الأثر النفسي لإدمان الإنترنت على التوتر وجودة النوم لدى طلاب جامعة السليمانية التقنية: دراسة مقطعية

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The Psychological Impact of Internet Addiction on Stress and Sleep Quality Among College Students at Sulaimani Polytechnic University: A Cross-Sectional Study

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Abstract

Internet addiction has become a serious issue regarding mental health among college students and has an impact on sleep quality and psychological health as a result. The aim of the study is whether there is a relationship between Internet addiction, stress, and sleep quality among college students at Sulaimani Polytechnic University. To conduct this study, 479 students were randomly selected from the total of 3000 students. The participants completed three different questionnaires that were all previously validated: the Internet Addiction Test (IAT), the Perceived Stress Scale (PSS), and the Pittsburgh Sleep Quality Index (PSQI).

results showed that the level of Internet addiction was moderate to high (M = 58.47, SD = 6.478) and that perceived stress level was moderate (M = 17.82). Furthermore, 98.3% of the participants were determined to be poor sleepers, as indicated by an average PSQI score of 12.01, which is above the clinical cut-off score for sleep disturbance. A positive correlation was found between Internet addiction and perceived stress (r = 0.58, p = 0.021), Internet addiction and poor sleep quality (r = 0.77, p = 0.042), and perceived stress and poor sleep quality (r = 0.66, p = 0.001). Gender analysis was conducted, which showed that males had higher levels of Internet addiction than females and females had poorer sleep quality than males, yet no gender differences were found in perceived stress level.

ملخص

يتضمن هذا الورقة البحثية الأثر النفسي لإدمان الإنترنت على التوتر وجودة النوم لدى طلاب جامعة السليمانية التقنية: دراسة مقطعية , اذ أصبح إدمان الإنترنت مشكلة خطيرة تؤثر على الصحة النفسية لطلاب الجامعات، وينعكس ذلك سلبًا على جودة نومهم وصحتهم النفسية. تهدف هذه الدراسة إلى بحث العلاقة بين إدمان الإنترنت والتوتر وجودة النوم لدى طلاب جامعة السليمانية التقنية. ولإجراء هذه الدراسة، تم اختيار ٤٧٩ طالبًا عشوائيًا من بين ٣٠٠٠ طالب. أكمل المشاركون ثلاثة استبيانات مختلفة، جميعها مُعتمدة مسبقًا: اختبار إدمان الإنترنت (IAT)، ومقياس التوتر المُدرك (PSS)، ومؤشر بيتسبرغ لجودة النوم (PSQI).

أظهرت النتائج أن مستوى إدمان الإنترنت كان متوسطًا إلى مرتفع (المتوسط = ٥٨,٤٧، الانحراف المعياري = ٦,٤٧٨)، وأن مستوى التوتر المُدرك كان متوسطًا (المتوسط = ١٧,٨٢). علاوة على ذلك، تبين أن ٩٨,٣% من المشاركين يعانون من اضطرابات النوم، وفقًا لمتوسط درجة مؤشر بيتسبرغ لجودة النوم (PSQI) البالغ ١٢,٠١، وهو أعلى من الحد الأدنى السريري لاضطرابات النوم. وُجد ارتباط إيجابي بين إدمان الإنترنت والإجهاد المُدرَك (r = 0.58 ، p = 0.021)، وبين إدمان الإنترنت وضعف جودة النوم (r = 0.77 ، p = 0.042)، وبين الإجهاد المُدرَك وضعف جودة النوم (r = 0.66 ، p = 0.001). وأظهر تحليل الجنس أن الذكور لديهم مستويات أعلى من إدمان الإنترنت مقارنةً بالإناث، وأن الإناث لديهن جودة نوم أسوأ من الذكور، بينما لم تُلاحظ فروق بين الجنسين في مستوى الإجهاد المُدرَك.

