere with data collection. After obtaining the result of the pilot study, the necessary modifications of the tools were made, and then the final format was developed. Those students were excluded from the actual study. The pilot study revealed that the study tools were clear, understood, and applicable.

Procedure of data collection:

- Before starting any step in the study, an official letter was addressed about the purpose of the study from the faculty of nursing, Menoufia University, to the dean of the selected faculties.
- Permission was obtained from the dean of selected faculties to collect data from students within their college. Additionally, all of the authorized personnel provided the needed information about the purpose and the importance of the study.
- The researchers received students' written consent and informed them that participation was voluntary, and they had the right to withdraw if they chose to do so. There were no physical or psychological risks associated with participating in the study, and students did not receive any direct benefits.
- The researchers started data collection by introducing themselves to the students.
- A brief description of the purpose of the study and the type of questionnaire required to fill out was given to each student.
- Data collection was done through interviews with each one of them. The researchers collected data during the morning on two days/week for each faculty at the main lecture hall after academic time.
- Each interview lasted for 20-30 minutes, depending on the response of the students consisting of 25-35 students per day according to the availability and readiness of the students until the predetermined duration was completed. The process of data collection took a period of three months from February 2025 to May 2025.

Statistical Analysis

Data entry and statistical analysis were done using the Statistical Package for Social Sciences (SPSS version 25). Data were presented using descriptive statistics in the form of frequencies and percentages for qualitative variables, mean, and standard deviation for quantitative variables. Qualitative variables were compared using the chi-square test, and the test correlation coefficient is used to measure the direction and strength of the correlation between variables. A significant level value was considered when P-value <0.05, and a highly significant level value was considered when P-value < 0.001, while a P value of >0.05 indicated non-significance.

Results:

Table 1 shows that the mean age of the studied students is 20.46±٢.2٥, the age ranges from 18-23 years old. More than half of them (64%) are males, more than one third (40.8%) are from faculty of law, almost one third of the studied students have father and mother with university education or higher (29.2% and 26%) respectively. More than two-thirds of them (72%) are from rural areas, and nearly half (38.4%) of them have enough only daily expenses. Most of them (72.4%) live with both parents and the

mean screen time in hours per day is 8.03 ±4.50.

Figure 1 shows that more than one-third of the studied students, 35.6% has moderate anxiety and almost one quarter 24.4 % has severe anxiety.

Figure 2 assured that almost one third of the studied students, 28.8% and 27.6% have moderate depression to moderately severe depression respectively.

Table 2 presents the distribution of mean screen time (in hours) per day across socio-demographic characteristics of the studied students. It indicates that screen time tends to be higher among older students compared to younger ones, and there is a highly statistically significant relation between preparatory and secondary educational level of their mothers and screen time use; low education (secondary education) of mothers is associated with high screen time use. Also, there is a highly statistically significant relation between place of residence and screen time use; setting in rural areas is associated with high screen time use.

Table 3 reveals the correlation coefficient between socio-demographic characteristics and screen time, anxiety, and depression among the studied students.

For socio- demographic characteristics and screen time, the age of students shows a highly statistically significant positive correlation, meaning older students tend to use screens more than younger students, and there is a statistically significant negative correlation between mothers' education and screen time use; lower educational level of their mothers is associated with higher screen time use per day. Also, there is a highly statistically significant negative correlation between place of residence and screen time use; setting in rural areas is associated with high screen time use.

For socio- demographic characteristics and anxiety, age shows a weak negative correlation (-0.093, p = 0.141), indicating that younger age groups tend to have slightly higher anxiety scores, although not statistically significant. Students' daily expenses have a small positive correlation (0.090, p = 0.157), suggesting that enough only expenses are associated with slightly higher anxiety levels. Father's education shows very weak correlations with anxiety, with p-values indicating no significant relationship.

Moreover, there is a statistically significant negative correlation between the mother's education and anxiety, which means that as the mother's education increases, the student's level of anxiety will decrease. Also, there is a highly statistically significant negative correlation coefficient between students' residence and anxiety, which means living in rural areas, is associated with a higher level of students' anxiety. Also, there is a highly statistically significant positive correlation between screen time and anxiety score, which means that if anxiety level increases, the screen time will increase as well.

