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Association between internet addiction and mental well-being among adolescents in the Al-Qassim region of the Kingdom of Saudi Arabia

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Abstract: **Adolescence is a period in human life characterized by the adoption of varied lifestyles, educational choices, and health behaviors. The demand for satisfaction (e.g., self-expression, need for recognition, peer communication, and peer group pressures) could explain the rising frequency of online media use and internet addiction. This study was conducted to examine the prevalence of internet use and addiction and its association with the psychological well-being of adolescents in the Al-Qassim region of the Kingdom of Saudi Arabia (KSA) .Methods: A descriptive, cross-sectional study was carried out to assess a convenience sample consisting of 663 adolescents in the Al-Qassim region of the KSA. Data were obtained from online responses to a questionnaire that addressed sociodemographic characteristics, patterns of internet use, and questions relevant to Young's Internet Addiction Test (YIAT) and the Warwick–Edinburgh Mental Well-Being Scale (WEMWBS). Results: The mental well-being scores of the adolescents ranged from 2 to 56, with a mean of 38.53 and standard deviation of 10.61. Statistically, significant inverse correlations were detected between internet addiction (IA) scores, well-being scores, and age, and a statistically significant direct correlation was detected between IA scores and hours of daily internet use. Furthermore, there was a highly statistically significant inverse correlation between well-being scores and hours of daily internet use, indicating that internet addiction is a strong negative predictor of mental well-being. Conclusions: The majority of the study participants have moderate to severe internet addiction and poor mental health, and there were statistically significant negative associations between internet addiction, well-being, and age. This study emphasizes the need to provide suitable school-based interventions for the prevention of IA in adolescence, which can include teacher and parent training, student education, and awareness-raising and can help to strengthen protective variables and reinforce positive behaviors or aspects of the environment that reduce the likelihood of IA occurrence.**

Keywords: **Internet, Addiction, Psychological, Wellbeing, Adolescence, KSA.**

1. INTRODUCTION

Adolescence is a developmental stage in which teenagers undergo significant psychological, biological, and social changes. Adolescents are thus affected by several existing and emerging health concerns (Yeo, Ang, Chong, & Huan, 2007). Preoccupation with and repetitive thoughts about restriction and control of internet use characterize internet addiction (IA). Internet addiction is also characterized by continuous use of the internet, failure to control the desire for access to the internet, and seeking use of the internet in the event of inability to access it (Koyuncu, Unsal, & Arslantas, 2014; Kuss, Griffiths, Karila, & Billieux, 2014; Leung, 2014).

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Despite not being officially classified as a nosology category in the DSM-5 (Association, 1994; Kardefelt-Winther et al., 2017) or the final edition of ICD-11, internet addiction has recently become a popular topic in diagnostic studies (Grant et al., 2014). Four basic manifested behaviors have been proposed as characteristic of IA (Spada, 2014; Tao et al., 2010). Uncontrolled recurrent and excessive use of the internet at the expense of other activities is the first characteristic of IA. Guillot et al. (2016) reported that a person's behavior is addictive if the person spends more than 38 hours per week on activities that are unrelated to work or academic objectives. The second characteristic of IA is a tolerance developed as a result of the need to be connected to the Internet for extended periods of time to reap significant benefits from it. Withdrawal related to the unavailability of internet access is the third characteristic. The fourth characteristic of IA is the deterioration of psychological, economic, and social well-being, all of which are negative consequences of addictive internet use (Samaha & Hawi, 2016).

The average global prevalence of IA is estimated to be approximately 6% (Cheng & Li, 2014). Among adolescents; the prevalence of IA is estimated to range between 2.5% and 26.8% in Asian countries and between 5% and 15.2% in Europe (Kuss et al., 2014; Wang, Wu, & Lau, 2016). Male adolescents are believed to be most affected by IA (A. Tsitsika et al., 2014).

Internet addiction has been described as a compulsive–impulsive spectrum disorder, with clinical manifestations such as loss of control, excessive use, preoccupation, tolerance, and withdrawal (Beard & Wolf, 2001). Social isolation, emotional and behavioral issues, daily dysfunction, and poor family relationships are also linked with IA (Carli et al., 2013; Lam, 2014). Metanalysis studies have reported that lower well-being is associated with problematic internet use (Çikrıkci, 2016; Odacı & Çıkrıkçı, 2014). Several authors have observed that IA negatively affects adolescent individuals' optimistic view of life (Çikrıkci, 2016; Telef, 2016; Valkenburg & Peter, 2007).

