

The Evaluations of the Physical, Behavioural and Psychosocial Consequences of Internet Addiction in Vietnam

Son Quang Le¹, Hai The Hoang^{*,2} and Dieu Thi Thanh Bui³

¹*The University of Danang, Danang, Vietnam*

^{2,3}*Department of Psychology and Education, The University of Danang, Vietnam
University of Science and Education, Danang, Vietnam*

KEYWORDS Assessing Effects. Consequence. Internet Use. Young Adults. Vietnamese

ABSTRACT This paper assesses the physiological, behavioural, and psychological ramifications often encountered by adolescents as a result of internet usage. The research sample included 655 students in Vietnam. The Internet Addiction Test and Internet Consequences Scales were used in this study. Descriptive statistics percent, t-test, Pearson's correlation and ANOVA were implemented for data analysis. The results indicated that 389 (60.7%) out of the 655 student participants exhibited characteristics of internet addiction. Along with that, there are symptoms of physical behavioural consequences of internet addiction, but the psychosocial consequences are unclear. There is a significant difference in physical consequences and behavioural consequences between students in the two groups, non-addicted and addicted ($p < 0.05$). Nevertheless, there was no significant difference observed in the psychological repercussions between the two student groups, one with internet addiction and the other without. These findings indicate that internet addiction has adverse impacts on the physical and behavioural well-being of individuals.

INTRODUCTION

Over the last few decades, the Internet has increased in popularity and importance in the contemporary century because of its user-friendly communication features that connect people and provide economic advantages. The Internet has simplified modern civilisation more conveniently (Shek and Yu 2012) and has evolved into an essential communication tool. As a result, the Internet has become a valuable resource to utilise in various settings, including schools, companies, and social life. It has made it significantly easier for individuals to access information, communicate and collaborate, and participate in leisure activities and education. Most individuals use the Internet healthily and beneficially for both work and education. Therefore, the time spent using the Internet has significantly expanded. According to Mathy and Cooper (2003), people admitted to spending much more weekly online hours than before. Besides the advantages the Internet provides, it also has neg-

ative consequences for people. Excessive internet dependence and use is considered abnormal or potentially addictive behaviour (Wu et al. 2016).

Parallel to the development of internet accessibility, with the modification and upgrade of functions to satisfy the younger generation's demands, the emergence of "internet addiction" is an addictive behaviour that needs global attention (Christakis 2010). Several previous studies have documented the harm that internet addiction causes to young adults, who are a vulnerable and at-risk demographic group because they often utilise the Internet for study, leisure, work, and interpersonal communication (Abdoli et al. 2003; Xia 2023). This age group has been exposed to the Internet early (Djamasbi et al. 2010). Internet activity has become a daily necessity for young adults in the 21st century (Ballarotto et al. 2018). Recent data reports the high prevalence of internet addiction among young individuals is a cause of concern (Kuss et al. 2014). The incidence of dependence on the Internet fluctuates between 1.6 and 18 percent worldwide (Shaw and Black 2008), and is influenced by age, gender, ethnicity, and is widespread in university students (Pujazon-Zazik and Park 2010). The overall rate of internet addiction is estimated to be 12 percent among young Asians (Hechanova and Czincz 2008) and 8.1 percent among Westerners (Morahan-Martin and Schumacher 2000).

**Address for correspondence:*

Dr. Hai The Hoang
Faculty of Psychology and Education,
The University of Danang –
University of Science and Education,
Danang, Vietnam
Telephone: +84982403302
E-mail: hthai@ued.udn.vn

Internet addiction refers to the incapacity to control one's constant Internet usage, which causes substantial pain and reduces a person's daily functioning. Although many have claimed that the term 'addiction' primarily refers to situations involving chemical substance addiction, the same diagnostic criteria apply to some behavioural dependencies (Young 1996). *Internet addiction* was defined by Kandell (1998) as psychological dependency on the Internet when engaging in any form of social network activity. Internet addiction is considered by Widyanto and Griffiths (2007) as a type of technology addiction (like computer addiction) as well as a behavioural addiction. Additionally, Internet addiction is defined by obsession, excessive Internet use, and poor behavioural control, which impairs functioning and causes suffering (Shaw and Black 2008). Moreover, internet addiction can also be described as the desire to escape from oneself (Xu et al. 2010). Not limited to psychiatric syndromes, pathological Internet usage may be understood as an uncontrollable incapacity to manage Internet usage, causing detrimental adverse effects on daily functioning (Spada 2014). No formal diagnostic system, including the DSM-V, has established diagnostic criteria for Internet addiction. The present investigation utilised diagnostic criteria derived from the fundamental definitions of drug dependency disorders outlined in the DSM-IV-TR to diagnose Internet addiction. Hence, the diagnosis of addiction to the internet was established when all four of the specified criterion were met, that is, the overuse of the Internet resulting in negative impacts on one's daily life, the inability to control or discontinue Internet usage despite repeated attempts, a decline or complete abandonment of significant occupational, social, or leisure activities caused by Internet usage, and an amount of time devoted to functions related to Internet usage (Kim et al. 2012).

Despite the benefits of the Internet in socio-economics, education and entertainment, educators and psychologists are aware of the negative consequences of using the internet, including internet dependence or abuse (Hur 2006; Seyrek et al. 2017). Researchers have identified several consequences of Internet addiction, including spending too much time online, feeling bored when not using the Internet, becoming agitated if interrupted online, and reducing realistic social interactions (Kraut et al. 1998). Excessive Internet usage has

significant negative relationships on many aspects of an individual's life, including the factors regarding interpersonal, occupational, social, physical and psychological (Murali and George 2007). Individuals addicted to the Internet frequently experience psychological issues including anxiety, mood disorders, and attention-deficit hyperactivity disorder (ADHD) (Weinstein and Lejoyeux 2010), and physical problems such as hypersomnia, headaches and back pain (Li et al. 2015). Moreover, it contains substantial research indicating that Internet addiction has a detrimental influence on both psychological and physiological health by triggering mental suffering, impaired academic achievement, unhealthy dietary habits, and familial relationships (Tsitsika et al. 2011), thereby harming the physical health development and psyche of young adults. Several evidence stated that Internet use had impacted individual's academic performance, work performance, or social activities (Veisani et al. 2020; Al-Hashimi et al. 2021; Alhrahshesh and Al Majali 2023).