For socio- demographic characteristics and depression, age demonstrates a weak negative correlation (-0.096, p = 0.130), suggesting that younger students may have slightly higher depression scores, but not statistically significant. Father's education, mother's education and place of residence showed weak negative correlations, respectively, and these are not statistically significant as well.

Also, there is a highly statistically significant positive correlation between screen time and depression. Which means that if depression level increases, the screen time will increase as well.

Table 4 shows that there is a statistically significant relation between moderate anxiety level and more screen time (hours) use. Also, there is a highly

statistically significant positive correlation between screen time and anxiety score, which means that if anxiety level increases, the screen time will increase as well.

Similarly, **Table 4** shows that there is a statistically significant relation between depression level and more screen time (hours) use per day. Also, there is a highly statistically significant positive correlation between screen time and depression score, which means that if the depression level increases, the screen time use per day will increase also.

Table 5 clarifies that there are a highly statistically significant relation and positive correlation between anxiety and depression means that when anxiety level increases, depression level will increase as well.

Table (1): Socio-demographic characteristics among the students studied (N=500):

Socio-demographic characteristics	Frequency (No.)	Percent (%)
Students' Age/years ($\bar{X}$ ±SD)	20.46±2.25	
Range	18 – 23	
Gender		
- Male	320	64%
- Female	180	36%
Name of the Faculty		
- Faculty of Law	204	40.8%
- Faculty of Education	108	21.6%
- Faculty of Agriculture	124	24.8%
- Faculty of Health Science	64	12.8%
Father education:		
- Illiterate	40	8%
- Reads and writes	60	12%
- Primary	68	13.6%
- Preparatory	90	18%
- Secondary	96	19.2%
- University or higher	146	29.2%
Mother education:		
- Illiterate	18	3.6%
- Reads and writes	62	12.4%
- Primary	68	13.6%
- Preparatory	74	14.8%
- Secondary	148	29.6%
- University or higher	130	26 %
Place of residence		
- Urban	140	28%
- Rural	360	72%
Students' daily expenses		
- Enough only	192	38.4%
- Enough and saves	148	29.6%
- Not enough	160	32%
Students live with whom		
- Both parents	362	72.4%
- Relatives	10	2%
- Friends	128	25.6%
Screen time in hours	**Mean 8.03 ±4.50**	

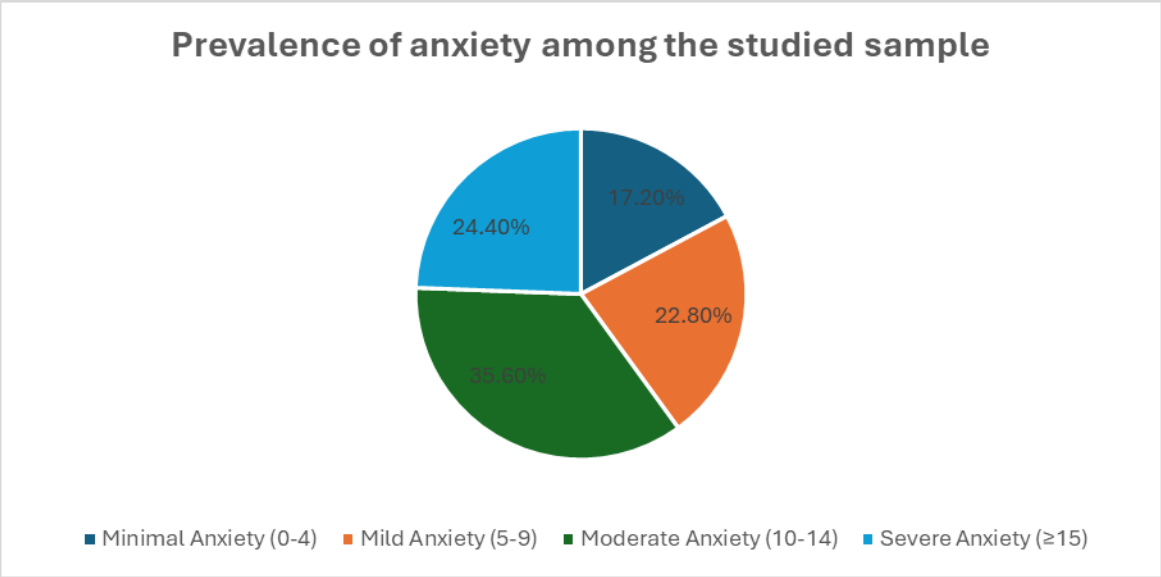

Figure (1): Prevalence of anxiety among the studied students (N=500):