Two primary perspectives on well-being are discussed in the literature on the psychology of optimism. The first is the concept of eudemonic well-being, and the second is the concept of hedonic well-being (Keyes, Shmotkin, & Ryff, 2002; Ryan & Deci, 2000). These two different perspectives have given rise to characterizations of subjective well-being and psychological well-being. Subjective well-being is associated with a hedonic perspective, whereas psychological well-being is associated with a eudemonic perspective. Subjective well-being is typically characterized as happiness, relief, and the absence of problems. Psychological well-being, on the other hand, is typically characterized as facing a challenge, making an effort, personal development, and wanting to progress (Waterman, 1993).

According to cognitive behavioral theory (Davis, 2001) and the problematic psychosocial predisposition model (S. E. Caplan, 2003), psychosocial maladjustments lead to maladaptive cognitions, such as the notion that one can remedy one's problem by browsing the internet. According to this perspective, IA is a form of adaptive "self-soothing" that satisfies unmet psychosocial needs while assisting in the avoidance or alteration of unpleasant feelings associated with underlying psychological issues.

Although excessive internet use can exacerbate current problems and create new ones for anyone, it is thought that persons who are addicted to the internet have some level of psychological inadequacy. According to this logic, IA should be viewed as a consequence (i.e., effect) of a previously existing low level of personal well-being (e.g., low life satisfaction or a high sense of hopelessness) (S. Caplan, Williams, & Yee, 2009; Chak & Leung, 2004; Lo, Wang, & Fang, 2005).

According to Kraut et al. (1998), excessive internet use harms face-to-face relationships by restricting time spent with friends and family, which results in sadness and loneliness and hence diminished psychological well-being (PWB). The negative impact of internet use on young adults' daily lives and its disruption of their PWB have been reported. The disruption of well-being attributed to AI has been described as mental disease and discomfort, manifested as impulsivity, loneliness, behavioral issues, negative sensation, social isolation, depression, and novelty-seeking (Mannell, Zuzanek, & Aronson, 2005; Whang, Lee, & Chang, 2003). Oktuğ (2012) observed that well-being is harmed as a result of inability to manage time, lost sleep, missed meals, and other behaviors and norms comparable to those seen with other addictions (Oktuğ, 2012). In contrast, Kraut et al. (2001) observed better communication and better social involvement after greater internet usage, which suggests a positive relationship between internet usage and well-being with greater internet usage.

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Significance of the study

Uncontrolled internet use has a pervasive negative impact on adolescents' physical health, social interactions, academic achievement, and psychological well-being (Engelberg & Sjöberg, 2004; K. Kim et al., 2006; C.-H. Lin, Chen, Chang, & Lin, 2013). Furthermore, there is evidence of a link between internet addiction and other mental health issues (Byun et al., 2009; Ko, Yen, Chen, Chen, & Yen, 2008). In the absence of related regulatory policies in organizations, internet addiction leads to loss of productivity (Yellowlees & Marks, 2007; Young & De Abreu, 2010). It is critical to better understand the process underlying the development of internet addiction to address and prevent these issues. The purpose of this study was to examine the relationship between internet addiction and PWB in adolescents.

Aim of the study

This study was conducted to measure the prevalence of internet use and addiction and determine its association with psychological well-being.

Research hypothesis

Internet addiction is associated negatively with psychological well-being.

2. METHODOLOGY

Design and setting

A descriptive, cross-sectional, comparative research study was conducted in Saudi Arabia.

Sample size

The sample size was selected based on the proportion of the Saudi Arabian population aged between 10 and 18 years old. The number of people in Saudi Arabia in this age range is estimated to be 4,285,714, and the prevalence of internet addiction is estimated to be 20% (Effatpanah et al., 2020). For a confidence level of 99% and power of test of 80%, the sample size was determined to be 663 subjects, as calculated using Epi Info™ version 6.02.

