

Original Article

Prediction of Internet Gaming Disorder Based on Perceived Stress and Obsessive-Compulsive Disorder Among Male Students In Tehran

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Abstract

Background and Aim: The Internet has become an integral part of human life. One field that is dramatically expanding is internet gaming, which can be harmful to those who overplay. The aim of this study is to examine the correlation between internet gaming disorder, stress, and obsessive-compulsive disorder among high school students in Tehran.

Materials and Methods: This study used a descriptive survey-based data collection method. The research population consisted of all students who studied in Tehran during the research. The sample included 122 students who were selected by the convenient sampling method. The research instruments were the Internet Gaming Disorder Test-10 (IGDT-10), Perceived Stress Scale (PSS), and Obsessive Belief Questionnaire-Child Version (OBQ-CV). Descriptive statistics, Spearman's rank correlation coefficient, and multiple linear regression were used to analyze data..

Results: The results showed a significant correlation between IGD and perceived stress, with a correlation coefficient of 0.645 ($P < 0.01$). In contrast, there was a negative association between IGD and obsessional beliefs, but the correlation was not significant with a correlation coefficient of 0.014 and a significance level of 0.88 ($P < 0.01$). Furthermore, the impact of the predictor variables on the dependent variable is statistically accepted. Based on the R^2 coefficient of 0.457, this model can explain more than 47% of the variance in IGD. Additionally, perceived stress has a Beta coefficient of 0.663, which confirms the hypothesis that perceived stress predicts IGD positively ($P < 0.01$). In contrast, obsessional beliefs have a Beta coefficient of 0.123, which means they cannot significantly predict IGD.

Conclusion: It seems IGD is significantly related to perceived stress, and those with higher stress are more prone to IGD symptoms. Meanwhile, there is no correlation with obsessional beliefs. IGD appears to be more characterized by impulsivity than compulsivity. If the hallmark of behavioral addictions is the initial impulsivity followed by compulsivity, IGD may be more akin to an impulse-control disorder than a behavioral addiction.

Keywords: Anxiety; Cyberspace, Depression, Internet addiction, Medical students

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Introduction

The Internet has become an integral part of human life (1). To date, the use of the Internet for many people, especially students, plays a vital role in their daily lives for both educational and entertainment purposes (2). Despite the positive effects of the Internet, concerns about its harmful consequences and possible psychopathology are growing (3). Greater use of the Internet is associated with some social and psychological maladaptive variables such as a decrease in social interaction leading to loneliness (4), lower self-esteem, lower life satisfaction (5), sensation seeking (6), poor mental health (7, 8), dysfunctional family (7) and enhance anxiety and stress (9). Internet addiction develops academic, social, family, psychological, and physical problems that cause mood and emotional change substantially (10). One of the areas that is growing is Internet gambling, which can be harmful to those who overplay (11). Studies in this field indicate that overplay may lead to behavioral problems, social isolation, academic weakness, aggression, and psychological disorders (12, 13). To emphasize the importance of this issue, the World Health Organization (WHO) (14) and American Psychiatric Association (APA) (15) introduced Gaming Disorder (GD) and Internet Gaming Disorder (IGD), respectively, in their last editions.

Internet gaming disorder, as a behavioral addiction, can impact negatively on several areas that are considered to be possible mental disorders. Worldwide prevalence ranges from 0.3 to 12%, and public health concerns are increasing, particularly in Asia. Research has suggested that COVID-19 and behavioral addictions (including IGD) might constitute two pandemics that may intersect and represent a significant public health threat (16). In Hong Kong, the hours spent on internet leisure activities increased from 0.87 h/d before the COVID-19 outbreak to 2.28 h/d average after the outbreak

among adolescents (17). Higher levels of engagement in internet games may lead to a higher risk of IGD (18). It was also reported that IGD is associated with psychiatric symptoms in addition to cognitive and behavioral symptoms similar to those of substance use disorder, including ADHD, depression, anxiety, and somatic symptoms. The high comorbidity of emotional symptoms suggests that people with this disorder may use gaming to escape emotional trauma (19).

Behavioral addiction is not caused by drug use but by behaviors that are initially rewarded and later become repetitive, harmful, and obsessive. Behavioral addiction is defined for the first time in DSM-5 as a compulsive behavior with negative consequences. Gambling disorder is now listed as a behavioral addiction alongside substance-related disorders in DSM-5 (20). Behavioral addiction usually starts as a maladaptive mechanism to cope with stress. During the abstinence period, stress may enhance the memories of addiction; consequently, the risk of returning to addictive behaviors increases after a period of abstinence (21). Internet gaming disorder will also be included in the same category if confirmed.