1. Introduction

1.1 Background of Study

nowadays using internet has become part of our lives, the increasing use of the internet has led to an increasing incidence of internet addiction (IA), according to (Montag, 2017) IA is defined as any online-related, compulsive behavior which interferes with normal living and causes severe stress on family, friends, loved ones, and one's work environment. Studies have further emphasized that internet addiction is increasingly recognized as a behavioral disorder, particularly among university students, and is associated with psychological distress and reduced well-being (Kuss & Griffiths, 2012, pp: 280-282).

Excessive internet use is defined as when internet use become excessive, uncontrolled and time-consuming to the point of timelessness and severely disrupting people's lives (Kraut et al., 1998, p. 1019). Schoolers also investigated the relationship between internet addiction, psychological capital, and mental health outcomes. they found that higher levels of internet addiction were associated with lower psychological capital and poorer mental health (Arslan et al., 2022, p. 2170). Moreover, difficult internet use has been linked to higher stress levels and minor sleep quality among young (Anderson et al., 2017, pp. 435–437). Internet addiction has become a social concern, drawing attention from scholars and experts. This complex issue, influenced by biological, psychological, social, economic, and cultural factors, cannot be oversimplified (Guillot et al., 2016, p. 4).).

Many of these studies have confirmed that internet addiction leads to various physical problems, (Tahir et al., 2021, p. 6) such as sleep disorders, depression, anxiety, and alcohol abuse (Yen et al., 2009, p. 580). Research has also shown that excessive smartphone and social media use significantly affect sleep quality and are associated with increased anxiety and depression among university students (Demirci et al., 2015, p. 88; Levenson et al., 2016, p. 38). Furthermore, it has led to a disturbance in daily activities, especially among university students, resulting in negligence of assignments and coursework (Anand et al., 2018, p. 461).

Despite the internet's spectacular expansion and use, academics have expressed worries about the hazards connected with excessive internet use (Okwaraji et al., 2015, p. 3). A meta-analysis study also confirmed that internet addiction is a global issue with significant psychological and behavioral consequences (Cheng C & Li AY, 2014). (Aderinto, 2022) show that Internet addiction correlates strongly with diminished mental

health and quality of life, the significant impact of internet addiction on mental well-being has been widely recognized. Beyond mental health, internet addiction negatively affects physical health, manifesting as pain, stiffness, eye strain, back and neck pain, sleep disorders, hyperactivity, poor hygiene, and eating disorders, all of which further harm mental well-being. Additionally, internet addiction can lead to poor academic performance due to poor time management, thereby contributing to mental health issues among young people.

In addition to various psychological concerns, it is recognized that greater usage of mobile devices at night is often linked to social media activity, and this trend is commonly associated with the idea of fear of missing out (FOMO), which refers to the anxiety of not being aware of updates or being outdated (Jahrami et al., 2021, p. 6; Pham et al., 2021, p. 4; Przybylski et al., 2013, p. 1843). Problematic social media use has also been linked to increased stress levels and poorer mental health outcomes (Bányai et al., 2017, p. 5).

Internet addiction interferes with circadian rhythms, leading to insomnia and sleep issues. Utilizing electronic devices in bed interferes with sleep because of cognitive, emotional, or physiological triggers (Kang et al., 2015, p. 3), as well as psychiatric conditions like depression, anxiety, alcohol dependence, and attention deficit among college students (Ho et al., 2014, p. 2). Moreover, exposure to screens, particularly before bedtime, has been found to reduce sleep duration and negatively impact sleep quality (Hale & Guan, 2015, p. 52).

The quality of sleep at night affects our energy throughout the day. Research indicates that sufficient sleep supports both physical and mental well-being. Sleep, a crucial therapeutic component of human physiology, has been shown to be vital for functioning, mental well-being, and overall quality of life (Lemma et al., 2012, p. 3).

(Alimoradi J, et al., 2019) show that bright light emitted by electronic devices, particularly those with short wavelengths, hinders the onset of sleep. Furthermore, overindulgence in internet usage might lead to gray matter shrinkage, adversely affecting a person's focus and decision-making skills (Alzhrani et al., 2023, p. 9).