Data collection tools

The data collection questionnaire had three sections. The first section consisted of questions intended to collect sociodemographic data, including gender, education level (primary, preparatory, secondary), residence, and family monthly income. The questionnaire also had questions about internet usage patterns, such as hours spent on the internet each day, purpose of online use, and average academic score in the previous year.

The second part of the questionnaire was the Arabic version of Young's Internet Addiction Test (YIAT), which was validated in a preceding study conducted in Lebanon (Hawi, 2013). YIAT is the first valid and reliable tool developed for measuring internet addiction. This 20- item questionnaire was developed by Kimberley Young. It classifies internet addiction as mild, moderate, or severe. Each answer is scored on a Likert scale from 1 to 5: 1 = rarely, 2 = occasionally, 3 = frequently, 4 = often, and 5 = always. The final score is obtained by summing the scores for all questions. A greater total score indicates a higher level of addiction. Scores between 20 and 49 indicate normal internet use, scores between 50 and 79 indicate moderate internet use (moderate addiction), and scores between 80 and 100 indicate severe internet use (severe addiction) (Ayatollahi, Ayatollahi, & Bahrololoomi, 2010).

Mental well-being was assessed using the Warwick–Edinburgh Mental Well-Being Scale (Tennant et al., 2007). The scale assesses positive mental health (mental well-being) and consists of 14 positively worded items (e.g. "I've been interested in new things") with five response categories (0 = none of the time, 1 = rarely, 2 = some of the time, 3 = often, 4 = all of the time). Cronbach's alpha for the sample of this study was high ($\alpha = 0.91$). The total score is calculated by summing all 14 item scores. The minimum score is 14, and the maximum is 70. A higher score indicates a higher level of mental well-being (Taggart, Stewart-Brown, & Parkinson, 2016; Tennant et al., 2007).

Validity and reliability

The questionnaire used in this study was reviewed by a panel of five experts in the field of psychiatric mental health nursing to assess its content and face validity, which were deemed acceptable. Reliability was assessed for approximately

10% of the participants (60), Cronbach's alpha was 0.926 for the internet addiction tool and 0.922 for the mental well-being tool.

Pilot study

A pilot study was conducted with 60 adolescents (approximately 10% of the total) to assess the clarity and applicability of the tool before data were collected from the remainder of the sample. The responses of the pilot study participants were excluded from the final study. Based on the positive findings of the pilot study, the tool was not modified. Scale reliability was assessed by measuring internal consistency.

Study Procedure

After informing eligible participants about the study's objectives, the researchers disseminated an electronic consent form along with a questionnaire to the participants to take part in the survey. Smart tools such as WhatsApp and Messenger were used to disseminate the link to the sample group. The questionnaire took approximately 20 minutes to complete. Data were collected over the two-month period from September 26th to November 26th, 2021.

Ethical considerations

Participation in the study was entirely voluntary and was not financially compensated. Before completing the questionnaire, participants were required to read and approve an informed consent form. They were informed about the nature and objective of the study, the researchers' contact information and affiliations, and their right to refuse or withdraw participation at any time. The use of survey identification numbers mitigated any breaches of confidentiality; nonetheless, no identifying information, such as names, email addresses, or mobile numbers, was collected from the participants, and their responses were fully anonymous. No harm or risk, except for discomfort or inconvenience, was expected as a result of completing the questionnaire. The Declaration of Helsinki's ethical criteria for medical research involving human subjects were followed.

STATISTICAL ANALYSIS

All data were collected, tabulated, and statistically analyzed using SPSS 20.0 for Windows (SPSS Inc., Chicago, IL, USA 2011). Quantitative data were expressed by the mean ± standard deviation (SD) and range; qualitative data were expressed by absolute frequencies (number) and relative frequencies (percentage). The distributions of values for categorical variables were compared using Chi-square tests. Spearman's rank correlation coefficient was calculated to assess the relationships between various study variables, with a plus (+) sign indicating direct correlation, a minus (-) sign indicating inverse correlation, values close to 1 indicating strong correlation, and values close to 0 indicating weak correlation. All tests were two-sided. A p-value < 0.05 was considered statistically significant (S); a p-value ≥ 0.05 was considered statistically insignificant (NS).