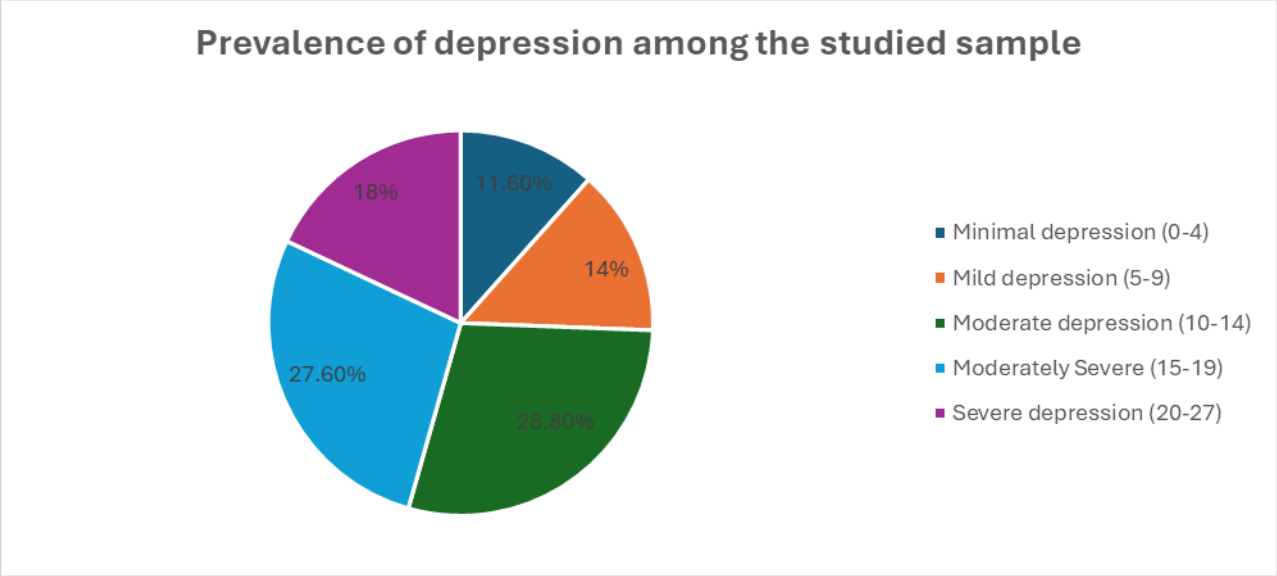

Figure (2): Prevalence of depression among the studied students (N=500):

Table (2): Relation between socio-demographic characteristics and the mean screen time (in hours) per day among the students studied (N=500):

Socio demographic Characteristics	Screen time Mean ± SD	F	P- Value
Students Age			
Range 18 - 20	5.17 ± 2.84	4.259	**0.001****
21 – 23	6.81± 2.25		
Gender			
- Male	4.48 ± 2.45	0.483	0.488
- Female	6.53 ±3.05		
Name of the Faculty			
- Faculty of Law	6.10 ± 3.02	0.419	0.955
- Faculty of Education	7.75 ± 2.56		
- Faculty of Agriculture	5.44 ± 4.1		
- Faculty of Health Science	5.26 ± 2.56		
Father education:			
- Illiterate	5.72 ± 4.77	0.274	0.974
- Reads and writes	6.24 ±3.51		
- Primary	7.6 ± 2.02		
- Preparatory	6.5 ±1.64		
- Secondary	4.01 ± 3.7		
- University or higher	5.3 ± 3.29		
Mother education:			
- Illiterate	5. 69 ± 4.78	12.351	**0.001****
- Reads and writes	4.21± 3.74		
- Primary	5.29 ± 4.53		
- Preparatory	6.15 ± 4.40		
- Secondary	7.28 ± 1.94		
- University or higher	5.1 ± 3.44		
Place of residence			
- Urban	6.0 ± 5.07	14.849	**0.001****
- Rural	7.63 ± 3.30		
Students' daily expenses			
- Enough only	7.0 ± 6.07	0.314	0.892
- Enough and saves	5.01 ± 3.7		
- Not enough	4.64 ± 1.6		
Students live with whom			
- Both parents	6.35 ±4.96	0.216	0.898
- Relatives	6.55 ± 4.17		
- Friends	4.78 ± 3.16		