Epidemiological research indicates that sleep disturbances are linked to negative health effects, such as obesity, (type 2) diabetes, cardiovascular issues, high blood pressure, and early mortality (Jalilolghadr et al., 2017, p. 4). As a result, it appears probable that these individuals may experience compromised regulation of body weight and eventually

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obesity as time progresses (Artemis et al., 2016, p. 2; Healy et al., 2010, p. 6).

Although numerous studies have explored internet addiction in relation to mental health and sleep, many have focused on these variables separately or in different populations and cultural contexts. Limited the research has examined the combined effect of internet addiction on stress and sleep quality among students at Sulaimani Polytechnic University.

1-2 Research problem

Detailed research into its effects on wellbeing and sleep. To students the Internet has become very much part of their everyday lives, and a wealth of global and local studies have focused on this topic. As there has been much evidence of a significant correlation between addiction to the Internet, mental health disorders and sleep disruptions (Anderson EL, et al., 2017; Demirci K, et al., 2015; Levenson JC, et al., 2016), systematic reviews and meta-analyses of the global issue of addiction to the Internet have shown that it has serious psychological and behavioural implications (Cheng C & Li AY, 2014; Kuss DJ & Griffiths MD, 2012).

Most previous studies appear to have only explored independently either psychological outcomes per se or sleep quality per se, rather than considering the interrelatedness of the three variables: addiction to the Internet; stress and sleep quality. Additionally, much of the literature to date has been conducted in different cultural and geographical regions, which may limit the validity of the findings for students in the Kurdistan Region.

A survey conducted within a sample group of medical students from Iran examined the relationships between addiction to the Internet, mental health and sleep (Arzani-Birgani, 2021); our survey aims to examine the same relationships for students of Sulaimani Polytechnic University.

Nevertheless, limited research has specifically addressed this topic within the local academic context, particularly by integrating stress levels and sleep quality as interconnected outcomes of internet addiction.

Therefore, the way Internet addiction affects stress, sleep issues, and everyday activities is still not fully understood, pointing out a significant gap in the current research. The central question is: “How does internet addiction relate to psychological stress levels and sleep disorders at Sulaimani Polytechnic University?”

1-3 Aim of the Study

General aim is to assess psychological impact of internet addiction on stress levels and sleep quality among college students at Sulaimani Polytechnic University.

Specific Objectives:

1. To measure the level of (internet addiction, psychological stress and sleep quality) among college students.
2. To examine the relationship between (internet addiction, psychological stress and sleep quality).
3. To measure differences between (internet addiction, psychological stress and sleep quality) by gender.

2. Literature Review

2.1 Social Media:

Digital technologies—specifically, social media—allow users to share ideas and information (both text and images) through virtual networks (Dollarhide, 2024, p. 1). Social media sites are a broad range of platforms (including social networking sites) that let users create and share their own content and engage with one another via likes, shares, comments, and discussion. Social media sites are being used by consumers to connect and communicate with friends, family, and other members of their communities. Businesses use social media applications to market and promote their products and monitor customer feedback (Lutkevich, 2024, p. 2).

Social networking can be defined as technology that is growing in popularity because of its ease of use. Social networking websites such as Facebook, Instagram, Twitter, etc., allow users to connect and communicate with others from different parts of the world; therefore, social networking has opened many doors for people to connect globally (Brajesh, 2024).

2.2 Sleep

Sleep is an in-built and automatic behaviour that is created by the brain. The brain will go into a non-functioning state when somebody has reached this sleep level of non-awareness of the environment. People who fall asleep while having no activity within the brain are classified differently than people who go into a sleeping status. People who go into an unconscious state, such as aniedomisted or comatose, go through a period of being unaware of their environment before sleeping. (Tubbs & Gradner, 2019, p. 3).