Logistic regression was used to describe the data and explain the relationships between one dependent binary variable and one or more nominal, ordinal, interval, or ratio-level independent variables. Simple linear regression was used to assess the dependency of one dependent variable on one quantitative dependent variable.

Formally, the model for simple linear regression, given n observations, is

$Y = a + \beta 1 * X1$

Y= the variable that we are trying to predict (the dependent variable)

X = the variable that is used to predict (the independent variable)

a= the intercept (a constant)

β = coefficient of x that represents the mean change in the dependent variable per unit change in the independent variable

3. RESULTS

As Table 1 shows, the majority of the study sample was female (52.9%), with ages ranging between 16 and 18 years (69.2%), and in secondary school (78.9%). Most of the respondents lived in urban areas and in families with sufficient income (76.5% and 76.8%, respectively).

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Table 1: Sociodemographic characteristics of the study sample (n = 663)

Variable	Number	%
Gender		
Males	312	47.1
Females	351	52.9
Age in years		
10–11	39	5.9
12–13	62	9.4
14–15	103	15.5
16–18	459	69.2
Level of education		
Primary school	47	7.1
Preparatory school	93	14.0
Secondary school	523	78.9
Residence		.
Urban	507	76.5
Rural	156	23.5
Family monthly income		
Sufficient	509	76.8
Insufficient	154	23.2

As Table 2 shows, the majority of the devices used to access the internet were mobile telephones (73%) and that most of the participants (77.5%) spent 4–9 hours per day doing so, with most of this use at night (68.8%). Among the study participants, the greatest use of the internet was for social purposes (66.7%), and slightly more than half of them (53.2%) had average academic scores in the range of 4.5 to 5 in the previous year.

Table 2: Patterns of internet use of the study sample (n = 663)

Variable	Number	%
Devices used to access internet		
Mobile	484	73.0
iPad or tablet	63	9.5
Desktop computer	24	3.6
Laptop computer	92	13.9
Hours spent per day on internet		
≤ 3	130	19.6
4–6	190	28.7
7–9	153	23.1
➢ 9	190	28.7
Time of day on internet		
At day	207	31.2
At night	456	68.8
Purpose for using internet		
Social	442	66.7
Games	109	16.4
Knowledge searches	112	16.9
Average academic score in previous year		
score < 2	12	1.8
2 ≤ score < 2.5	23	3.5
2.5 ≤ score < 3.5	85	12.8
3.5 ≤ score < 4.5	190	28.7
4.5–5	353	53.2

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Figure 1 shows that more than half of the study sample has a moderate level of internet addiction (55.5%).

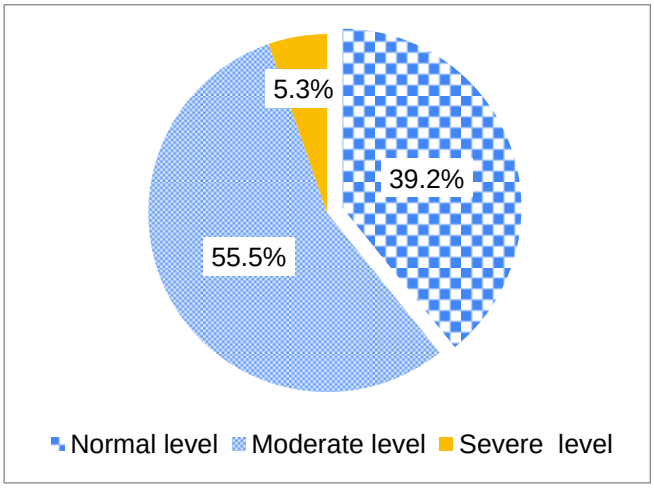

Figure 1: Internet addiction level of the study sample

As Table 3 shows, statistically significant relations were detected between well-being total scores and addiction levels (p = 0.0001).

Table 3: Comparison Well-being score regard internet addiction level of the study sample (n.663)

	Internet Addiction Level			F	p
	normal	moderate	severe		
Well-being score Mean ± SD	43.61 ± 8.36	35.96 ± 9.89	27.74 ±14.73	70.92	0.0001

F = F-test (ANOVA) value

Table 4 shows that the mental well-being total scores of the study sample ranged between 2 and 56, with a mean and standard deviation of 38.53 ± 10.61.

