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ORIGINAL ARTICLE

Relation between Personality and Internet Addiction in a Sample of Benha University Students

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Background The internet is extremely popular nowadays; it has not only positive but also negative effects, especially on the physical and mental health. The similarities between substance abuse and behavioral dependence have given rise to the concept of behavioral addiction.

Objectives To determine the prevalence of internet addiction disorder (IAD) among Benha University students and find out the presence of psychiatric disorders and emotional dysregulation in relation to IAD.

Subjects and Methods A comparative observational cross-sectional study was conducted on 400 students from Benha University, who were chosen by a random technique convenient to our study. A semistructured interview; clinical psychiatric assessment; psychometric tests such as the Young Internet Addiction Test, SCID I, and SCID-II; and test for affect regulation scale (Trait Meta Mood Scale) were performed for all participants.

Results Internet addiction was common among Benha University students (77.5%). Overall, 10.0% were diagnosed as having avoidant personality disorder and 10.0% with histrionic personality (both were statistically significant). Moreover, 6.1% had obsessive personality, 1.3% had passive aggression personality, 1.0% had paranoid personality, 1.0% had dependent personality, 6.7% had borderline personality, and 7.1% had antisocial personality. Overall, 53.2% of students with IAD had suicidal ideas, whereas 61.3% had insomnia (both were statistically significant). There was a statistically significant difference between the studied groups regarding major depressive disorder, substance use disorders (54.8%), and generalized anxiety disorder (54.8%).

Conclusions There was a high prevalence of IAD among Benha University students (77.5%). Substance use disorders, major depressive disorder, generalized anxiety disorder, insomnia disorder, and suicidality were statistically significantly higher among students with IAD, in addition to avoidant and histrionic personality disorders.

Keywords Internet addiction, Personality disorders, Traits, University students.

INTRODUCTION

The concept of internet addiction was first introduced in a pioneer study by Young (1996). However, many believed the term addiction should be applied only to cases involving the ingestion of a drug (Rachlin, 1990). Internet addiction may be broadly defined as 'the inability of individuals to control their internet use, resulting in marked distress and/or functional impairment in daily life.' Internet addiction appears to be a common disorder that merits inclusion in DSM-V (Pies, 2009).

Moreover, internet addiction has attracted increasing coverage in the popular media and among researchers, and this attention has paralleled the growth in computer use and internet access (Shaw and Black, 2008).

Personality factors such as lack of perseverance, psychoticism and neuroticism, sensation seeking, and aggressiveness have been found to be associated with internet addiction (Mehroof and Griffiths, 2010). In

addition to this, it appears to be comorbid with clinical disorders and premorbid symptoms. Internet addiction was associated with increased prevalence of substance use disorder, depressive disorder, various types of anxiety disorder, and obsessive–compulsive disorder (Park *et al*., 2017). In adolescents, internet addiction has been reported to be comorbid with depression and insomnia (Cheung and Wong, 2011).

AIM

The aim was to determine the prevalence of internet addiction disorder (IAD) among Benha University students and find out the presence of psychiatric disorders, personality disorders, and emotional dysregulation in relation to IAD.

SUBJECTS AND METHODS

This is a comparative observational cross-sectional study.

PATIENTS

All data was collected from Benha University students who were randomly selected (convenient to our study) from four different faculties: faculty of medicine, faculty of applied arts, faculty of literature, and faculty of nursing. Equal numbers of students from each faculty were interviewed.

The sample size was calculated using the following equation: the number=Z2pq/E2.

Prevalence of IAD (6%) from previous literature (Tang *et al*., 2014). was used; thus, the required *n* was found to be *n*=394.468, which was approximated to 400 students. Inclusion criteria were being a student in Benha University and age of students above 18 years old.

METHODS

All participants were subjected to the following:

(1) Semistructured interview and clinical psychiatric assessment.

(2) Informative designed questionnaire: it was specific for this study.

(3) Young Internet Addiction test (IAT) (Young *et al*., 1999): we used the Arabic version (Reda *et al*., 2013).