According to DSM-5, psychological disorders like major depression, ADHD, and obsessive-compulsive disorder could be comorbid with IGD (22). Ko et al. indicated that those who are higher in generalized anxiety disorder (GAD) are more likely to have IGD symptoms (23). Another research in Africa illustrates that IGD is associated with sleep disorders (24). Moreover, Meng et al. found that those with higher IGD symptoms have altered brain structure (25). Furthermore, another study shows that people with IGD have maladaptive functioning and stress coping through gaming, higher perceived stress and depression, and lower coping difficulties and flexibility (26). Another study by Andreetta et al. showed that higher stress is a risk factor for IGD and that gender and culture would influence this association (27). In a study on university students, Jaafar et al. found that 52.8% met the IGD criteria, and age, gender, and stress were significantly

associated with it, but academic performance, depression, and anxiety do not appear as significant predictors. (28).

Due to the large number of students who play online video games in Iran, on the one hand, and the limited study of this field in our country, on the other hand, this study examined the correlation between internet gaming disorder, stress, and obsessive-compulsive disorder among high school students in Tehran.

Methods

This study used a descriptive survey-based data collection method. The research population consists of all the high school students who studied in Tehran during the research. The sample was 122 students who were selected by the convenient sampling method. They should have access to computers or cell phones and the internet. Research inclusion criteria included being a high school student in Tehran city, having access to the internet, and filling out the questionnaires. The exclusion criteria included physical or mental conditions that could affect the researcher's judgment during the research procedure. The questionnaires were designed online and sent to students through social media.

The questionnaires began with instructions and demographic questions (including age and gender), followed by three questionnaires to collect data.

Research instruments

Internet gaming disorder test-10 (IGDT-10): It is a 10-question test developed by Király et al. in 2017 (29) that measures nine diagnostic criteria for internet gaming disorder on a three-point Likert scale, ranging from 0 (never) to 2 (often). Scores range from 0 to 20, with higher scores indicating more IGD symptoms. In 2018, in a cross-cultural study including Iran, Cronbach's alpha coefficient was reported to be 0.62 to 0.75 (30).

Perceived Stress Scale (PSS): This 14-item scale developed by Cohen et al. in 1983 measures perceived stress in the past month. It assesses thoughts and feelings about stressful events, coping control, coping with stress, and experiencing stress (31) with a multipoint Likert scale ranging from 0 (never) to 4 (many times). Scores range from 0 to 56. The Cronbach's alpha coefficient was 0.84 in the Iranian

population (32) and 0.86 in the Japanese population in the study by Mimura et al. (33).

Obsessive Belief Questionnaire-Child Version (OBQ-CV): This questionnaire was developed by Coles et al. in 2010 for 8 to 18-year-olds. It is a simplified version of the Obsessive Belief Questionnaire (OBQ). It has 44 questions on a multi-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). It has been reported to have a Cronbach's alpha coefficient of 0.96 (34). Six questions were omitted from the Farsi form due to their inappropriate psychometric properties, with a Cronbach's alpha coefficient of 0.79 reported for the Iranian population (35).

Descriptive statistics, Spearman's rank correlation coefficient, and SPSS 26 were used to analyze the data.

Results

The mean age of participants was 13.39 with a standard deviation of 1.02, and the age range was 8-15. The results of descriptive statistics of variables are shown in Table 1. The Kolmogorov-Smirnov test was used to determine the normality of the research variables. This test shows that the values obtained were less than 0.05 and that the distribution of the scores was not normal. Therefore, Spearman's rank correlation coefficient was used to examine the correlation between the variables. Table 2 shows the correlation between Internet gaming disorder (IGD), perceived stress, and obsessional beliefs. The table shows a significant correlation between IGD and perceived stress, with a correlation coefficient of 0.645 ($P<0.01$). It means that IGD symptoms are more likely to occur when perceived stress is higher. In contrast, Table 2 shows a negative association between IGD and obsessional beliefs, but the correlation is not significant, with a correlation coefficient of 0.014 and a significance level of 0.88 ($P<0.01$). Table 3 shows the ANOVA, which assesses the statistical validity of the model. Given the statistical significance of $P<0.01$, the effect of the predictor variables on the dependent variable is statistically acceptable. Based on the R^2 coefficient of 0.457, this model can explain more than 47% of the variance in IGD. In addition, perceived stress has a beta coefficient of 0.663, which confirms the hypothesis that perceived stress positively predicts IGD ($P<0.01$). In contrast, obsessional beliefs have a beta coefficient of 0.123, meaning they do not significantly predict IGD.

Table 1. Descriptive statistics of variables

variables	Mean	Standard deviation
Internet Gaming Disorder	7.35	4.51
Perceived Stress	25.14	7.13
Obsessional Beliefs	132.41	24.82

Table 2. Spearman's rank correlation coefficient of variables

Variables	Internet Gaming Disorder	Perceived Stress	Obsessional Beliefs
Internet Gaming Disorder	1		
Perceived Stress	0.645** (0.0)	1	
Obsessional Beliefs	0.014 (0.88)	0.013 (0.89)	1

Table 3. Results of simultaneous multiple regression analysis and regression coefficients to explain internet gaming disorder based on perceived stress and obsessive beliefs