Table 4: Well-being scores of the study sample (n = 663)

Total well-being scores	
Mean ± SD	38.53 ± 10.61
Range	2–56

Table 5 shows that statistically significant inverse correlations were detected between IA scores, well-being scores, and age, and a statistically significant direct correlation was detected between IA score and hours of daily internet use. Furthermore, there was a highly statistically significant (p<0.001) inverse correlation between well-being scores and hours of daily internet use.

Table 5: Correlation matrix between internet addiction score, well-being score, and some study sample characteristics (n = 663)

Parameter	**Internet addiction score**		**Well-being score**	
	(r)	**P**	**(r)**	**P**
Internet addiction score	1	.		
Well-being score	-0.492 **	0.0001	1	.
Age (years)	-0.121 *	0.002	0.063	0.105
Education level	-0.075	0.051	-0.029	0.458
Average previous-year academic score	-0.031	0.42	0.015	0.702
Hours of daily internet use	0.352**	0.0001	-0.150 **	0.0001

(r) correlation coefficient *significant, p < 0.05 ** highly significant, p < 0.001

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As Table 6 shows, males in the study sample exhibited internet addiction to a greater degree than females, but no statistically significant relations between internet addiction and study sample demographic characteristics were detected except for participants aged from 12 to 13 years and those in preparatory school ($p < 0.05$).

Table 6: Relation between Internet Addiction level among study sample and their demographic characteristics (n = 663)

Variables	Internet Addiction				n	χ^2	p
	Normal n = 260		Addiction n = 403				
	No.	%	No.	%			
Gender							
Males	111	35.6	201	64.4	312	3.27	0.07
Females	149	42.5	202	57.5	351		
Age (years)							
10–11	11	28.2	28	71.8	39		
12–13	14	22.6	48	77.5	62	11. 2	0.01
14–15	40	38.8	63	61.2	103		
16–18	195	42.5	264	57.5	459		
Education							
Primary school	9	19.1	38	80.9	47		
Preparatory school	35	37.6	58	62.4	93	8.99	0.01
Secondary school	216	41.3	307	58.7	523		
Residence							
Urban	204	40.2	303	59.7	507	0.94	0.33
Rural	56	35.9	100	64.1	156		
Income							
Sufficient	210	41.3	299	58.8	509	3.8	0.05
Insufficient	50	32.5	104	67.5	154		

χ^2 = Chi square test significant, $p < 0.05$ highly significant, $p < 0.001$

As Table 7 shows, highly statistically significant ($p<0.001$) relations were detected between internet addiction and some patterns of internet use, including accessing the internet using an iPad, 4–6 hours per day of internet use, and using the internet for games.

Table 7: Relations between internet addiction levels among study sample and patterns of internet use (n = 663)

Variables	Internet addiction level				χ^2	p
	Normal n = 260		Addict n = 403			
	No.	%	No.	%		
Devices used to access internet						
Mobile	169	65.0	315	78.2		
iPad or tablet	26	10.0	37	9.2		
Desktop computer	14	5.4	10	2.5	17.6	0.001
Laptop computer	51	19.6	41	10.2		
Hours spent per day on internet						
≤ 3	72	27.7	58	14.4		
4–6	85	32.7	105	26.1	36.02	0.0001
7–9	58	22.3	95	23.6		
> 9	45	17.3	145	36.0		
Preferred time to use internet						
At day	84	32.3	123	30.5	0.23	0.63
At night	176	67.7	280	69.5		
Purpose of internet use						
Social	161	61.9	281	69.7		

Games	33	12.7	76	18.9	23.3	0.0001
Knowledge searches	66	25.4	46	11.4		
Average previous-year academic score						
score < 2	4	1.5	8	2.0		
2 ≤ score < 2.5	7	2.7	16	4.0	1.38	0.84
2.5 ≤ score < 3.5	31	11.9	54	13.4		
3.5 ≤ score < 4.5	76	29.2	114	28.3		
4.5–5	142	54.6	211	52.4		

χ^2 = Chi square test significant, $p < 0.05$ highly significant, $p < 0.001$

Table 8 presents the logistic regression results for internet addiction versus age of the study participants. Participants aged 12 to 13 years exhibited internet addiction to a degree 2.532 times greater than the reference group of those aged 16 to 18 years ($p = 0.003$). For the other age groups, age was not a statistically significant predictor of internet addiction ($p > 0.05$).