Similarly, several studies found that the Internet influences young adults in four dimensions of physical health, psycho-social, school performance, and relationships with their families (Tsitsika et al. 2011). Physical, behavioural, and psycho-social consequences are prevalent and affect people's lives due to internet addiction. Firstly, there are the behavioural consequences of internet addiction, excessive social media usage's negative psychological and physical consequences. Internet addicts are diagnosed with various physical health issues, such as dry eye disease, headaches, back pain, and weight gain (Lam et al. 2009). The physical symptoms of internet addiction involve migraines or headaches and sleep disturbances (Yang and Tung 2007).

Moreover, Zheng et al. (2016) found that internet use negatively impacts physical health. The most popular reports mention reduced eyesight, dry eyes, and neck pain. Headaches and low back pain were also common. In addition, participants claimed that extended internet use caused back pain and eye strain. Frequent internet use leads to weight gain and spinal injuries due to a sedentary lifestyle. Prolonged exposure to electronic devices causes redness, irritation, or dryness of the eyes, impaired vision, eye strain, neck and shoulder pain, and headaches. There is a risk of eardrum injury while using headphones at excessive volumes (Yeap et al. 2015).

Internet addiction also has psychosocial consequences. Müller et al. (2014) discovered that around 53 percent of Internet addicts claimed negative psychosocial outcomes related to excessive Internet usage. Excessive Internet usage is related to increased evaluations of depression, social isolation, and loneliness indice (Al-Kandari and Al-Sejari 2021; Orsolini et al. 2023). Additional findings of the study indicate that Internet abusers' psychosocial problems are associated with low self-esteem, interpersonal problems, emotional problems, and academic, family, and professional problems (Clark et al. 2004; Morahan-Martin and Schumacher 2000). Other prevalent problems are anxiety, loneliness, poor self-esteem, life satisfaction, and impaired family functioning (Yao and Zhong 2014). Multiple research has demonstrated the relationship between self-esteem and dependency on the internet (Douglas et al. 2008; Yang and Tung 2007). Furthermore, the research by Armstrong et al. (2000) have reported that people with poor self-esteem will likely spend more online time. Internet addiction has influenced life satisfaction and vice versa (Senol-Durak and Durak 2011). The link between Internet addiction and life satisfaction is bidirectional. Besides, many studies found that problematic Internet use can also create a financial risk in online gambling, shopping addiction, or other financially risky behaviours on the internet can result in significant financial problems and debt (Ching et al. 2017; Islam et al. 2018). In addition, some studies also show that there is a connection between internet use and online bullying. As time on the internet increased, so did cyberbullying and victimisation levels (Cemiglia et al. 2017; Lee and Shin 2017).

Significant reports have been undertaken on the use of the internet and its related physical, social and psychological consequences using a range of research methodologies. The issue of internet addiction necessitates attention within Vietnamese society. Several studies have shown that individual characteristics, such as self-esteem, life satisfaction, loneliness, anxiety, and depression disorder, contribute to internet addiction (Lan et al. 2020). Moreover, the development of internet-based psychotherapy interventions for young adults' mental health is currently being investigated (Sobowale et al. 2016). In Vietnamese young people, the estimated incidence of internet addiction fluctuates between 20.9 percent and 21.2 per-

cent (Tran et al. 2017). Notably, Facebook has been linked to anxiety and depression among Vietnamese students experiencing internet use difficulties (Ho et al. 2021). Do et al. (2020) examined the detrimental effects of the internet on the health of 16-to-30-year-olds. Their findings suggest that college students are more aware than employees and high school students that regular internet use might impair their health. However, less research has been conducted on internet users' physical, behavioural, and emotional consequences among young adults. The purpose of this study is to evaluate the internet addiction's physical, behavioural, and psychosocial consequences on college students. Research results provide insights into the potential risks and consequences of excessive internet usage and inform policymakers about the significant effect of internet addiction on individuals and society. This can lead to developing policies and regulations to promote responsible internet use, protect vulnerable populations, and address the consequences of excessive internet usage.

Objectives of the Study

The objective of this study was to assess the physical, behavioral, and psychological effects often encountered by students as a result of internet usage. This study utilises existing research as a basis to examine the following hypotheses:

1. Students who exhibit indicators of the internet addiction have physical, behavioural, and psychological issues as a result of their internet utilisation.
2. There exist disparities in the physical, behavioural, and psychological outcomes among pupils belonging to the two categories, namely non-addicted and addicted.

METHODOLOGY

Participants

The present research adopted a cross-sectional design and gathered information employing an online survey administered by Google Forms. The study suggestions were distributed to the volunteers using email and widely used social media sites, such as Zalo and Facebook. The data-collecting period spanned from 31 December, 2021 to 18 March 2022. The sample size was determined

using the method for unknown population size, assuming a deviation from the mean of 1.96 at a confidence level of 95 percent, an allowance of error of 5 percent, and a minimum needed sample size of 385 students. A total of 655 students from three institutions in Da Nang, Vietnam, participated in the survey using a convenience sample method. The sample comprised 221 male students, accounting for 33.74 percent, and 434 female students, making up 66.26 percent. The participants' age spanned from 18 to 24 years. The population comprised persons who consented to fill out the questionnaire. Prior to commencing the questionnaires, the participants were provided with a guarantee of confidentiality and anonymity. The researchers presented explicit instructions for carrying out the survey and elucidated the study's aim. The researchers also resolved any inquiries or concerns about the questionnaire. Before responding to the scale questions, the volunteers were requested to furnish socio-demographic data, involving age, gender, place of residence, school year, principal, and other pertinent particulars. The completion of the socio-demographic information form and the scales required a time frame of roughly 15-20 minutes.

