

**ORIGINAL ARTICLE:**

**Relationship between Internet Gaming Addiction and Attention Deficit Hyperactivity Disorder's  
Symptoms in Young Adults**

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**ABSTRACT**

**OBJECTIVE**

To explore the relationship between video gaming addiction and Attention Deficit Hyperactivity Disorder (ADHD) symptoms among young adults.

**STUDY DESIGN**

A correlational cross-sectional design.

**PLACE & DURATION OF STUDY**

This study was conducted at different universities of Sialkot, Pakistan from February, 2024 to July, 2024.

**SUBJECTS AND METHODS**

A purposive sample of 200 young adults with internet gaming addiction was taken. A self-developed demographic sheet was administered along with the Internet Gaming Disorder Scale Short-Form to measure internet gaming addiction. Attention deficit/ hyperactivity disorder's symptoms were measured using Adult ADHD Self-Report Scale (ASRS-v1.1 Symptom Checklist). For the analysis of data, descriptive statistics, Pearson Product Moment Correlation Coefficient and regression were applied using SPSS v25.0 software.

**RESULTS**

Study found a significant positive relationship between IGD (Internet Gaming Disorder Scale) score and ADHD (Attention deficit/ hyperactivity disorder) symptoms in young adults.

**CONCLUSION**

This research highlights the comorbidity of psychopathology such as ADHD, in video gaming addicts, suggesting that individuals with higher internet gaming addiction are more likely to exhibit signs of ADHD symptoms.

**KEYWORDS**

IGD, ADHD, Young Adults, Internet Gaming Addiction

**INTRODUCTION**

In the modern world, digital technology is evolving rapidly, offering numerous benefits. However, its excessive presence in nearly all aspects of life also poses significant threats to mental health. One such issue is internet gaming addiction. Internet gaming has not only replaced physical sports but has also become a passionate pursuit among emerging adults <sup>1</sup>.

Internet gaming addiction, also known as video gaming addiction is defined as a serious dependence over gaming, resulting in increased gaming time and negative effects in a variety of areas of one's life. DSM-5 defines gaming disorder as a 12-month period of continuous and intermittent contribution in online or offline computerized video gaming. The highlights of Internet Gaming Disorder (IGD) seemed to be mostly same across the two classifications, with both stressing a loss of control over gaming, continued use of videogames regardless danger, and significant disablement in everyday life <sup>2</sup>.

Internet gaming addiction has the potential to cause various mental health issues; one of them is Attention deficit hyperactivity disorder (ADHD). It is a threat to addiction which may increase the likelihood of engaging in high-risk activities<sup>3</sup>. The bulk of previous study has shown that people who spend two hours each day in front of screens (such as TVs, computers, phones and so on) have difficulties in maintaining attention to the tasks<sup>4</sup>.

A study conducted a comprehensive systematic review and meta-analysis to explore the relationship between symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) and Internet Gaming Disorder (IGD). Their findings revealed a significant positive association between the two conditions. Specifically, individuals displaying ADHD symptoms were more likely to exhibit signs of problematic gaming behavior. The study emphasized that both inattention and hyperactivity/impulsivity dimensions of ADHD contribute to the development and severity of gaming-related issues. These results suggest that ADHD may act as a potential risk factor for Internet gaming addiction<sup>5</sup>.

Adolescents and young adults are especially vulnerable to the addictive nature of video games, often dedicating excessive hours to gameplay. This overuse can lead to significant disruptions in various areas of life, including family dynamics, academic achievement, and social functioning that tend to be more severe among those with ADHD. While engaging in online gaming with friends has been linked to improvements in attention, visual-spatial processing, and working memory, such cognitive benefits are not consistently evident in individuals with ADHD who play games casually<sup>6</sup>.

Individuals diagnosed with Attention deficit hyperactivity disorder (ADHD) are significantly more prone to developing problematic gaming behaviors regardless of the type or genre of games they tend to prefer<sup>7</sup>. This heightened susceptibility is often attributed to core ADHD-related difficulties, such as poor time management, impulsivity, challenges in organizing tasks, and a tendency to hyper-focus on stimulating activities like video games. These characteristics may cause individuals with ADHD to lose track of time, prioritize gaming over responsibilities, and find it difficult to disengage from gaming sessions eventually leading to addictive patterns<sup>8</sup>.