(4) Psychometric test for assessment of personality disorders (Structured Clinical Interview for DSM-IV, SCID-II personality questionnaire) (First *et al*., 1997a): we used the Arabic version (Hatata *et al*., 2004).

(5) Psychometric test for assessment of psychiatric disorders [Structured Clinical Interview for DSM-IV-Clinician Version (SCID-CV)] (First *et al*., 1997b). Arabic version of SCID-I-CV was translated into Arabic language and had the reliability and validity tests done by El-Missiry (2004).

(6) Test for affect dysregulation, that is, Trait Meta Mood Scale (TMMS) (Salovey *et al*., 1995). The Arabic version was used in the research (Kafafi and El Dawash, 2006).

ETHICAL CONSIDERATION

(1) An official approval was obtained to conduct this study from the ethical committee of Benha Faculty of Medicine.

(2) A formal approval was obtained from the deans of the four faculties to visit tutorials and distribute the research material to the students.

(3) An informal written consent was taken from all of the participants.

STATISTICAL ANALYSIS

All of the collected data were tabulated and analyzed using the computer program SPSS (Statistical Package for the Social Sciences), version 20 software (SPSS Inc., Chicago, Illinois, USA). Descriptive statistics were calculated for the data in the form of frequency and distribution for qualitative data. In the statistical comparison between the different groups, the significance of difference was tested. Intergroup comparison of categorical data was performed using one of the following tests.

Z test was used to compare proportion between two groups of qualitative data.

Intergroup comparison of categorical data was performed using χ^2 test and Fisher exact test.

A *p* value of more than 0.05 was considered statistically insignificant, less than 0.05 was considered statistically significant, *p* value of less than 0.01 was considered highly significant, and less than 0.001 was considered very highly statistically significant in all analyses.

RESULTS

The study included 400 students. Most students were between 18 and 20 years of age (65%), whereas 35% were between 20 and 22 years of age. Moreover, 65% were in the first academic year, whereas 35% were in the second academic year. More than half of the students were females (52.5%), and 72.5% of the students lived in rural areas (Table 1).

The application of Young IAT revealed that 42.75% (*n*=171) of the students had mild dependence on internet followed by 31.75% of the students (*n*=127) who had moderate dependence, and only 3% of the students (*n*=12) had severe dependence; thus, 310 (77.5%) students presented with dependence, whereas 22.5% of the students (*n*=90) had a normal usage (Table 2).

Regarding the distribution of personality disorders among the studied groups according to SCID-II, 10.0% of students with IAD (*n*=310) showed avoidant personality disorder, with a statistically significant difference between the studied groups ($p<0.04$). Moreover, 1.9% showed depressive personality, 6.1% obsessive personality, 1.3% passive aggression personality, 1.0% paranoid personality, 1.0% dependent personality, and 10.0% histrionic personality, with a statistically significant difference between the studied groups ($p<0.04$). Moreover, 6.7% had borderline personality and 7.1% had antisocial personality (Table 3).

Overall, 53.2% of students with IAD had suicidal ideas, compared with 13.3% of control students, and there was a statistically significant difference between the studied groups regarding suicidal ideas ($p<0.001$). Insomnia was present in 61.3% of students with IAD, compared with 25.6% of control students. There was a statistically significant difference between the studied groups regarding insomnia ($p<0.001$). Regarding depression among students with IAD, 32.2% had mild depression, 19.7% had moderate depression, and 1.3% had severe depression, whereas in control students, 17.8% had mild, 2.2% had moderate, and 1.1% had severe depression. There was a statistically significant difference between the studied groups regarding depression ($p<0.001$). Dysthymia was present in 16.1% of students with IAD, whereas in control students, 7.8% had dysthymia, and there was a statistically significant difference between the studied groups regarding dysthymia ($p<0.001$). Substance use disorders were present in 54.8% of students with IAD, whereas 14.4% of control students had substance use disorders. There was a statistically significant difference between the studied groups regarding substance use disorders ($p<0.001$). Regarding the types of substance dependence among students with IAD, 50.6% had nicotine dependence, 10.3% had alcohol dependence, 29.4% misused THC (Tetrahydrocannabinol), 2.3% had tramadol dependence, 0.6% had opioid dependence, and 0.6% other substances. Generalized anxiety disorder (GAD) was present in 54.8% of students with IAD, compared with 8.9% of control students, and there was a statistically significant difference between the studied groups regarding substance use disorders ($p<0.001$) (Table 4).