Measures

Internet Addiction Test (IAT)

Young's Internet Addiction Test (IAT) (1998) is a highly recognised as a long-standing rating scale used to determine Internet addiction. It utilises the criteria set by the DSM-IV for compulsive gambling and is frequently employed as a measurement tool in this domain (Kim et al. 2012). The IAT has shown robust face validity, Cronbach alpha, and reliability, and its factor structure has been examined by scholars (Simkova and Cincera 2004; Widyanto and McMurran 2004). Previous studies have frequently utilised the IAT as a method of evaluating individuals from community-based organisations to determine their likelihood of developing Internet addiction (Simkova and Cincera 2004; Widyanto and McMurran 2004). This assessment identifies many problems associated with excessive Internet usage, including neglecting obligations and social relationships due to an inability to control Internet consumption, exhibiting addiction symptoms even when not using the Internet, and

other related difficulties. The IAT comprises a set of 20 questions that evaluate harmful behaviour related to Internet usage. Participants assess each topic using a 5-point Likert Rating Scale spanning from 0 (not applicable) to 5 (always). The IAT has a maximum attainable score of 100. A higher score indicates a more substantial problem (Young 2016). Typical scores fall between 0 and 30, although scores ranging from 31 to 49 indicate a slight addiction. Scoring between 50 and 79 suggests a moderate addiction, but scoring between 80 and 100 indicates a significant dependence on the Internet (Nguyen and Le 2015; Young 2016).

In this study, the researchers employed the Vietnamese version of the IAT developed by Nguyen and Le (2015). According to their research, the scale has high reliability, with an internal consistency of 0.83. The instrument demonstrated high reliability ($\alpha = 0.92$) in the investigation sample.

Internet Consequences Scales (ICONS)

Physical Consequences

Clark and Frith (2005) developed the Physical Consequences scale to assess the frequency of physical symptoms, such as neck pain and shoulder fatigue, that occur as a result of regular Internet usage. This scale comprises seven items, assessed using a 5-point Likert scale ranging from 1 (never) to 5 (everytime).

In line with higher scores on the Physical Consequences scale indicate more frequent physical symptoms related to Internet use. The internal consistency reliability estimate for the sample was 0.91.

Behavioural Consequences

The Behavioural Consequences scale, established by Clark and Frith (2005), has 15 inquiries intended to evaluate attributes of Internet addiction, such as prominence, mood alteration, withdrawal, tolerance, and confrontation. The participants provided their agreement ratings using a Likert scale with a score of 5, from "Strongly Disagree" to "Strongly Agree". Higher scores on the Behavioural Consequences scale imply a greater likelihood of detrimental behavioural consequences associated with frequent Internet use. The internal consistency reliability estimate for the sample was 0.92.

Psychosocial Consequences

The Psychosocial Consequences scale, created by Clark and Frith (2005), evaluates the effects of internet addiction on people's psychosocial health. The scale assesses several factors, such as social isolation, interaction, feeling alone, depression, self-esteem, and sense of accomplishment. The assessment has 18 questions that are assessed using a 5-point Likert Rating Scale from "Decreased" to "Increased". A greater score signifies an elevated degree of favourable psychological outcomes. The sample had a high level of internal consistency dependability, with an estimate of 0.92.

Statistical Analysis

The SPSS software version 21.0 was utilised to analyse the statistical data in this study. First, descriptive statistics were used to define the rate of internet addiction. Subsequently, t-test was used to compare mean score differences between students who have an addiction and those who have no addiction on physical, behavioural, and psychosocial consequences. Simultaneously, the Pearson correlation analysis was used to ascertain the association between internet usage and its consequences on the two groups of samples, addicted and non-addicted Vietnamese university students. Finally, ANOVA was used to define physical, behavioural, and psychosocial symptoms among students with signs of internet addiction.

RESULTS

Percentage of Students Addicted to the Internet

The findings of the study revealed that 389 (60.7%) out of the 655 participants exhibited char-

acteristics of internet addiction. Specifically, 281 students (43%) displayed mild addiction, 105 students (16%) showed moderate addiction, and 12 students (1.8%) had severe addiction. The mean IAT score was 45.68. The sample of 389 students who demonstrated signs of Internet addiction consisted of 136 males (34.2%) and 262 females (65.8%) aged between 18 and 24.

Differences Between Addicted and Non-addicted Students on Physical, Behavioural and Psychosocial Effects

Table 1 reports that there is a significant difference in physical consequences (M group non-addicted = 2.88, M group addicted = 3.42; $p < 0.05$) and behavioural consequences (M group non-addicted = 2.01, M group addicted = 2.76; $p < 0.05$) between addiction and non-addiction. Nevertheless, there is no significant difference in psychosocial consequences between the two groups of students with internet addiction and without.

In Table 1, the correlation analysis results also indicate a significant association between the presence of internet addiction and physical consequences ($r = 0.188$; $p < 0.05$ and $r = 0.287$; $p < 0.05$) as well as behavioural consequences ($r = 0.449$; $p < 0.05$ and $r = 0.572$; $p < 0.05$) in the two groups of students. However, there is no correlation between internet addiction and psychosocial consequences for either group of students ($r = 0.105$; $p > 0.05$ and $r = 0.017$; $p > 0.05$).