This study fills the gap related to the effects of internet gaming addiction in Pakistan, especially in Sialkot. It will help teachers, mental health professionals and parents and may enhance the mental health of emerging adults.

## **SUBJECTS AND METHODS**

### **Participants**

This cross-sectional study was conducted over a period of 6 months, from February 2024 to July 2024, involving adults from different universities of Sialkot, Pakistan. Ethical approval was obtained from the Ethical Review Committee prior to the commencement of the study.

A random sample of 200 young adults, aged between 18 and 27 years, was selected for the study. The sample comprised of individuals with Internet Gaming Addiction screened out through Internet Gaming Disorder Scale-Short form, based on DSM-5 criteria. All participants had a minimum educational qualification of matriculation and represented diverse socio-economic backgrounds, including lower, middle, and upper classes. They also came from both nuclear and joint family systems. Full informed consent was obtained from each participant prior to their involvement in the study.

## **Instruments**

A demographic sheet was administered to collect demographic related data. Additionally, two standardized questionnaires were also employed to measure model variables.

Internet Gaming Disorder Scale- Short Form was used to measure gaming addiction. This scale has 9 items, defining internet gaming addiction according to the DSM-V criteria. All items are rated on five-point Likert Scale from Never to Very often. The reliability of this scale was ( $\alpha=0.91$ )<sup>9</sup>. While ADHD was measured through Adult ADHD Self Report Scale Symptom Checklist. This is a five-point Likert type scale (from 1 never to 5 very often) with 18 items. This instrument is used to check the symptoms of ADHD in adults. It has two parts; part-A & B. Part-A has 6 items that reflect the greater vulnerability of disorder and part-B has 12 items that provide some extra cues about the disorder. The reliability of this scale was ( $\alpha=0.79$ ) and the internal consistency was ( $\alpha=0.80$ ).<sup>10</sup>

## **Procedure**

After obtaining ethical approval from competent authority and departmental approval from different institutions, students were approached individually and informed consent was obtained. Participants were selected randomly based on their availability on the day of data collection. Prior to administering the questionnaire, the purpose of the study was clearly explained. The questionnaire was then introduced in a simple, clear manner. Participants were encouraged to ask questions and were assured that their information would only be used for academic and research purposes and would not be disclosed to anyone. The questionnaire was administered only after the researcher was confident that the participant fully understood the questions and was aware of their right to withdraw from the study at any point without any consequences.

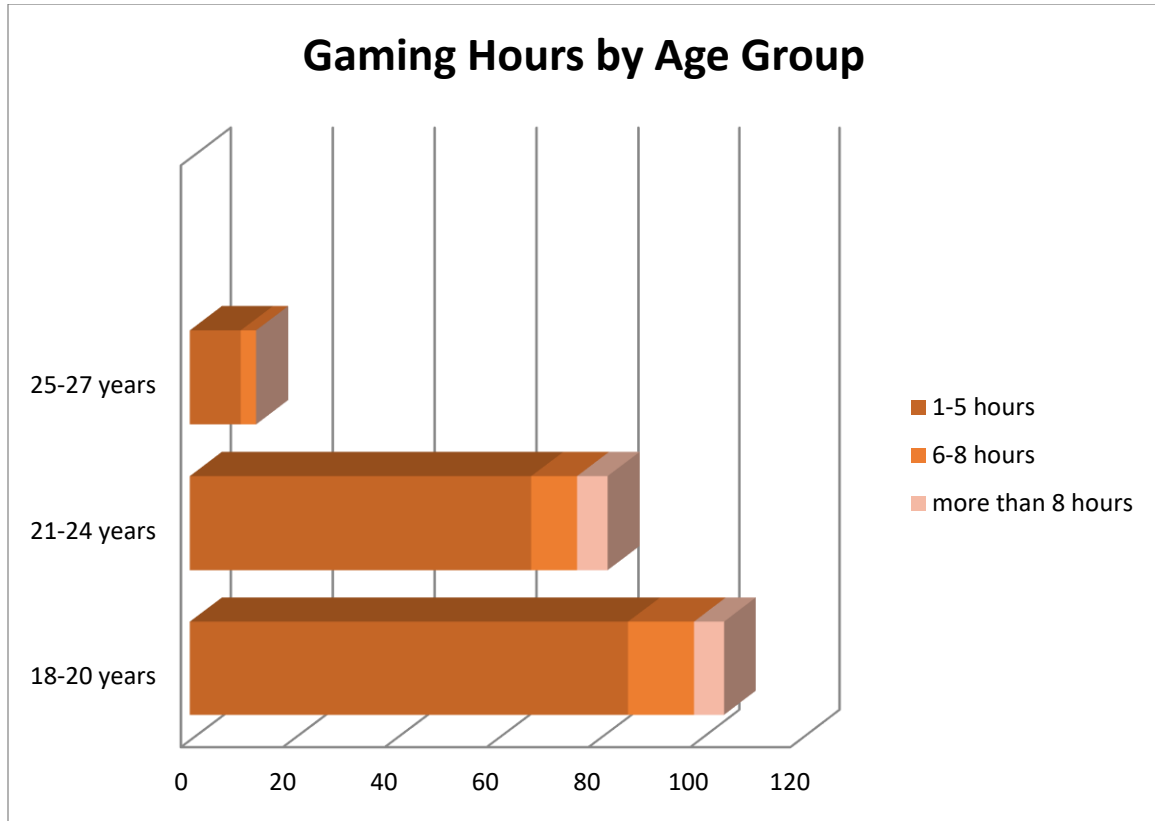
For statistical analysis, descriptive statistics, Pearson product moment correlation coefficient model and regression model were analyzed through (SPSS-25). Percentages, means and standard deviations of demographic variables and characteristics were evaluated by using descriptive statistics. Further, to investigate the relationship between IGD and model variable (ADHD) correlation and regression model was applied.