Regarding the Trait Meta Mood Scale among students with IAD (*n*=310), 58.1% showed impairment in attention to feelings, with a highly statistically significant difference ($p<0.001$). Regarding clarity to feelings, 54.8% of students with IAD showed an impairment. Regarding repair of mood among students with IAD (*n*=310), 80.6% had impairment in repair of mood, with a highly statistically significant difference ($p<0.001$) (Table 5).

Table 1: Distribution of the studied students regarding demographic characteristics

Demographic data	*N*=400 [*n* (%)]
Age (years)	
18–20	260 (65.0)
20–22	140 (35.0)
Sex	
Male	190 (47.5)
Female	210 (52.5)
Residence	
Rural	290 (72.5)
Urban	110 (27.5)
Academic year	
1st year	260 (65.0)
2nd year	140 (35.0)

Table 2: Internet addiction disorder distribution among the studied group

IAD	*N*=400 [*n* (%)]
Mild	171 (42.75)
Moderate	127 (31.75)
Severe	12 (3.0)
Average usage (control group)	90 (22.5)

IAD: internet addiction disorder.

Table 3: Distribution of personality disorders among students according to Structured Clinical Interview for DSM-IV

SCID II among students	Students with IAD (*N*=310) [*n* (%)]	Control (*N*=90) [*n* (%)]	*Z*	*P*
Avoidant PD	31 (10.0)	3 (3.3)	2.03	0.04*
Depressive PD	6 (1.9)	5 (5.6)	1.9	0.06
Obsessive PD	19 (6.1)	3 (3.3)	1.03	0.30
Paranoid PD	3 (1.0)	0	0.95	0.34
Dependent PD	3 (1.0)	1 (1.1)	0.08	0.94
Schizotypal PD	1 (0.3)	1 (1.1)	0.97	0.33
Schizoid PD	2 (0.6)	0	0.74	0.46
Histrionic PD	31 (10.0)	3 (3.3)	2.03	0.04*
Borderline PD	21 (6.7)	4 (4.4)	1.34	0.18
Antisocial PD	22 (7.1)	5 (5.6)	1.23	0.22

IAD: internet addiction disorder; PD: personality disorder; SCID-II: Structured Clinical Interview for DSM-IV Axis II Personality Disorders; *Z, Z* test; *p* value more than 0.05 insignificant; **p* value less than 0.05 significant; ***p* value less than 0.001 highly significant.

Table 4: Distribution of the studied subgroup regarding to (Structured Clinical Interview for DSM-IV) among students with internet addiction disorder (*N*=310) and control group (students with normal usage) (*N*=90)

SCID I among students	Students with IAD (*N*=310) [*n* (%)]	Control (*N*=90) [*n* (%)]	χ^2 test	*P*
Suicidal idea				
Yes	165 (53.2)	12 (13.3)	45.0	<0.001**
No	145 (46.8)	78 (86.7)		
Insomnia				
Yes	190 (61.3)	23 (25.6)	35.78	<0.001**
No	120 (38.7)	67 (74.4)		
Depression				
No	145 ((46.8)	71 (78.9)	FET=29.86	<0.001**
Mild	100 (32.2)	16 (17.8)		
Moderate	61 (19.7)	2 (2.2)		
Severe	4 (1.3)	1 (1.1)		
Manic D				
Yes	0	0	–	–
No	310 (100)	90 (100)		
Hypomania				
Yes	8 (2.6)	0	FET=1.24	0.27
No	302 (97.4)	90 (100)		
Dysthymia				
Yes	50 (16.1)	7 (7.8)	3.98	0.046*
No	260 (83.9)	83 (92.2)		
Psychotic disorders				
Yes	3 (1.0)	0	FET=0.06	0.81
No	307 (99.0)	90 (100)		
Substance use disorder				
Yes	170 (54.8)	13 (14.4)	45.86	<0.001**
No	140 (45.2)	77 (85.6)		
Types of substance misused				
Nicotine	157 (50.6)	13 (14.4)	*Z*=6.12	<0.001**
Alcohol	32 (10.3)	0	3.17	0.002**
THC	91 (29.4)	6 (6.7)	4.42	<0.001**
Tramadol	7 (2.3)	3 (3.3)	0.53	0.60
Opioid	2 (0.6)	0	2.38	0.017*
Other	2 (0.6)	0	2.38	0.017*
GAD				
Yes	170 (54.8)	8 (8.9)	59.63	<0.001**
No	140 (45.2)	82 (91.1)		
OCD				
Yes	7 (2.3)	3 (3.3)	FET=0.04	0.85
No	303 (97.7)	87 (96.7)		
PTSD				
Yes	0	0		
No	310 (100)	90 (100)	–	–
Panic D				
Yes	11 (3.5)	5 (5.6)	FET=0.30	0.58
No	299 (96.5)	85 (94.4)		