Symptoms of Physical Consequences among Students

Table 2 presents the mean scores of physical consequences of regular Internet use among stu-

Table 1: Differences in the level of consequences of Internet use between two groups of samples

Variables	Non-addicted (N = 257)	Addicted (N = 398)	t	p	Non-addicted (N = 257)	Addicted (N = 398)
	M ± SD	M ± SD			r	r
Physical consequences	2.88 ± 0.94	3.42 ± 0.81	-7.53	<0.001	0.188**	0.287**
Behavioural consequences	2.01 ± 0.62	2.76 ± 0.68	-14.13	<0.001	0.449**	0.572**
Psychosocial consequences	3.22 ± 0.62	3.27 ± 0.53	-1.05	0.276	0.105	0.017

Note: N = quantity, M = Mean, SD = Standard Deviation, t = t-value, p = p-value; r = correlation coefficient

**Correlation is significant at the 0.01 level (two-tailed)

Table 2: Symptoms of physical consequences (N=398)

<i>Factors</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Post hoc</i>
1. Wrist pain	3.44	1.04	57.146***	1<5; >7
2. Upper or lower back pain	3.52	0.97		2<5; >6,7
3. Shoulder strain		3.55	0.97	3<6; >7
4. Neck pain	3.56	0.97		4>6,7
5. Eyestrain, including dry eyes	3.67	0.96		5>1,2,6,7
6. Headaches	3.29	1.07		6<2,3,4,5; >7
7. Numbness or tingling in your fingers	2.86	1.19		7<1,2,3,4,5,6,7
Total	3.42	0.81		

Note: M = Mean, SD = Standard Deviation; F(df, df) = 57.146

***p < .001; Post hoc: ANOVA

dents, which is 3.42 (SD = 0.81). Among the physical symptoms, numbness or tingling in fingers obtained the lowest score. Headaches were also among the lowest-rated symptoms. Conversely, neck pain, shoulder strain, and eyestrain, including dry eyes, obtained the highest ratings (details in Table 2).

Symptoms of Behavioural Consequences among Students

Table 3 indicates that the majority of students judged the behavioural outcomes of Internet usage as relatively minimal, with an average score of 2.76 (standard deviation = 0.67). The item related to *experiencing dissatisfaction when discontinuing online activities* earned the lowest score among

the behavioral symptoms. The symptom of prioritizing online activities above *using the Internet instead of devoting time to other significant connections* was ranked as one of the least favorable. The symptoms that received the highest scores were *excessive time spent engaging in preferred online activities* and *excitement experienced while using the Internet*. The information can be seen in Table 3.

Symptoms of Psychosocial Consequences Among Students

According to Clark and Frith (2005), the 18-question scale is calculated on a 5-point Likert scale with a central score of 3.0. Where symptoms are concerned, a score above 3.0 is considered posi-

Table 3: Symptoms of behavioural consequences (N=398)

<i>Items</i>	<i>M</i>	<i>SD</i>	<i>F</i>	<i>Post hoc</i>
BC 1	2.87	0.96	F=28.180***	1>2,6,7,8
BC 2	2.41	1.08		2<1,3,4,5,9,10,11,12,13,14,15
BC 3	2.78	1.02		3>2,4,6,7,8,10
BC 4	3.04	1.00		4>2,3,6,7,8,9,12,14
BC 5	2.86	0.99		5>2,6,7,8
BC 6	2.57	1.03		6<1,3,5,9,10,11,13,15; 6>8
BC 7	2.46	1.07		7<1,3,5,9,10,11,12,13,15
BC 8	2.37	1.06		8<1,3,4,5,6,7,8,9,10,11,1,2,1,3,1,4,15
BC 9	2.80	1.02		9>2,6,7,8; 9<4,10
BC 10	3.05	1.00		10>2,3,5,7,8,9,12,13,14
BC 11	2.94	1.00		11>2,6,7,8,12,14
BC 12	2.73	1.01		12>2,4,7,8; <10,11,15
BC 13	2.83	1.06		13>2,6,7,8; <10
BC 14	2.68	1.18		14>2,4,8; <10,11,15
BC 15	2.99	1.13		15>2,6,7,8,12,14
Total	2.76	0.67		

Note: M = Mean, SD = Standard Deviation; F(df, df) = 28.180

***p < .001; Post hoc: deep analysis ANOVA

tive, and below 3.0 is considered harmful. The study's findings indicated that 25.9 percent of the 398 adolescents exhibiting indications of internet addiction had psychological issues. Utilising Table 4, the calculations reveal that the majority of university students indicated a favourable correlation between the Internet and psychological well-being, with an average score of 3.28 (SD = 0.53). Among the psychosocial symptoms, *the frequency of communication with family and feeling helpful to family members* were classified as among the lowest symptoms. On the other hand, the symptoms that received the highest ratings were *finding information to enhance physical and mental health* and, as well as the item related to *feeling connected to the outside world* (details in Table 4).

DISCUSSION

Internet addiction has detrimental effects on both mental and physical health, behaviour, and social interactions of young adults (Weinstein and Lejoyeux 2010; Zheng et al. 2016). Nevertheless, there is a scarcity of studies conducted in the Vietnamese context about the impact of addiction to the internet on students at universities. Hence, the main purpose of the present study was to investigate students' perspectives on the consequences of excessive internet use on their physical, behavioural, and psychological health.

The findings discovered that students with internet addiction exhibit markedly elevated levels in comparison to their non-addicted counterparts. However, the study failed to identify a substantial disparity in psychological issues between persons with online addiction and those without internet addiction. Additional correlation analysis demonstrated a positive correlation between levels of internet addiction and physical and behavioural issues, indicating that internet addiction contributes to a higher occurrence of such problems. Nevertheless, the study found no significant correlation between internet addiction and psychosocial consequences, and the findings align with previous research conducted by Alavi et al. in 2011. Based on the outcomes of the Khan et al.'s (2021) study, it is suggested that the lower prevalence of internet use addiction among students compared to previous studies, and the users in this sample were identified as having mild internet addiction. Therefore, mild internet addiction does not lead to changes in psychosocial problems in users.