Table 8: Logistic regression results for age versus internet addiction among participants

Age in years	Sig.	Exp (β)	95% C.I. for EXP(B)	
			lower	upper
10–11	0.086	1.880	0.914	3.869
12–13	**0.003**	**2.532**	**1.358**	**4.724**
14–15	0.498	1.163	0.751	1.802
16–18 (reference)				

B = regression coefficient Exp(β) = odds ratio for the predictor CI = confidence interval

Wald test of significance

Table 9 presents the simple linear regression results for well-being scores versus internet addiction scores.

Table 9: Simple linear regression for well-being scores versus internet addiction scores

	R	R^2	β	t	p
Constant			57.641		
Internet addiction score	0.496	0.246	0.355	14.7	0.0001

β = coefficient of regression, representing the mean change in the dependent variable (well-being score) per unit in change in the predictor variable (internet addiction score).

t = calculated t value

Model ANOVA: F = 215, p = 0.0001

4. DISCUSSION

Rapid psychological maturation and vulnerability to internet attraction are characteristics of adolescence (Artemis Tsitsika et al., 2009). Family relationships, life satisfaction, academic performance, and self-esteem have all been reported to be negatively affected by excessive internet use (Kaltiala-Heino, Lintonen, & Rimpelä, 2004; F. Lin et al., 2012; Wainer et al., 2008). The amount of time spent online has gradually increased in recent years. Internet use can have negative consequences if not properly controlled, despite its many advantages (Jorgenson, Hsiao, & Yen, 2016). This study was conducted to assess the prevalence of internet use and addiction among adolescents in the in the Al-Qassim region of the Kingdom of Saudi Arabia and to assess the association between internet addiction and the psychological well-being of those adolescents.

A slight majority of the study sample was female aged 16–18 years and in secondary school. A statistically significant inverse correlation was observed between internet addiction score and age. This indicates that younger students exhibit increased levels of internet addiction. The findings of K. Kawabe, F. Horiuchi, M. Ochi, Y. Oka, and S. i. Ueno (2016), however, indicate that the incidence of internet addiction among students increases with grade level. In addition, a study

conducted in Hong Kong found that during adolescence, the prevalence of internet addiction gradually decreased with age (Shek & Yu, 2016).

The results of this study demonstrate that mobile phone internet usage is much higher among the study participants than internet usage with laptops iPads, or tablets. The results also show that the highest percentage of participants (77.5%) spent 4–9 hours per day using the internet, predominantly at night and predominantly for social purposes. Only 16.9% used the internet for knowledge searches. This may be because smart phones tend to always be closer at hand than other devices. Using the internet more frequently at night may affect sleeping patterns, and this could lead to addictive use of these devices.

The findings of this study are consistent with those of other studies reported in Saudi Arabia and Egypt, with the majority of participants reporting that they often stay online longer than intended (Shehata & Abdeldaim, 2021; Taha, Shehzad, Alamro, & Wadi, 2019). In a Korean meta-analysis research, Chun and colleagues found that internet-addicted adolescents spend less time with their families than peers who are not addicted to the internet (Chun, Shim, & Kim, 2017). In a study in China, Jorgenson and his colleagues found that the amount of time spent online has gradually increased in recent years. Despite its many advantages, internet use can be harmful if it is not properly regulated (Jorgenson et al., 2016).

Uncontrolled internet use has a pervasive detrimental influence on young people's academic achievement, physical health, psychological well-being, family, and other social relationships (Odacı & Çelik, 2013). In Hong Kong, adolescents were reported to have a negative a negative relationship between their personal well-being and internet addiction (Yu & Shek, 2018).

Slightly more than 50% of the participants of the current study have moderate internet addiction, and sightly less than 40% of them have severe internet addiction, which may require immediate intervention. These findings highlight the importance of paying attention to not only severe but also moderate internet addiction in adolescents. These findings are consistent with those of an Indian study that showed that high school students are particularly vulnerable to internet addiction because they are more receptive during this stage, are more willing to use the internet during their free time, and lack guidance for proper internet use (Shresta & D'mello, 2020). Several new IA programs for adolescents have been developed because the severity of IA among adolescents is higher than in other age groups (S. Kim & Noh, 2019; Yeun & Han, 2016).