(Continued)

Table 4: (Continued)

Phobias				
Yes	22 (7.1)	11 (12.2)	2.42	0.12
No	288 (92.9)	79 (87.8)		

χ^2 test, χ^2 test; D: disorder; FET: Fisher exact test; GAD: generalized anxiety disorder; IAD: internet addiction disorder; OCD: obsessive–compulsive disorder; PTSD: posttraumatic stress disorder; SCID I: Structured Clinical Interview for DSM-IV; *Z, Z* score; *p* value more than 0.05 insignificant; **p* value less than 0.05 significant; ***p* value less than 0.001 highly significant.

Table 5: Relation between internet addiction and the Trait Meta Mood Scale among the studied faculty students

TMMS	IAD (*N*=310) [*n* (%)]	Control (*N*=90) [*n* (%)]	χ^2 test	*P* value
Attention to feelings				
Impaired	180 (58.1)	5 (5.6)	77.36	<0.001**
Not impaired	130 (41.9)	85 (94.4)		
Clarity to feelings				
Impaired	170 (54.8)	45 (50.0)	0.66	0.42
Not impaired	140 (45.2)	45 (50.0)		
Repair of mood				
Impaired	250 (80.6)	17 (18.9)	119.86	<0.001**
Not impaired	60 (19.4)	73 (81.1)		

χ^2 test, χ^2 test; IAD: internet addiction disorder; TMMS: Trait Meta Mood Scale; *p* value more than 0.05 insignificant; **p* value less than 0.05 significant; ***p* value less than 0.001 highly significant.

DISCUSSION

This was a comparative cross-sectional study that included 400 students from our faculties of Benha University. These faculties represent the three categories of studies, that is, the literature, science, and mathematical sectors of education. More than half of the students were females (52.5%). Overall, 72.5% of the students lived in rural areas, as the surroundings of Benha City is mainly rural. Most students were between 18 and 20 years of age (65%), whereas 35% of them were between 20 and 22 years of age. Moreover, 65% were in the first academic year and 35% of them were in the second academic year. The choice of students from early years was due to their probable higher rate of attendance, so they were easily accessible, and to rule out the use of the internet for things related to graduation as graduation projects, or searching for jobs, or further postgraduate studies.

The results of the Young IAT showed a mean±SD of 43.17±18.153, with minimum of 9 and maximum of 100. The results demonstrated that 90 (22.5%) students had no problems with abuse of the internet, 171 (42.75%) students had mild dependence, 127 (31.75%) students had moderate dependence, and only 12 (3%) students had severe dependence. These results agree with Saied *et al*., (2016), who conducted a study on Egyptian and Malaysian medical students in Tanta University using IAT to assess the severity of internet addiction. They found that average internet users (normal users and mild dependence) represented 64.1% of the students, whereas moderate dependence represented 33.2% of the students and severe dependence represented 2.7% of the students. However, internet addiction was mild in 42.3%, moderate in 29.9%, and severe in 1.8% in the study by Khayat *et al*., (2018). Moreover, these results also agree with Kamal and Mosallem (2013), who stated that the prevalence of problematic internet use (PIU) (identified as severe dependence by IAT) was 2.6%. This is supported by the presence of other studies, which stated that Middle Eastern prevalence of PIU (identified as severe dependence) varies between 1 and 12% (Canbaz *et al*., 2009).