The results also indicated that college students experienced physical consequences related to internet addiction, including eyestrain, neck pain, and shoulder strain, which were the most common manifestations. These outcomes are aligned with evidence from previous studies (Lam et al. 2009; Zheng et al. 2016) showing that the internet affects

Table 4: Symptoms of psychosocial consequences (N=398)

Items	M	SD	F	Post hoc
PS 1	3.17	1.01	F=11.576***	1<4,11,12,16
PS 2	3.32	0.94		2>3,8,10<11,12
PS 3	3.10	0.93		3<2,4,11,12,14,15,16
PS 4	3.46	1.01		4>1,3,7,8,9,10,13
PS 5	3.32	1.03		5>8
PS 6	3.23	0.96		6<11,12
PS 7	3.24	1.01		7<4,11,12; >8
PS 8	3.05	0.95		8<2,4,5,7,9,11,12,14,15,16
PS 9	3.19	0.86		9<4,11,12,15,16;>8
PS 10	3.11	0.85		10<2,4,11,12,14,15,16
PS 11	3.52	1.02		11>1,3,6,7,8,9,10,13,14,15,18
PS 12	3.55	1.04		12>1,2,3,6,7,8,9,10,13,14,15,16,17,18
PS 13	3.20	0.87		13<4,11,12
PS 14	3.31	0.89		14>3,8,10;<11,12
PS 15	3.35	0.92		15>3,8,10;<11,12
PS 16	3.37	0.99		16>1,3,8,9,10;<11
PS 17	3.27	0.99		17<12
PS 18	3.20	1.00		18<11,12
Total	3.28	0.53		

Note: M = Mean, SD = Standard Deviation; F (df, df) = 11.576

***p < .001; Post hoc: deep analysis ANOVA

teenagers' physical health. Other studies (Yeap et al. 2015) have found that prolonged internet use can cause physical issues including back pain, fatigue, eye strain, dry eyes, eye irritation, vision-obscuring, weight gain, neck and shoulder pain, headaches, eardrum injuries, and hearing impairment. Future research on Internet addiction among college students should assess physical health issues such as back discomfort and eye strain, as these can impact students' ability to study and complete assignments. Excessive Internet use can lead to sedentary behaviour and reduced exercise, which are related to being overweight and obese (Brown et al. 2003). To prevent these issues, increasing physical activity and limiting electronic devices can help to manage weight (Hosseinzadeh et al. 2015). The results also suggested that college students exhibited behavioural consequences of Internet addiction. This findings corroborates the findings of previous research on the effect of regular Internet use on healthy living behaviours (Yildiz and Yildirim 2012). Rakhmawati et al. (2021) indicated that young adults were aware of the need for self-control to mitigate the negative consequences of Internet addiction and that participants strived to limit their internet use. Self-control is crucial for minimising addiction symptoms (Akin et al. 2015). Various strategies have been employed for reducing Internet addiction, including regulating internet access time, enhancing face-to-face social interactions, promoting engagement in activities, and fostering awareness of the repercussions of Internet addiction (Ballarotto et al. 2018). Possible intervening factors include sociocultural, economic status, psychosocial, and behavioural changes that shape modern lifestyles.

The COVID-19 pandemic has resulted in a rise in internet addiction, which is associated with psychosocial problems (Guessoum et al. 2020). According to this study, 25.9 percent, which is equivalent to 1.4 out of 10 students, were determined to be at risk of experiencing psychological disorders. Pre-COVID-19 research conducted in Turkey (Avsar and Ayaz-Alkaya 2021) revealed that the occurrence of psychological problems among adolescents was 18.8 percent, respectively. Nonetheless, it is indisputable that internet usage has the potential to ease challenging psychosocial situations and foster a positive mentality (Kardefelt-Winther 2014). The present study indicated that college students experienced positive psycholog-

ical effects related to internet addiction, including increased contact with friends, a sense of connectivity to the external world, enhanced ability to learn new skills, increased quality of life, increased knowledge to help improve their physical and psychological health, and increased quality of life. This phenomenon may be attributed to the reality that students utilise the internet for online activities to connect with numerous family members, friends, and relatives, particularly during the pandemic. Hence, the behaviour provides people with greater happiness, leading to heightened tranquillity and reduced feelings of despondency (Chotpitayasuonondh and Douglas 2018). The results are consistent with other investigations undertaken by Ong and Lin (2015), Lissitsa and Chachasvili-Bolotin (2016), and Gong et al. (2021), Zhou et al. (2023). Nevertheless, this outcome conflicts with prior research, wherein prior study has shown that excessive Internet usage is correlated with psychosocial issues, including diminished self-esteem (Akin and Iskender 2011), loneliness (Acharya et al. 2023), depression (Demenech et al. 2023; Chaleshi et al. 2023), and a decline in social interactions (Smahel et al. 2012). The present study elucidates that the psychological dynamics of internet usage among university students are growing increasingly intricate. Therefore, further studies exploring the effects of internet addiction on psychosocial university students are needed in the future.

CONCLUSION

The Internet has gained popularity among individuals and has provided socioeconomic benefits, including learning, entertainment, and communication through its numerous functions and features. However, prolonged and uncontrolled utilisation of the Internet can lead to internet addiction and negatively affect individuals' physical and mental health and social lives. This study examines the behavioural, physical, and psychological influences of internet addiction among university students and has both theoretical and practical relevance. The study provides information for future studies to undertake a more in-depth evaluation of the expected consequences of internet addiction in the present framework, providing appropriate therapies for young adults. The findings of this study can assist educators and social workers construct effective strategies to help students

reduce excessive internet use. Psychological counselling activities and counselling aimed at raising awareness about the detrimental effects of internet addiction should be conducted based on the research results to prevent adolescent internet addiction.

LIMITATIONS AND IMPLICATIONS

Several constraints of this investigation require attention. Primarily, this study centred on young individuals in Vietnam, so the findings may not be generalisable to other socio-cultural settings and nations. Therefore, it is necessary to conduct comparative studies to examine the consequences of Internet addiction across different countries. Furthermore, that investigation utilised a design with cross-sections, precluding the analysis of causal interactions between components over an extended duration. To get a more comprehensive comprehension of the impacts of Internet addiction and to formulate suitable methods and interventions, it is imperative to conduct empirical and qualitative research in the Vietnamese setting. Another limitation that needs to be considered is that the study's results were based on self-reported adolescent data, and no information was available from the parents' viewpoints. This affects the reliability and accuracy of the responses given by students. Finally, the study primarily focused on the Internet's physical, behavioural, and psychosocial consequences for young adults. Future research must examine the multidimensional relationship between these variables and explore the reasons behind increased Internet use.