Table (3): Correlation coefficient between socio-demographic characteristics and students' screen time per day, depression, and anxiety among the studied students (N=500):

Socio-demographic variables vs screen time, anxiety, and depression						
Socio-demographic Variables	**Screen time**		**Anxiety**		**Depression**	
	R	**P-value**	**R**	**P-value**	**R**	**P-value**
Age of students	0.764	**0.000****	-0.093	0.141	-0.096	0.130
Students gender	0.215	0.621	0.152	0.094	0.253	0.358
Name of the faculty	0.346	0.338	0.237	0.326	0.052	0.098
Father education	0.063	0.196	0.018	0.774	-0.008	0.902
Mother education	- 0.421	**0.028***	-0.309	**0.024***	-0.060	0.347
Place of residence	-0.680	**0.000****	-0.570	**0.000****	-0.030	0.604
Students' daily expenses	0.064	0.140	0.090	0.157	0.054	0.394
Students live with whom	0.216	0.221	0.035	0.067	0.106	0.350
Screen time in hours	------	-----	0.541	**0.000****	0.622	**0.000****

Table (4): Relation and correlation between anxiety, depression scores, and screen time in (Hours) per day among the studied students (N=500):

GAD-7	**Screen time Mean ± SD**	**F**	**Sig. P-Value**	**R**	**Sig. P-Value**
Minimal Anxiety (0-4)	4.32 ± 1.82	2.87	**0.037***	0.541	**0.001****
Mild Anxiety (5-9)	6.88 ± 3.13				
Moderately Anxiety(10-14)	8.43 ± 2.71				
Severe Anxiety (≥15)	7.55 ± 2.7				
Depression	**Screen time Mean ± SD**	**F**	**Sig. P-Value**	**R**	**Sig. P-Value**
Minimal depression (0-4)	5.31 ± 3.55	3.37	**0.010***	0.622	**0.001****
Mild depression (5-9)	6.37 ± 3.09				
Moderate depression (10-14)	7.89 ± 3.69				
Moderately Severe(15-19)	7.31 ± 1.15				
Severe depression (20-27)	6.12 ± 3.24				

Table (5): Relationship and correlation coefficient between anxiety and depression among the studied students (N=500):

Study variables	**Depression**			
	F	**P-Value**	**R**	**P-Value**
Anxiety	14.62	**<0.001****	0.781	**<0.001****

Discussion

Screens of all types, including televisions, computers, tablets, and smartphones, have become considerably greater in our daily lives during the digital era. Excessive screen time has sparked concerns regarding potential adverse health consequences, even though these devices have undoubtedly enhanced connectivity and convenience. One significant area of research is the correlation between screen time and overall mental health and quality of life. An increasing body of research has focused on the suggestion that excessive screen time may be linked to the recent rise in mental health issues among adolescents.

Concerning the socio-demographic characteristics of the studied students

In terms of age, the results of the current study showed that the mean age of the studied students was 20.46±2.25, the age ranges from 18-23 years old (**table 1**). This reflects a typical undergraduate student population. This was consistent with **El-Sayed. (2023)** revealed that most participants were between 21 and 24 years old. Moreover **Liu et al. (2023)** stated that the mean age of the participants was 21.47 years. On the other hand, **Deyo et al. (2024)** reported that the age of college student's participants ranged from 13-17 years, and half of them were aged 17.

In terms of gender, more than half of the studied students were males; this may reflect higher male admission in these faculties which may help them for getting job faster (**Table 1)**. This result was consistent with **Sserunkuuma et al. (2023)** who stated that over half of the students were male. This was contradicted by **Kaewpradit et al. (2025)** who reported that most students were female.

In terms of parents' education, almost one-third of the students studied had a father and mother with university or higher education as well (**Table 1**). This might be attributed to the fact that many students were from rural areas, and the approved culture to complete higher education to satisfy their needs. These findings disagreed with **Opdal et al. (2020)** who indicated that more than half of parents of participants did not have higher education.