The current study results demonstrate an increased level of internet addiction among male adolescents than females, although the difference was not statistically significant. This is consistent with the findings of Ozturk and Ayaz-Alkaya (2021), who reported that male students were 1.9 times more likely than female students to engage in problematic internet behaviors, indicating that gender is a risk factor for problematic internet use. The varied personality traits of girls and boys, as well as the purpose of internet use, can often explain the gender difference in problematic internet use.

In addition, the findings demonstrate a statistically significant association between internet addiction and various internet usage patterns, such as using an iPad, spending 4-6 hours per day online, and playing online games. This could be because the iPad's light weight makes it more convenient to use in bed than larger electronic devices (such as laptop computers), which makes it particularly appealing because it can be used while lying in bed to surf the Internet, watch videos, and play games. A Japanese study reported that one of the critical factors in IA is smartphone accessibility (K. Kawabe, F. Horiuchi, M. Ochi, Y. Oka, & S. Ueno, 2016). Loton and his colleagues reported that online and offline smartphone access is a source of addiction for young adults (Loton, Borkoles, Lubman, & Polman, 2016).

The results revealed age to be a significant predictor of internet addiction among the study sample, with students aged 12 to 13 years exhibiting internet addiction to a degree 2.532 times greater than students aged 16 to 18 years. A statistically significant inverse correlation was detected between internet addiction score and age. These findings suggests that internet addiction is common in early adolescence, presumably as a result of the accessibility and ease of use of the internet for a variety of purposes.

A study of Portuguese adolescents found that about half of the participants' first internet exposure occurred by the time they were 10 years old, indicating the alarming status of internet exposure at young ages (Prabhakaran, Patel, Ganjiwale, & Nimbalkar, 2016). Similarly, Kurniasanti and his colleagues found that among Indonesian children and teenagers, the

likelihood of excessive internet use evolving into internet addiction increased (Kurniasanti, Assandi, Ismail, Nasrun, & Wiguna, 2019). Furthermore, as predicted by Shek and Yu (2016), the proportion of respondents who might be considered Internet-addicted gradually decreased throughout the adolescent years, despite an initial increase in several internet-addictive behaviors from secondary school levels 1 to 2 (i.e., grades 7–8).

The current study's findings reveal a statistically significant inverse correlation between internet addiction score and well-being score, i.e., internet addiction being a significant independent predictor of negative psychological well-being. This finding may be interpreted as higher levels of pathological internet use being associated with lower levels of well-being. This result is consistent with that of an Indian study that found internet addiction was a significant negative predictor of PWB (Sharma & Sharma, 2018). A Japanese study found that, like other addictive diseases, Internet addiction causes poor academic performance, impaired interpersonal relationships, and other psychological issues (Kojima et al., 2019).

5. CONCLUSIONS AND RECOMMENDATIONS

The findings of this study reveal that the majority of the study participants had moderate to severe internet addiction, with higher levels of internet addition corresponding to poorer psychological well-being. IA was found to be inversely correlated to well-being score and age and directly correlated to daily hours of internet use. A strong inverse correlation was detected between well-being score and daily hours of internet use.

Recommendations

It is critical to establish ways to prevent internet addiction and to implement therapeutic interventions. Further research in this area is essential to promoting teenagers' PWB. For severely internet-addicted adolescents, multilevel intervention that involves both individual therapy and family intervention is required to reduce time spent online and related psychological concerns. To strengthen protective factors and reinforce positive behaviors or characteristics of the environment that minimize the likelihood of negative outcomes, school-based prevention of IA in adolescence might include teacher and parent training, student education, and awareness-raising. Nurses can help teenagers avoid harmful behaviors by providing health education on internet addiction, as with topics such as smoking and substance abuse.

Limitations of the study

Although the IAT instrument provides some insights, it does not adequately distinguish between different types of internet users in terms of addiction. Some of the students, for example, may have been accessing the internet for employment or research purposes. To ascertain the true amount of IA in adolescents, more study is needed to determine the exact types of internet-based activities in which they engage.

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Conflict of interest

The researchers declare no conflicts of interest exist concerning the research work.

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