Notwithstanding these constraints, this study has substantially contributed to the existing understanding of Internet addiction and its physiological, behavioural, and psychological outcomes, which may be extrapolated to equivalent cultural settings. The results can assist parents and professionals in understanding the prevalent consequences of Internet addiction for young adults. The results gathered from this research can also be used to help parents and counsellors assist young adults in overcoming Internet addiction. In addition, this study can help improve actions to manage, prevent, and mitigate harmful effects. It is necessary to provide educational and psychological counselling to increase awareness of the Internet addiction's consequences, not just among

university students but also among other age groups. Furthermore, this study promotes the conduct of health evaluations to explore practical strategies for preventing and treating physical problems. It is also necessary to provide alternate outdoor activities and limit access to the Internet in public and educational settings.

ETHICS STATEMENT

The research followed the ethical criteria specified in the Declaration of Helsinki and the guidelines set by the American Psychological Association (APA) for conducting research with human subjects. Students in the present investigation provided informed consent.

FUNDING

The research being conducted is unfunded.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

DATA AVAILABILITY STATEMENT

Research data are not shared.

AUTHOR CONTRIBUTIONS

Son Quang Le played a role in developing and designing the study. Son Quang Le, Hai The Hoang, and Dieu Thi Thanh Bui managed the database. Hai The Hoang conducted the statistical analysis and authored the initial version of the manuscript. Each author made contributions to the revision of the manuscript and thoroughly reviewed and approved the final version submitted.

REFERENCES

- Abdoli N, Farnia V, Alikhani M, Sadeghi-Bahmani D, Dürsteler KM, Esmaeili M, Brühl A, Brand S 2021. Validation and psychometric properties of the Persian version of the 21-item game addiction scale with a sample of adolescents and young adults. *Frontiers in Psychiatry*, 12: 649276.
- Acharya S, Adhikari L, Khadka S, Paudel S, Kaphle M 2023. Internet addiction and its associated factors among undergraduate students in Kathmandu, Nepal. *Journal of*

- Addiction, 2023; Article ID 8782527, 9 pages. <https://doi.org/10.1155/2023/8782527>
- Akin A, Arslan S, Arslan N, Uysal R, Sahranç Ü 2015. Self-control management and internet addiction. *International Online Journal of Educational Sciences*, 7(3): 95-100.
- Akin A, Iskender M 2011. Internet addiction and depression, anxiety and stress. *International Online Journal of Educational Sciences*, 3(1): 138-148.
- Alavi SS, Maracy MR, Jannatifard F, Eslami M 2011. The effect of psychiatric symptoms on the internet addiction disorder in Isfahan's university students. *JRMS*, 16: 793-800.
- Al-Hashimi M, Razzaque A, Hamdan A, Reyad S, Badawi S, Hussain Araby 2021. The impact of internet addiction on Bahraini employees' performance. In: Bahaaeddin Alareeni, Allam Hamdan, Islam Elgedawy (Eds.): *The Importance of New Technologies and Entrepreneurship in Business Development: In The Context of Economic Diversity in Developing Countries: The Impact of New Technologies and Entrepreneurship on Business Development*. Springer International Publishing, pp. 142-152. 10.1007/978-3-030-69221-6_11
- Alhrahshah R, Al Majali S 2023. Relationship between social networking addiction and academic performance in students of university. *International Journal of Instruction*, 16(2): 783-802. <https://doi.org/10.29333/iji.2023.16241a>
- Al-Kandari YY, Al-Sejari MM 2021. Social isolation, social support and their relationship with smartphone addiction. *Information, Communication & Society*, 24(13): 1925-1943.
- Armstrong L, Phillips JG, Saling LL 2000. Potential determinants of heavier internet usage. *International Journal of Human-Computer Studies*, 53(4): 537-550.
- Avsar F, Ayaz-Alkaya S 2021. Erken adölesan dönemde çocukların İnternet kullanım alışkanlıkları ve psikososyal sağlık durumlarının incelenmesi [Examination of Internet usage habits and psychosocial health status of children in early adolescence]. *Türkiye Klinikleri Journal of Nursing Sciences*, 13(2): 258-265. Doi: 10.5336/nurses.2020-78416
- Ballarotto G, Volpi B, Marzilli E, Tambelli R 2018. Adolescent internet abuse: A study on the role of attachment to parents and peers in a large community sample. *BioMed Research International*, 1-10.
- Bricolo F, Gentile DA, Smelser RL, Serpelloni G 2007. Use of the computer and Internet among Italian families: First national study. *CyberPsychology and Behavior*, 10(6): 789-798.
- Brown W, Miller Y, Miller R 2003. Sitting time and work patterns as indicators of overweight and obesity in Australian adults. *International Journal of Obesity*, 27(11): 1340-1346.
- Cemiglia L, Zoratto F, Cimino S, Laviola G, Ammaniti M, Adriani W 2017. Internet addiction in adolescence: Neurobiological, psychosocial and clinical issues. *Neurosci Biobehav Rev*, 76: 174-184.
- Chaleshi D, Badrabadi F, Ghadiri Anari F, Sorkhizadeh S, Nematollahi Z, Shirdareh Haghighi MH, Aghabagheri M 2023. Depressive symptom level, sleep quality, and internet addiction among medical students in home quarantine during the COVID-19 pandemic. *Mental Illness*, 2023; Article ID 1787947, 9 pages. <https://doi.org/10.1155/2023/1787947>
- Ching SM, Hamidin A, Vasudevan R, Sazlyna M, Wan Aliaa W, Foo YL, Yee A, Hoo F 2017. Prevalence and factors associated with internet addiction among medical students-a cross-sectional study in Malaysia. *Med J Malaysia*, 72(1): 7.
- Chotpitayasunondh V, Douglas KM 2018. The effects of "phubbing" on social interaction. *J Appl Soc Psychol*, 48: 304-316.
- Christakis DA 2010. Internet addiction: A 21st century epidemic? *BMC Medicine*, 8(1): 1-3.
- Clark DJ, Frith KH 2005. The development and initial testing of the Internet Consequences Scales (ICONS). *CIN: Computers, Informatics, Nursing*, 23(5): 285-291.
- Clark DJ, Frith KH, Demi AS 2004. The physical, behavioral, and psychosocial consequences of internet use in college students. *CIN: Computers, Informatics, Nursing*, 22(3): 153-161.
- Demenech L M, Domingues MR, Muller RM, Levien VR, Dumith SC 2023. Internet addiction and depressive symptoms: A dose-response effect mediated by levels of physical activity. *Trends in Psychiatry and Psychotherapy*, 45.
- Djamasbi S, Siegel M, Tullis T 2010. Generation Y, web design, and eye tracking. *International Journal of Human-Computer Studies*, 68(5): 307-323.
- Do HN, Onyango B, Prakash R, Tran BX et al. 2020. Susceptibility and perceptions of excessive internet use relationship on health among Vietnamese youths. *Addictive Behaviors*, 101: 105898.
- Douglas AC, Mills JE, Niang M, Stepchenkova S, Byun S, Ruffini C, Lee SK, Loutfi J, Lee JK, Atallah M 2008. Internet addiction: Meta-synthesis of qualitative research for the decade 1996-2006. *Computers in Human Behavior*, 24(6): 3027-3044.
- Gong S, Xu P, Wang S 2021. Social capital and psychological well-being of Chinese immigrants in Japan. *Int J Environ Res Public Health*, 18: 547.
- Guessoum SB, Lachal J, Radjack R, Carretier E, Minassian S, Benoit L, Moro MR 2020. Adolescent psychiatric disorders during the COVID-19 pandemic and lockdown. *Psychiatry Research*, 113264.
- Hechanova M, Czincz J 2008. *Internet Addiction in Asia: Reality Or Myth?* Philippines: International Development Research Centre.
- Ho TTQ, Huynh SV, Tran -Chi VL 2021. Relationship of problematic Facebook use, loneliness, and poor sleep quality on mental health. *International Journal of Advanced and Applied Sciences*, 8(9): 112-118.
- Hosseinzadeh K, Niknami S, Hidamia A 2015. Encouragement to be more physically active or to lessen sedentary behavior: Are these two as the same. *Biotech Health Sci*, 2(2): 1-5.
- Hur MH 2006. Demographic, habitual, and socioeconomic determinants of Internet addiction disorder: An empirical study of Korean teenagers. *CyberPsychology and Behavior*, 9(5): 514-525.
- Islam S, Malik MI, Hussain S, Thursamy R, Shujahat M, Sajjad M 2018. Motives of excessive internet use and its impact on the academic performance of business students in Pakistan. *J Subst Abuse*, 23(1): 103-111.