In terms of residence, the results of the current study revealed that more than two thirds of studied students were from rural areas, and nearly half of their daily expenses were enough only (**table 1)**. As the university serves a largely rural region. Urban students have more educational options, while rural students often depend on nearby public universities, and many rural students come from low-income families with limited resources, so their expenses are low as well. In contrast to **Mohd Saat et al. (2024)** who reported that more than two-thirds of the participants were from urban areas but nearly half of them had household incomes enough only. Furthermore, most currently studied students lived with both parents, this might stem from family solidity and living together as a household are more typical in rural areas.

Regarding the screen time, the current study results showed that the mean screen time in hours per day was 8.03 ± 4.50 **(table 1)**. This might be due to students depending heavily on electronic devices for academic purposes, social interaction, and entertainment, especially during their free time or in the absence of other recreational activities. Additionally, the lack of sufficient parental supervision may contribute to excessive screen use. This results was in the same line with **Zhang et al. (2025)** who reported that the mean exposure time of electronic screens among participants was 6.46 (SD: 2.67) hours per day. On the other side **Steiner-Hofbauer et al. (2023)** revealed that participants spent about 12 hours per day with screen-related activities. Additionally, **Achak et al. (2023)** reported 4 to 8 hours screen time per day.

Regarding the students level of anxiety and depression: According to the current study, more than one third of studied students had moderate anxiety and almost one quarter had severe anxiety (**figure 1& table 4)**, and almost one third of studied students had moderate depression (**figure 2&table 4**), this might be due to academic stress moreover, the different kinds of life stressors they are facing. These findings were aligned with **Zhang et al. (2025)** who showed that most of the students reported moderate anxiety and depression. But this result contradicted with **Hassan et al. (2025)** who revealed that almost of the students report mild depression and anxiety.

Socio-demographic and screen time

Regarding relation between screen time and age, the results of the current study illustrated that screen time tends to be higher among older students compared to younger ones (**table 2 and 3)**. This might be due to older students are more likely to be engaged in advanced education stages which necessitate prolonged screen use for academic tasks and communication. Additionally, they typically have greater autonomy and less parental control, leading to fewer screen time restrictions. This was aligned with **Maurya et al. (2022)** who verified that screen time use among adolescents increased with getting older and observed that females and older students reported higher average screen time.

But opposite to **Nagata et al. (2023)** who revealed that younger age groups have more screen time, which gradually decreases with age, showed that younger students had more screen time than older. Likewise, **Ganesamoorthy et al. (2024)** revealed that increased screen time was significantly associated with younger age (10-15 years) and urban residence.

Regarding relation between screen time and students mother education, the current study findings reflected that there was a highly statistically significant relation between mother education and screen time use, low (secondary) education of mothers was associated with high screen time use (**table 2 and 3)**. This might be due to mothers with higher education usually having better health literacy and awareness of the negative impacts of excessive screen exposure, so they set screen limits, and monitor sons' media use more closely. Also, many parents, particularly those with lower educational levels, may not be fully aware of the potential negative impacts of prolonged screen exposure.

This result was consistent with **Cardenas-Fuentes et al. (2021)** who reported that maternal educational level was inversely associated with sons' screen time and being in the lowest maternal educational category was associated with exceeding the maximum recommended time of screen time per day. Also, this result was in the same line with **Ke et al. (2023)** who stated that children and adolescents with higher parental education levels were more likely to meet the screen time guidelines.

Regarding the relation between screen time and students' place of residence, the current findings reflected that there was a highly statistically significant relation between place of residence and screen time use; living in rural areas was associated with high screen time use **(Tables 2 and 3)**, this could be because people in rural areas don't have as many options for sports and recreational activities that could help them spend less time in front of screens.

This result was in the same line with what **Nigg et al. (2022)** who found rural teens spent less time playing outside and being active, but they spent a lot more time on computers and playing video games. But **Christiana et al. (2021) and Manyanga et al. (2022)** said that rural adolescents spend less time on screens than urban youth.
Also, the results of this study were

contrary to what **Ganesamoorthy et al. (2024)** found that younger people (ages 10 to 15), those who lived in cities, and people who went to school were more likely to spend more time on screens.