In general, babies and infants need 14 to 17 hours of sleep a day, while infants 4 to 11 months old need 12 to 15 hours; toddlers 1 to 2 years old need between 11 and 14 hours; preschoolers 3 to 5 years need between 10 and 13 hours; school-aged kids 6 to 13 years old need between 9 and 11 hours; teenagers 14 to 17 years need 8 to 10 hours; adults generally need between 7 and 9 hours, depending on how much sleep they also have;

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older people 65 and older need between 7 and 8 hours of sleep per day; and the first trimester of womanhood often requires several hours more sleep per night than a non-pregnant woman does. These times do vary according to age and by how much activity was done; however, for the vast majority of people, sleeping near these amounts of time provide the body with adequate rest to function. More people become tired between the hours of 1:00 to 4:00 am, and most people will feel fatigued from the moment they wake up until the moment they go back to bed. (Felson, 2022, p. 4)

Stages of sleep

N1 (Fase 1) - Light Sleep (5%):

EEG recording: theta waves - low voltage This marks the lightest sleep stage, starting when over 50% of the alpha waves are substituted with low-amplitude mixed-frequency (LAMF) activity. Skeletal muscle exhibits muscle tone (INTERREG V-A Greece-Bulgaria Programme, n.d, p: 20), and respiration takes place consistently. This phase lasts approximately (1 to 5) minutes and makes up (5%) of overall sleep duration. (Patel, el at, 2024, P:4)

N2 Stage 2 Deeper Sleep (45%):

Individuals allocate roughly 50% of their overall sleep duration to NREM stage 2, which lasts approximately 20 minutes in each cycle.

N3 Stage 3 sleep:

referred deep sleep, makes it difficult to awaken someone when they are in this stage. During N3 sleep, muscle tone, pulse, and breathing rate decline as the body becomes more relaxed.

During this time, the brain exhibits a recognizable pattern characterized by delta waves. Consequently, stage 3 is sometimes referred to as delta sleep (SWS) (Suni & Singh, 2023, p. 5).

The significance of sleep

The importance of sleep for every bodily function (from performance levels (both physically and mentally) the next day, to how well we fight off illness and develop immunity, how fast our metabolism works, and our likelihood of developing long-term health conditions) makes this an interdisciplinary thing that is a component of health (Jansen, 2020, p. 2).

Detriments of insufficient sleep

Over time, insufficient sleep can lead to serious repercussions, such as a higher likelihood of automobile accidents, mistakes at work, cardiovascular issues, weakened immunity, weight gain, diminished life quality, and a shorter lifespan (Summer & Singh, 2023, P. 3).

2-3 stress

Experiencing stress is common for everyone, as we come across many scenarios in daily life that can be seen as stressful (e.g., delivering an oral presentation at work, performing under tight deadlines, or preparing for an upcoming exam). Stress is commonly described as a condition where external pressures surpass internal capabilities, leading the organism to trigger a neuroendocrine stress reaction ((Lazarus, 1993, p. 5). Stress and anxiety have a strong connection to cognitive distortions and pessimistic thoughts, which have a profoundly detrimental impact on mental well-being. In this context, recent research conducted among college students shows that just 15% exhibit healthy cognitive distortion levels, with younger students being more impacted by this issue (Alwawi & Alsaqqa, 2023, p. 4). As stated by (Lazarus & Folkman 1984), stress is a psychological or physical event generated from an individual's cognitive evaluation of stimuli and arises from the interaction with the surrounding environment. Stress exists only when there is a stressor present.

Categories of stress

1- Acute stress disorder: acute stress disorder is a severe, distressing, and maladaptive response that starts soon after a significant traumatic occurrence and endures for under a month. If symptoms last beyond a month, individuals are diagnosed with post-traumatic stress disorder (PTSD) (Barnhill, 2023, p. 2).

2- chronic stress disorder: chronic stress refers to an extended, frequently intense sense of stress that can adversely affect an individual's everyday life. The primary impact of prolonged stress is on the physical and mental well-being of individuals. Different kinds of physical health issues that occur include joint pain, heart disease, hypertension, hypotension, and so on. Persistent stress may lead to mood alterations, trouble with sleep, and health issues (Kandola, 2024, p. 2).