However, our results and those of other Egyptian studies were not in line with a meta-analysis conducted in 2014 on 80 previous studies comprising 89 281 participants from 31 nations using IAT, which showed a global prevalence in the Middle East of 10.9% (Cheng and Li, 2014). The variation in the results between the Egyptian studies and other studies can be related to the different criteria used to identify PIU or internet addiction and whether it is referred only to severe dependence score obtained by IAT or whether moderate dependence and mild dependence were included too.

Regarding the presence of personality disorders among the students, 10.0% of those with IAD (*n*=310) had avoidant personality disorder and 10.0% had histrionic personality, with a statistically significant difference between the studied groups ($p<0.04$). Moreover, 1.9% had depressive personality, 6.1% had obsessive personality, 1.3% had passive aggression personality, 1.0% had paranoid personality, 1.0% had dependent personality,

6.7% had borderline personality, and 7.1% had antisocial personality. Avoidant personalities probably tend to hide away, and thus they can be more secure in front of a screen rather than interact with the outside people. Moreover, the increase in comorbid histrionic personality with IAD could be due to their tendency to follow fashion and celebrities on social media and copy these trends more than other types of personality disorder. However, individuals with cluster C personality disorders might not feel able to play part in real life interaction owing to their shyness and insecurity, thus engage in internet usage to interact easier with the real world. Moreover, on one hand, previous research suggested that personality disorders had no meaningful relationship with IAD or that personality disorders had a low association with IAD (Astarini and Yudiarso, 2020). On the other hand, there was a study that examined the association of IAD and personality disorders in a general population-based sample and deduced that the rate of personality disorders among participants with IAD was found to be 29.6 and 9.3% among participants without IAD (Aoud *et al*., 2022).

SCID I revealed that there was a highly statistically significant difference regarding suicidal ideas between the studied groups (p<0.001). This finding is congruent with the results of Cheng *et al*., (2018), who reported that individuals with internet addiction had significantly higher rates of suicidal ideation, planning, and attempts and higher severity of suicidal ideation. This comorbidity could be probably owing to the common neurobiological and genetic factors, which is supported by the study of Carballo *et al*., (2008).

Insomnia was present in 61.3% of students with IAD and in 25.6% of those without. There was a highly statistically significant difference between the studied groups regarding the absence of insomnia (p<0.001). This finding is congruent with the result of Khayat *et al*., (2018), who reported that poor sleep quality was found in 54.4% of the participants, whereas a significant correlation was found between sleep quality and internet addiction. In the current research, insomnia may be present owing to the long hours these students spend on the internet and the continued search on social media and information browsers at night, especially as there is a belief that the internet quality is better at night. Moreover, maybe the sleep was interrupted owing to the need to see the alerts and notifications as soon as they pop, or owing to the caffeine and smoking intake, which affects the sleep quality.

Regarding depression among students with IAD, 32.2% had mild depression, 19.7% moderate depression, and 1.3% had severe depression, whereas in control students, 17.8% had mild, 2.2% moderate, and 1.1% severe depression. A statistically significant difference was found between the studied groups regarding depression (p<0.001). Ho *et al*., (2014) published a meta-analysis and found that the global prevalence of depression among people with IAD was 26.3% (95% confidence interval: 17.6–37.4%) and the risk to develop depression was 2.77 times higher than the general population worldwide. Puri *et al*., (2013) found a significant correlation between internet addiction and psychological symptoms, proving the relation between depression, loneliness, and self-esteem and internet addiction. Moreover, Morrison and Gore (2010) believe that 'internet addicts' had a higher incidence of moderate to severe depression than nonaddicted users. On the contrary, Kraut *et al*., (2002) found that communication through computers weakens social influence owing to the absence of nonverbal behaviors, such as talking in the headset, speaking loudly, staring, touching, and gesturing. The disappearance of facial expression, voice inflection, and eye contact makes electronic communication less threatening, thereby helping the depressed patients to overcome the initial intimidation in meeting and awkwardness and speaking with others.