Socio-demographic and anxiety Regarding students' age and anxiety, the results of this study demonstrated that younger students tend to have slightly higher anxiety levels, but this difference is not statistically significant (Table 3). This could be because of challenges in college that happen early on, and the fact that younger students don't have a lot of life experience or coping abilities. **Al-Garni (2025)** backed this up by saying that people under 25 were more likely to be depressed, stressed, and anxious than people older than 25. Also, **Alshehri et al. (2023)** found that first-year students had more symptoms of anxiety and depression than fifth-year students.

This result was contradicted with **Abuejheisheh et al. (2024)** as the results revealed that there was a statistically significant difference in anxiety concerning the age group, the mean score for the age group of those between 18 and 20 years was significantly lower than those at the age of 21–23 years, and 24–26 years. In addition, there was a statistically significant difference in anxiety in relation to the academic year. The mean score for the second-year students was significantly lower than the fourth-year students.

Regarding mother education and anxiety, the results of the current study confirmed that there was a statistically significant negative correlation between mother educational level and students anxiety scores; low education of mothers was associated with students higher anxiety levels (**Table 3)**, this is possibly explained by reduced mental health literacy in mothers with less education can hinder effective responses to their sons' psychological needs. Additionally, a lack of academic guidance from the mother increases students' feelings of pressure and inadequacy, contributing to elevated anxiety.

This was agreed by **Tayefi et al. (2020) and Awadalla et al. (2020)** who stated that students with higher levels of anxiety symptoms came from less wealthy families and had less maternal education. Also results of the study conducted by **Swartz et al. (2018)** suggested that high maternal education may serve as a protective factor against anxiety and depression. But this was challenged by **Ge et al. (2022)** who indicated that college students whose parents have a higher level of education tend to suffer from anxiety and somatization. Moreover, **Anjum et al. (2022)** observed that there was no significant association found between the mothers' educational level and students' anxiety.

Regarding place of residence and anxiety, there was a statistically significant negative correlation between place of residence and anxiety levels, indicating that students living in rural areas experienced higher levels of anxiety compared to those in urban settings **(Table 3)**. This could be attributed to limited access to mental health services and recreational facilities can leave students feeling isolated and overwhelmed. As a coping mechanism, many may turn to screens for connection, entertainment, or escape. The combination of social isolation, technological barriers, and reduced physical activity contributes to both heightened anxiety and excessive screen time. This agreed with **Ma & Sheng (2023)** who claimed that rural adolescents with higher screen time exhibited significantly higher anxiety and depressive symptoms compared to their urban peers.

Also, the current findings agreed with **Deshpande et al. (2024)** who reported that rural youth with increased screen exposure reported higher anxiety and sleep disturbances. The lack of recreational alternatives and poor awareness of digital well-being

contributed to this correlation. Nevertheless, this was contradicted with **Anjum et al. (2022)** who observed that the urban students were suffering from anxiety more than rural students. While their study doesn't specify the reasons for this discrepancy, urban environments, with their faster pace of life, higher academic pressures, and potentially greater access to technology, could be contributing factors to increased anxiety.

Socio-demographic and depression

Regarding students' age and depression, the evidence from this study demonstrated that younger students may have slightly higher depression scores than older ones, but not statistically significant (table3), this might stem from challenges of transitioning to university life. However, the lack of statistical significance suggests that age alone may not be a strong predictor of depression, and other factors such as personality traits and support systems may play a role. This was supported by **Farrer et al. (2016)** who revealed that the risk of depression was higher for students in their first year of undergraduate study. But contradicted by **Nguyen et al. (2019)** who showed that students those aged 20 were more likely to have depression than those aged from 17 to 19.

Regarding the relation between parents' education, place of residence, and depression, the current study results showed that father's education, mother's education, and place of residence had weak negative correlations with depression **(Table 3).** This could be attributed to the fact that higher parental education and possibly more stable living environments might be linked to slightly lower depression levels due to better socioeconomic support and access to resources. However, the lack of statistical significance indicates that these factors alone may not strongly influence depression, and other personal, social, or psychological variables could be impactful.

This result was in line with **Rajar et al. (2022)** conveyed that rural residence demonstrated a significantly negative association with depression among the students. In addition, the lower parental level of education showed a significant association with depression. However, this was contradicted by **Yu et al. (2022)** who observed the prevalence of complaints of depression was higher amongst those whose fathers had a bachelor's degree or higher education than those whose fathers only completed primary school or below. Moreover, **Zhao and Yiyue (2018)** pointed out that parents' education was positively associated with college students' depression.