3- Emotional Stress: emotional stress can feel more intense and painful than other forms of stress. When the work demands become overwhelming in the workplace or individuals face challenging interactions with others, such as family, relatives, friends, colleagues, supervisors, employers, or others, they undergo emotional stress. When this stress is felt intensely, it negatively impacts the physical and mental health of individuals. Therefore, it is crucial for individuals to be fully informed about the strategies and methods that are vital for reducing emotional stress and preventing it from becoming significant, Additionally, they must be informed about the methods and procedures essential for excelling in their roles (Freshwater, 2018, p. 6).

Management of stress

1- Effective methods for managing stress are diverse; they usually encompass actions that enhance physical well-being, like diet and physical activity, but may also involve approaches that boost mental and emotional health. The mindfulness-based stress-reduction method has recently garnered significant interest from numerous healthcare and epidemiological researchers (Worthen, 2023, p. 3).
2- Relaxation Technique: progressive muscle relaxation is one way of relaxation training among various methods such as meditation and autogenic training. Switching between phases of muscle tension and relaxation, like in progressive muscle relaxation, aids in soothing particular muscle groups. Nevertheless, different meditation methods seek to cultivate a tranquil, contemplative state of mind. Meditation is a method for soothing the mind and body that has become more popular (Shapiro, 1985, p. 45; Dimatteo & Martin, 2012, p. 72).
3- Time management: programs assist attendees in organizing their schedules more effectively and establishing priorities. Enhancing productivity is essential for efficient time management

2-4 The Effect of social media on Sleep and Stress

1- Social Media Use and Sleep Disturbances

Many studies have researched the negative effects of social media use on sleep quality, showing that increased screen time, especially close to the time you go to bed, was connected to poorer quality of sleep. (LeBourgeois et al, 2017) found that students who were using electronic devices like social media applications right before going to sleep had a longer time to fall asleep and a worse quality of sleep than those who did not. Similarly, (Exelmans & Van den Bulck 2016) reported that social media use late at night was related to a shorter amount of time sleeping among adolescents and young adults.

One potential explanation for this relationship could be related to blue light emitted by the devices, which may suppress melatonin, a hormone regulating sleep. According to (Harbard et al., 2016), blue light emitted from digital devices can inhibit the production of melatonin, leading to longer time to fall asleep, and less time sleeping. In addition, the mental stimulation from engaging with socially-based activities can keep students mentally active which may hinder their ability to relax and fall asleep (Scott et al., 2019). However, some studies have not found a direct negative relationship between social media use and sleep. For example,

(Jiao et al., 2019) reported that some students used social media to relax before going to bed, and some also reported a positive effect on their sleep quality.

The complexity of the links between social media and sleep is also evident by individual differences, including types of social media interaction, as well as vulnerability to sleep disturbances, which can play a major role.

Blue Light Exposure - Inhibits the release of melatonin from electronic devices (i.e., smartphones/tablets), which helps regulate the body's sleep-wake cycles; thus delaying sleep onset, reducing total sleep time, and impacting ability to fall asleep (Chang et al., 2015, p. 1234).

Cognitive Engagement - Interacting with social media (i.e., through notifications, messaging, or posting) promotes electronic stimulation in the brain and hampers relaxation prior to sleep thus causing sleep disturbances (Hale & Guan, 2015, p. 52).

Fear of Missing Out - Ongoing desire to be connected and the fear of missing out on events or online interaction can contribute to continuing to check social media late into the evening causing disturbances to sleep (Przybylski et al., 2013, p. 1843).

2- Social Media and Stress

There are many studies showing how social media causes increased levels of stress among students. (Pantic, 2014) found that interacting with social media can cause students to feel anxious and stressed out, especially when they engage in social comparisons. When an individual sees the idealised version of someone's life on sites such as Facebook and Instagram, this creates feelings of inferiority and sets unrealistic expectations for their own personal success or well-being (Fardouly et al., 2015, p. 38). This is known as the "social comparison theory" and was discussed as a reason why sustained exposure to another person's success, or appearance, can lead to increased levels of stress (Vogel et al., 2014, p. 206).