- Kandell JJ 1998. Internet addiction on campus: The vulnerability of college students. *CyberPsychology and Behavior*, 1(1): 11-17.
- Kardefelt-Winther D 2014. A conceptual and methodological critique of Internet Addiction Research: Towards a model of compensatory Internet Use. *Computers in Human Behavior*, 31: 351-354.
- Khan NM, Mullick MSI, Hussain S, Uddin MMJ 2021. Correlation between psychological distress and internet addiction among adolescents during COVID-19 period. *British Journal of Research*, 8(8): 1-5.
- Kim SJ, Park DH, Ryu SH, Yu J, Ha JH 2012. Usefulness of young's Internet Addiction Test for clinical populations. *Nord J Psychiatry*, (Early Online), 1-7.
- Kraut R, Patterson M, Lundmark V, Kiesler S, Mukophadhyay T, Scherlis W 1998. Internet paradox: A social technology that reduces social involvement and psychological well-being? *American Psychologist*, 53(9): 1017.
- Kuss, JD, Griffiths, DM, Karila L, Billieux J 2014. Internet addiction: A systematic review of epidemiological research for the last decade. *Current Pharmaceutical Design*, 20(25): 4026-4052.
- Lam LT, Peng Z, Mai J, Jing J 2009. Factors associated with Internet addiction among young adults. *CyberPsychology and Behavior*, 12(5): 551-555.
- Lan NTM, Kyesun L, Dung V, Huyen NTT et al. 2020. Internet addiction among university students and its associated factors: A cross-sectional study among college students in Hanoi, Vietnam. *Systematic Reviews in Pharmacy*, 11(10): 590-596.
- Lee C, Shin N 2017. Prevalence of cyberbullying and predictors of cyberbullying perpetration among Korean adolescents. *Computers in Human Behavior*, 68: 352-358.
- Li W, O'Brien JE, Snyder S, Howard MO 2015. Characteristics of internet addiction/pathological internet use in US university students: A qualitative-method investigation. *PloS One*, 10(2): e0117372.
- Lissitsa S, Chachasvili-Bolotin S 2016. Life satisfaction in the Internet Age - Changes in the past decade. *Computer Human Behavior*, 54: 107-206.
- Mathy RM, Cooper A 2003. The duration and frequency of Internet use in a nonclinical sample: Suicidality, behavioral problems, and treatment histories. *Psychotherapy: Theory, Research, Practice, Training*, 40(1-2): 125-135.
- Morahan-Martin J, Schumacher P 2000. Incidence and correlates of pathological Internet use among college students. *Computers in Human Behavior*, 16(1): 13-29.
- Müller KW, Glaesmer H, Brähler E, Woelfling K, Beutel ME 2014. Prevalence of internet addiction in the general population: Results from a German population-based survey. *Behaviour and Information Technology*, 33(7): 757-766.
- Murali V, George S 2007. Lost online: An overview of internet addiction. *Advances in Psychiatric Treatment*, 13(1): 24-30.
- Nalwa K, Anand AP 2003. Internet addiction in students: A cause of concern. *Cyberpsychology and Behavior*, 6(6): 653-656.
- Nguyen VT, Le MC 2015. *Internet Addiction, Theory and Practice*. Vietnam: Ho Chi Minh City National University Publishing House.
- Ong CS, Lin YL 2015. Security, risk, and trust in individuals' internet banking adoption: An integrated model. *International Journal of Electronic Commerce Studies*, 6(2): 343-356.
- Orsolini L, Longo G, Volpe U 2023. The mediatory role of the boredom and loneliness dimensions in the development of problematic Internet use. *International Journal of Environmental Research and Public Health*, 20(5): 4446.
- Pujazon-Zazik M, Park MJ 2010. To tweet, or not to tweet: Gender differences and potential positive and negative health outcomes of young adults' social internet use. *American Journal of Men's Health*, 4(1): 77-85.
- Rakhmawati W, Kosasih CE, Widiastih R, Suryani S, Arifin H 2021. Internet addiction among male young adults in Indonesia: A qualitative study. *American Journal of Men's Health*, 15(3): 1-9.
- Senol-Durak E, Durak M 2011. The mediator roles of life satisfaction and self-esteem between the affective components of psychological well-being and the cognitive symptoms of problematic Internet use. *Social Indicators Research*, 103(1): 23-32.
- Seyrek S, Cop E, Sinir H, Ugurlu M, Senel S 2017. Factors associated with Internet addiction: Cross sectional study of Turkish adolescents. *Pediatrics International*, 59(2): 218-222.
- Shaw M, Black DW 2008. Internet addiction. *CNS Drugs*, 22(5): 353-365.
- Shek DT, Yu L 2012. Internet addiction phenomenon in early young adults in Hong Kong. *The Scientific World Journal*, 1-9.
- Simkova B, Cincera J 2004. Internet addiction disorder and chatting in the Czech Republic. *CyberPsychology & Behavior*, 7(5): 536-539.
- Smahel D, Brown BB, Blinka L 2012. Associations between online friendship and Internet addiction among adolescents and emerging adults. *Developmental Psychology*, 48(2): 381-288.
- Sobowale K, Nguyen M, Weiss B, Van TH, Trung L 2016. Acceptability of internet interventions for youth mental health in Vietnam. *Global Mental Health*, 3: 1-9.
- Spada MM 2014. An overview of problematic Internet use. *Addictive Behaviors*, 39(1): 3-6.
- Tran BX, Mai HT, Nguyen L, Nguyen CT, Latkin CA, Zhang MW, Ho RC 2017. Vietnamese validation of the short version of internet addiction test. *Addictive Behaviors Reports*, 6: 45-50.
- Tsitsika A, Critselis E, Louizou A, Janikian M, Freskou A, Marangou E, Kormas G, Kafetzis DA 2011. Determinants of Internet addiction among young adults: A case-control study. *The Scientific World Journal*, 11: 866-874.
- Veisani Y, Jalilian Z, Mohamadian F 2020. Relationship between internet addiction and mental health in adolescents. *Journal of Education and Health Promotion*, 9.
- Weinstein A, Lejoyeux M 2010. Internet addiction or excessive internet use. *The American Journal of Drug and Alcohol Abuse*, 36(5): 277-283.
- Widyanto L, McMurrin M 2004. The psychometric properties of the Internet Addiction Test. *CyberPsychology & Behavior*, 7: 443-450.
- Widyanto L, Griffiths M 2007. Internet addiction: Does it really exist? (revisited) In: J Gackenbach (Ed.): *Psychology and the Internet: Intrapersonal, Interpersonal, and Transpersonal Implications*. 2nd Edition. San Diego, CA: Academic Press, pp. 141-163.