Regarding the relation between students' level of anxiety and screen time use per day, the results of the current study revealed that there were a statistically significant relation and a highly statistically significant positive correlation between screen time use per day and anxiety score means; if anxiety level increases, the screen time will increase as well **(Tables 3 and 4).** This might be explained by the fact that prolonged exposure to screens, particularly for non-academic purposes, can lead to mental fatigue and cognitive overload, increasing susceptibility to anxiety. Furthermore, reduced physical activity and limited face-to-face social interaction, both of which are protective factors against anxiety.

This result was supported by **Alsaigh et al. (2022)** who found a relationship between screen time exposure and the presence of anxiety-related disorders among adolescents. In the same line, a meta-analysis was conducted by **Zartika and Murti (2024)** found that screen time ≥4 hours increased the risk of anxiety and depression in adolescents. But contradicted by **Li et al. (2025)** reported

that high screen time is unlikely to cause anxiety and depression.

Regarding the relation between the students' level of depression and screen time, the results of the present study showed that there were a statistically significant relation and a highly statistically significant positive correlation between depression level and more screen time (hours) use per day. As the depression level increases, the screen time will increase as well **(table 3 and 4).** This might be because excessive screen use often displaces protective behaviors such as physical activity, social interaction, and adequate sleep, all of which are crucial for maintaining mental well-being. Furthermore, individuals experiencing depressive symptoms may turn into screen-based activities as a coping mechanism, creating a reinforcing cycle that intensifies both screen use and depression.

This was supported by **Xu et al. (2025)** showed that there was a positive association between screen time and depression and anxiety symptoms in adolescents. Moreover, this was in line with **Liu et al. (2025)** found a significant association between increased internet use and depressive symptoms, with rural adolescents more vulnerable than urban peers. But contradicted by **Baobaid et al. (2023)** revealed that there was no association between screen time with depression or stress.

Regarding the relation between anxiety and depression, the results of the current study showed that there were a highly statistically significant relation and positive correlation between anxiety and depression, which means that when anxiety level increases, depression level increases as well **(Table 5).** This might stem from the fact that anxiety and depression can worsen each other. Anxiety-driven restlessness or worry can reduce motivation and pleasure, common in depression; meanwhile, depressive symptoms can increase feelings of fear or worry, boosting the anxiety. This result was proven by **Sampasa-Kanyinga et al. (2021)** who found a significant correlation between depression and anxiety symptoms of college students and stated that significant associations between anxiety and depression were observed when increased screen time was paired with reduced sleep duration. Moreover, **Zhang et al. (2022)** reported that depressive symptoms were significantly positively associated with anxiety symptoms among college students.

The relationship of screen time with anxiety and depression is domineering due to the global influence of screens in our day-to-day lives. In the digital era, maintaining a healthy equilibrium between technology use and a healthy lifestyle is critical to reduce these negative impacts and raise a comprehensive sense of well-being. Forthcoming research and mental health programs will explore ways to promote a balanced method to screen time, physical activity, and good sleep hygiene.

Conclusion:

Based on the findings of the current study, it can be concluded that:

The mean average screen time per day among university students was 8.03 ±4.50 hours per day.

The studied students have moderate anxiety and almost one quarter have severe anxiety and almost one third of the studied students have moderate depression to moderately severe depression respectively.

There was a statistically significant relation and a highly statistically significant positive correlation between anxiety, depression level and more screen time (hours) use per day. Moreover, there was a highly statistically significant relation and positive correlation between anxiety and depression.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

1- Implement structured awareness campaigns to raise awareness that educate students about how too much screen time can hurt their mental health.

2- Design psychoeducational programs about digital health, good screen habits, and how to spot signs of sadness and anxiety.

3- Hold workshops on digital hygiene, promote planned use of the screen, and use social media with care.

4- Providing services to help with mental health and counseling programs at universities to check for signs of screen fatigue, depression and anxiety during orientation or the middle of the term. And offer online counseling to meet students where they are (online), followed by choices for meeting in person.

5- Further studies on factors that act as mediators or moderators, like resilience, social support, and emotional regulation, among university students

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Limitations of the study: No limitations were found

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