Substance use disorder was present in 54.8% in students with IAD versus 14.4% in those without IAD, with a highly statistically significant difference between the studied groups (p<0.001). Nicotine was the most used substance, as 50.6% with IAD were smoking and was present in 14.4% of those with no IAD, with a highly significant difference (p<0.001). This high occurrence of smoking may be owing to its easy availability and buying. Smoking was followed by THC (Tetrahydrocannabinol) (29.4%.3), alcohol dependence (10.3%), tramadol abuse (2.3%), opioid dependence (0.6%), and other substance abuse (0.6%). Moreover, they were used much less among the noninternet addict group. This can be explained by the fact that usually one does not get addicted to one substance or behavior only and that the comorbidity is usually high. This explanation is supported by Ko *et al*., (2009), who believed the reason behind this is that individuals with internet addiction and substance addiction may also share similar vulnerable brain regions including dorsolateral and orbitofrontal cortices. Sussman *et al*., (2014) found a 23% co-occurrence of two or more addictions. Moreover, Morioka *et al*., (2016) held a study to clarify the association between smoking and PIU among Japanese adolescents, where internet addiction was significantly higher among students who smoked. Similar results were obtained in a study on Turkish adolescents (Seyrek *et al*., 2017).

Regarding GAD among students, it was recorded that 54.8% with IAD experienced GAD versus 8.9% of the control students, with a very highly statistically significant difference (p<0.001). Maybe this highly statistically significant difference is owing to that excessive internet use causes this high anxiety of abandonment due to the

comparisons or the feeling of inadequacy. This was proven by the result of the research done by Cai *et al*., (2021), who found that internet addiction is associated with a range of negative health outcomes including poor mental health, anxiety, and depression. This result was congruent with the study of Tsitsika *et al*., (2016), who reported that of 2006 patients, 181 (9.0%) had moderate to severe PIU. It was found that attention-deficit hyperactivity disorder and social anxiety disorder were associated with high PIU scores in young participants (age≤25), whereas GAD and obsessive–compulsive disorder were associated with high PIU scores in the older participants.

On the contrary, a survey of 1258 students conducted at five universities in Japan estimated that some factors like female sex, older age, depression, anxiety traits, poor sleep quality, and attention-deficit hyperactivity disorder tendencies might predict PIU (Kitazawa *et al*., 2018).

Among students with IAD (n=310), 58.1% had impairment in attention to feelings, with a high statistically significant difference between the studied groups (p<0.001). Moreover, 54.8% experienced impairment in clarity to feelings and 80.6% showed impairment in repair of mood, with a highly statistically significant difference between the studied groups (p<0.001). This high presence of impairment in attention to mood, clarity of feelings, or its repair is perhaps owing to the overindulgent and preoccupation with the screen not with real individuals, so they do not practice real situations as often. Mahapatra and Sharma (2018) reported that individuals with alexithymia who have difficulty in identifying, expressing, and communicating emotions may overuse internet as a tool of social interaction to better regulate their emotions and to fulfill their unmet social needs. Similarly, an increasing body of evidence suggests that alexithymia may also play an essential role in the etiopathogenesis of addictive disorders. Based upon this study, substance use disorder in specific and all terms of behavioral addictions in general should be searched for among students with IAD. They also need to be thoroughly investigated in adolescents visiting psychiatry outpatient clinics.

CONCLUSION

This study emphasizes the high prevalence of internet addiction among young students (77.5%). Moreover, there was a highly statistically significant difference between internet-addicted students and nonaddicted students regarding suicidality, insomnia, depression, substance use disorders, and GAD and a significant difference regarding dysthymia and avoidant and histrionic personalities. Moreover, internet addiction students showed higher levels of inattention to mood and the inability to repair mood.

RECOMMENDATIONS

Specific awareness campaigns and programs for awareness and management of internet addiction should be established.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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