	Sum of squares	df	Mean square	F	Sig	R	R ²
Regression	1127.495	2	563.748	49.997	0.001	0.676	0.457
Residual	1342.349	119	11.280				
Total	2469.844	121					
	B		Beta		t		
Constant	-6.168				-3.141		
Perceived Stress	0.420		0.663		9.805		0.001
Obsessional Beliefs	0.022		0.123		1.818		0.072

Discussion

This study aimed to investigate the relationship between IGD and perceived stress and obsessional beliefs. Spearman's rank correlation coefficient showed that IGD was significantly related to perceived stress. The result is consistent with Zemestani et al. (36) and Lin et al. (26). Davis' theory (37) of inconsistent cognitions could explain this result. A different perspective on the self and the world in the real world and the game world could be recognized as a stressor. Online gaming may help them escape from challenging situations or stressors. Online gaming may help individuals satisfy their need for psychological escape when faced with challenges and/or stressful situations (38). Other possible explanations are that perceived stress may influence (a) cognitive processes by seeking immediate rewards despite long-term negative consequences, (b) motivation-seeking to reduce stress and/or experience pleasure (39), and (c) risky decision-making, which is associated with IGD (23). Highly stressed online gamers may use online gaming to relieve perceived life stress (40) or react with withdrawal symptoms when exposed to game-related cues (39).

Furthermore, as can be seen in Table 2, there is no significant correlation between IGD and obsessional

beliefs. This result contradicts Pearcy et al. (41) but agrees with Starcevic and Aboujaoude (42). It might be as individuals with IGD may resemble those with OCD to some extent. Both are preoccupied with specific thoughts and have urges to act in response to these thoughts. However, people with IGD are preoccupied with online gaming activities. However, people with OCD are preoccupied with a variety of problems, such as doubt, contamination, harm and safety, the appearance and arrangement of objects, the meaning of specific numbers, and aggressive or sexual urges. Although preoccupations with online gaming in IGD, like preoccupations with OCD, may be accompanied by anxiety, they are not usually experienced as distressing, intrusive, unwanted, or contrary to one's personality in the way that preoccupations with OCD often are.

The need to play online games in IGD is not analogous to the need to reduce anxiety, prevent harm, avert disaster, or feel "just right," which is the usual function of compulsions and avoidance behaviors in OCD. Although the urges to play online games in IGD and to perform compulsions in OCD may be experienced as similarly compelling, the former are typically engaged in without resistance, whereas the latter is usually, though not always, resisted.

Therefore, there are significant phenomenological differences between IGD and OCD, and there is little

support for the notion that IGD is a condition related to OCD from the perspective of descriptive psychopathology (42). In addition to the above, both OCD and IGD have been associated with impulsivity and impaired response inhibition using functional neuroimaging and behavioral and electrophysiological paradigms (43-48). However, a recent study using a Go/NoGo task with electroencephalographic recordings reported differences in altered response inhibition patterns between individuals with IGD and OCD: whereas a prolonged NoGo-N2 latency indicated impulsivity in IGD, a reduced NoGo-N2 amplitude indicated compulsivity in OCD (49). This finding, which needs to be replicated, suggests that increased impulsivity may be a key feature that distinguishes IGD from OCD; this may renew interest in one of the original conceptualizations of Internet-related psychopathology as disorders of impulse control (50). The frequent co-occurrence of two psychopathological conditions may also suggest that they share underlying pathophysiological mechanisms and are closely related. If IGD and OCD are indeed related, they would likely co-occur more frequently than with other disorders. However, research into the co-occurrence of IGD remains limited, partly due to the relatively recent establishment of diagnostic criteria for IGD. Another challenge is that previous studies of broader constructs such as 'internet addiction' or problematic internet use have tended to include IGD and its precursors (e.g., online gaming addiction or problematic online video game use). Consequently, results from studies of Internet addiction or problematic Internet use should be interpreted with caution when estimating co-occurrence rates of disorders with IGD (51). There are some limitations to reporting the results of this study. First, this is a correlational study, and caution is necessary while reporting causal relationships. In addition, due to the lack of a longitudinal study, the patterns of change in the variables are not straightforward. In addition, due to the coronavirus pandemic, it was not possible for this study to have more and more diverse samples or to supervise the completion of the questionnaire. It is suggested that casual and longitudinal studies with a larger sample should be carried out in the future.

Conclusion

It seems that IGD is significantly related to perceived stress, and those with higher stress are more prone to IGD symptoms. However, there is no association with obsessional beliefs.

Given the growing appreciation of the neurobiological overlap between compulsivity and impulsivity (52, 53), a tentative conclusion could be made about the place of IGD in the yin and yang dynamics of compulsivity and impulsivity. Both clinical observations and neurobiological studies support the notion that IGD is more closely related to impulsivity than compulsivity. In other words, people with IGD appear to be more driven by rewards and immediate gratification, which impairs their decision-making and tends to ignore the negative long-term consequences of gambling; on the other hand, these people appear to be much less likely to gamble to avoid or prevent some of the negative impacts of not gambling, such as withdrawal symptoms.

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Conflict of Interest

The authors declare no conflict of interest.

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