- Wu CST, Wong HT, Yu KF, Fok KW, Yeung SM, Lam CH, Liu KM 2016. Parenting approaches, family functionality, and internet addiction among Hong Kong young adults. *BMC Pediatrics*, 16(1): 1-10.
- Xia X 2023. Internet addiction among college students in China and its underlying causes. *Science Insights Education Frontiers*, 16(1): 2457-2473.
- Xu M, Kushner Benson SN, Mudrey-Camino R, Steiner RP 2010. The relationship between parental involvement, self-regulated learning, and reading achievement of fifth graders: A path analysis using the ECLS-K database. *Social Psychology of Education*, 13(2): 237-269.
- Yang S, Tung C 2007. Comparison of Internet addicts and non-addicts in Taiwanese High School. *Computers in Human Behavior*, 23: 79-96.
- Yao MZ, Zhong ZJ 2014. Loneliness, social contacts and Internet addiction: A cross-lagged panel study. *Computers in Human Behavior*, 30: 164-170.
- Yeap JA, Ramayah T, Kurni S, Abdul Halim H, Hazlina Ahmad N 2015. The assessment of internet addiction among university students: Some findings from a focus group study. *Tehnicky Vjesnik/Technical Gazette*, 22(1): 105-111.
- Yildiz I, Yildirim F 2012. The relation between problematic Internet use and healthy lifestyle behaviours in high school students. *Advances in School Mental Health Promotion*, 5(2): 93-104.
- Young KS 1996. Internet addiction: The emergence of a new clinical disorder. *CyberPsychology and Behavior*, 1: 237-244.
- Young KS 2016. *Internet Addiction Test (IAT)*. Illinois, US: Stoelting.
- Zheng Y, Wei D, Li J, Zhu T, Ning H 2016. Internet use and its relationship on individual physical health. *IEEE Access*, 4: 5135-5142.
- Zhou H, Zhang X, Ge C, Wang J, Sun X 2023. Does Internet use boost the sustainable subjective well-being of rural residents? Evidence from rural China. *Sustainability*, 15(2): 1652.

Paper received for publication in October, 2023
Paper accepted for publication in February, 2024