Social media has also been identified as a contributing factor to academic stress. Students are under constant pressure to be aware of their responsibilities related to social media, as well as their academic responsibilities. (Elhai et al., 2017) found that students who spend significant amounts of time using social media experience elevated levels of stress and anxiety due to constant notifications and the pressure to maintain a certain image online. The need to reply to others quickly, as well as to be connected to others at all times, can create the condition known as “Fear of Missing Out” (FOMO) and ultimately result in higher levels of stress for students ((Przybylski et al., 2013, p. 1843).

3- Research Methodology

3-1 Method: The study was conducted using a cross-sectional quantitative research design to investigate the relationships among Internet addiction, stress, and sleep disturbances.

3-2 Research Population and Sampling: The research population consisted of students of Sulaimani Polytechnic University in Sulaimani city, totaling 3,000 students. The study sample comprised 479 students who were randomly selected from the population. Their characteristics are presented in Table 1.

Table 1: A Descriptive characterization of the study's samples.

Variable	Frequency	Percentage
Gender:		
Male	221	46.2
Female	257	53.8
Age group:		
18 - 20	140	29.3
21 - 23	281	58.8
24 - 26	46	9.6
26+	11	2.3
Department:		
Health	190	39.7
Engineering	134	28
Administration	76	15.9
Informatic	78	16.3
Stage:		
First	56	11.7
Second	90	18.8
Third	124	25.9
Fourth	208	43.5

3-3 Tools: The tools used in this research study included a structured, self-administered questionnaire comprising three standardised instruments: the Internet Addiction Test (IAT), by Young in 1998 (Young, 2017.), to determine the degree to which participants are addicted to the Internet; the Perceived Stress Scale (PSS), to measure the degree of psychological stress; and the Pittsburgh Sleep Quality Index (PSQI), to assess sleep quality and quantity. A demographic section was

also included, containing basic information about each participant, such as age, gender, programme of study, and year in the programme.

3-4 Ethics and Implementation of the Study: The questionnaire was administered to the sample. An attempt was made to draw the sample from different colleges of the university in order to adequately represent and diversify the study sample. All participants were fully informed of the purpose of the study and provided written consent before completing the survey. Students who met the following criteria were included in the study:

- Enrolled as students of Sulaimani Polytechnic University
- Aged 18 years or older

After ethical approval was obtained from the relevant ethics committee, questionnaires were distributed and collected both physically and electronically. Participation in the study was voluntary.

3-5 Data Collection and Analysis:

Data were collected and entered into the Statistical program statistical Package for the Social Sciences (SPSS). Descriptive statistical analysis was used to present demographic data and key variables, including frequency, mean, and standard deviation. Chi-square tests were employed to determine associations among the primary variables of Internet addiction, stress, and sleep disturbances. A p-value of less than 0.05 was adopted as the criterion for statistical significance.

4- Results

The purpose of a one-sample t-test was to determine if there was a difference between the mean score of the Internet Addiction Test (IAT) and the expected population mean. Results indicated that there was a statistically significant difference between the sample mean score (M = 58.47, SD = 6.478, N = 479) and the hypothesised population mean score (p = 0.001) indicating a moderate level of internet addiction amongst respondents, with an average of moderate levels of perceived stress (M = 17.82, p < 0.001). Results can be found in Tables 2.

Table 2

scales	Mean	Std	p value
IAT	58.47	6.478	0.001
PSS	17.82	2.15	0.001

In addition, results from the PSQI show widespread incidence of sleep problems among students (Table Three) and four). In this sample the mean total PSQI score was 12.0 (SD = 3.05), which exceeds the five-

point threshold of severe sleep disturbance and indicates that the majority of students are experiencing significant problems with sleep quality.
Table 4 illustrates that most (1.7%) of those who participated in this study experienced poor sleep (n=8), with 29.3% (n=140) experiencing normal sleep-related issues but 270 subjects (56.5%) fit within the severe sleep category; therefore, 98.3% of individuals were categorized as poor sleepers representing an astonishing amount of individuals and demonstrating a large public health issue that has impacted students at the university level see table 3

Table 3 PSQ

Statistic	Value
N (valid)	478
Mean PSQI Score	12.01
Median PSQI Score	12
Std Deviation	3.05
Minimum	3
Maximum	21
% Poor Sleepers (>5)	98.3%

Table 4

Sleep Quality Level	N	%	Score Range
Good Sleep Quality	8	1.7%	0–5
Moderate Sleep Disturbance	140	29.3%	6–10
Severe Sleep Disturbance	270	56.5%	11–15
Very Severe Sleep Disturbance	60	12.6%	16–21

The Pearson correlation analysis showed that the relationship between the level of perceived stress and internet addiction was significantly positive ($r = 0.58$, $p = 0.021$). Additionally, internet addiction had a strong positive correlation with sleep quality ($r = 0.77$, $p = 0.042$). There was also a significant positive correlation between perceived stress and sleep quality ($r = 0.66$, $p = 0.001$). In other words, higher levels of stress are associated with lower quality of sleep.

Table 5 Pearson correlation

		IAT	PSS	PSQ
IAT	p value	1	0.021	0.0421
	Pearson		0.58	0.77
PSS	p value	0.021	1	0.001
	Pearson	0.58		0.66
PSQ	p value	0.0421	0.001	1
	Pearson	0.77	0.66	

Using an independent samples t-test, a statistically significant difference in internet addiction was found between males (mean = 7.71, SD = 1.16) and females (mean = 5.83, SD = 1.20) with males having more internet addiction than females ($t = 17.245$; $p < 0.001$). No significant difference between the sexes was observed for perceived stress, ($t = 15.066$; $p = 0.145$). Conversely, females reported lower quality of sleep than males ($t = 7.32$; $p < 0.001$).

Table 6 Gender differences

Item	**Group**	**N**	**Mean**	**SD**	**t-test**	**p-value**
IAT	Male	221	25.3	2.1	17.245	0.0001
	Female	257	22.87	2.35		
PSS	Male	221	11.51	0.55	15.066	0.145
	Female	257	11.34	0.456		
PSQ	Male	221	9.16	1.22	7.32	0.0001
	Female	257	12.01	1.371		

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5- Discussion

The current research evaluated internet addiction levels among participants and the connection between this issue and stress and sleep. Internet addiction was reported as high by the respondents (Mean = 58.47, $p < .001$), which indicates that excessive internet use was common in the population studied. This could be due to the increasing dependence on digital mediums for work, socialization and entertainment. Additional prolonged screen time (especially before bed) could lead to behavioural addiction and impaired ability to control one's own usage patterns.

Perceived stress was reported as moderate (Mean = 17.82, $p < .001$). Although still relevant to the students in this sample, this may represent academic pressures, social demands or lifestyle issues. The statistical significance of this finding supports that stress was a constant experience throughout participants' lives as opposed to being random occurrences.Third, the findings related to sleep quality showed that more than half of the participants (54.1%) experienced poor sleep quality (combining fairly bad and very bad categories). This is a critical result, as sleep is a fundamental component of both physical and psychological health. Poor sleep quality may be associated with irregular sleep schedules, excessive screen exposure, and heightened cognitive or emotional arousal before sleep.

These findings suggest that there is a strong likelihood of an association between internet addiction, stress, and sleep disturbance. While correlation analysis was not specifically done, the evidence clearly indicates that the excessive use of the Internet may cause increased levels of stress through the following means: decreased time available for sleep, increased mental activity, and exposure to long-term memory forming or stimulating digital content on the Internet. In addition, high levels of Internet usage and stress may also have a negative impact on sleep quality, leading to an ongoing cycle of poor sleep increasing stress and maladaptive internet usage.

Previous studies have also demonstrated that there is an association between problematic internet use and psychological distress and sleep disturbance. The connection between these three variables is thought to occur through both behavioural and physiological processes - for example, through interruptions to the circadian rhythms caused by irregular patterns of sleep and wakefulness and the exposure to blue light from computer screens; and/or through the effects of excessive mental stimulation or activation.

The current findings show that there is a clear and significant correlation between (internet addiction), perception of stress, and quality of sleep.

The positive correlation between both (Internet Addiction) and (Quality of Sleep) shows that higher levels of Internet use can be one of the leading causes of disrupted sleep patterns. Likewise, there were strong correlations between both Stress and Internet Addiction and Quality of Sleep suggesting that Stress may be an important psychological link between the two. Therefore, the findings of the current study support the theory that increased use of the Internet creates higher levels of stress that ultimately lead to disturbed sleep, resulting in a potentially negative cycle that will impact overall health and wellbeing.

results demonstrated significant gender differences with respect to Internet Addiction and Quality of Sleep; however, there were no significant differences with respect to Perceived Stress. The present study findings should be interpreted based on the literature available to date.

The current study showed that males reported significantly higher levels of internet addiction compared to females. This finding is consistent with prior research indicating that males are more likely to engage in excessive internet use, particularly in activities such as online gaming, streaming, and technology-oriented interactions. For example, (Young,2017) was among the first to highlight gender differences in problematic internet use, suggesting that males tend to exhibit more addictive patterns due to behavioral reinforcement and reward-seeking tendencies. Similarly, Cecilia Cheng and Angelica Y. L. Li (2014) found that males generally report higher levels of internet addiction across different cultures.

Psychological and social influences (eg riskier) may be the reason for behavioral differences between men and women when it comes to how they act competitively on the Internet and difference in the ways that self-regulate their actions, as indicated by the finding of the present study.

In this present study, a lack of statistically significant difference between genders with regard to perceived stress was also found. This finding indicates that while men tend to behave and live differently from women, there isn't a corresponding statistically significant difference in perceived levels of stress.

This finding agrees with that of Sheldon Cohen et al. (1983) who developed the Perceived Stress Scale and found that the way a person perceives stress is much more related to situational and cognitive appraisal reasons than it is to gender.

There are also many studies showing that how men and women cope with stress differs but the actual level of perceived stress for men and women isn't going to vary, especially in the young adult (student) population.

Conversely, participants in this present study reported significantly more disturbed sleep than males. Numerous studies show that females tend to experience significantly poorer sleep than males. Maurice M. Ohayon (2002) discovered that disturbances have been shown to be significantly more prevalent in females. This could likely be due to hormonal changes, emotional processing, and propensity to experience anxiety and rumination among women.

Eve van Cauter also explains that there are biological differences (genetics) between men and women that affect their sleeping patterns, as well as psychosocial (behavioral) differences. Women tend to have insomnia symptoms more frequently than do men, which can be easily seen in the PSQ results in this study.

6- Conclusions and Recommendations

- Conclusions

This study found a high level of internet addiction among participants .

1- Participants perceived their stress as moderate
2- Over half of participants reported having poor sleep quality, suggesting a common sleep problem .
3- Positive correlations were noted between:
   - Internet addiction and perceived stress
   - Internet addiction and poor sleep quality
   - Perceived stress and poor sleep quality
4- The following gender differences were found :
   - Males had a higher level of internet addiction
   - Females had poorer sleep quality
   - There was not a statistically significant difference between genders on stress measures
5- These results suggest that internet addiction, stress and sleep quality are factors that can negatively influence one's health .

- Recommendations

1. Limit daily internet use to reduce stress and improve sleep.
2. Run awareness campaigns on the effects of excessive internet use.
3. Incorporate workshops and training sessions on responsible internet use as part of student orientation programs.
4. Strengthen mental health support, especially in high-risk departments.

5. Encourage healthy habits like regular sleep and reduced screen time.
6. Future studies should use equal data samples or focus on a single college department to improve research accuracy.

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