## **RESULTS**

A total of 200 young adults participated in the study, with their ages ranging from 18 to 27 years. The sample included 136 males (68%) and 64 females (32%). In terms of age distribution, 105 participants (52.5%) were between 18 and 20 years old, 82 (41%) were between 21 and 24 years, and 13 (6.5%) were aged between 25 and 27 years. Among these, 82 participants (20.4) were employed and 318 participants (79.6) were unemployed. In terms of gaming duration, 163 (81.5%) spent 1 to 5 hours on gaming, 25 (12.5%) spent 6 to 8 hours, and 12 (6.0%) spent more than 8 hours daily. As for the overall duration of game involvement, 5 (2.5%) had been playing for less than a year, while 195 (97.5%) had been gaming for a year or more.

### **Figure 01**

#### **Frequency of Gaming hours spent with respect to Age**



**Table 1**

**Pearson Product Moment Coefficient of Correlation analysis of model variables**

| <i>Variables</i>                                   | <i>1</i> | <i>2</i> |
|----------------------------------------------------|----------|----------|
| <b>1. Internet Gaming Disorder</b>                 | -        | .609**   |
| <b>2. Attention Deficit Hyperactivity Disorder</b> |          | -        |

*Note: N=200 \*\*  $p < .001$*

Correlational analysis was performed to find the association between two variables. Findings showed that video gaming addiction has a significant positive relationship with ADHD ( $r=.609^{**}$ ) in young adults.

**Table 2**

**Linear Regression Analysis of ADHD and IGD**

| <i>Variable</i> | <i>B</i> | <i>SE</i> | <i>B</i> | <i>T</i> | <i>p</i> | <i>95% CI</i>  |
|-----------------|----------|-----------|----------|----------|----------|----------------|
| <b>Constant</b> | .753     | 1.249     |          | .603     | .000     | [15.21, 17.24] |

**ADHD** .416 .027 .609\*\* 15.329 .000 [.52, .65]

*Note.* N=200, CI= Confidence Interval, ADHD= Attention Deficit/Hyperactivity Disorder

a. Dependent Variable: ADHD

\*\* P<0.01

Results revealed that IGD contributes to be significant predictor of ADHD ( $\Delta R^2 = .60$ ,  $p < 0.01$ ), indicating that for every one-unit increase in IGD score, the outcome variable increases by 0.416 units.

**Table 3**

**Pearson Product Moment Coefficient of Correlation analysis of sub-scales of ADHD and Internet Gaming Disorder.**

| <i>Variables</i>                         | <i>1</i> | <i>2</i> | <i>3</i> |
|------------------------------------------|----------|----------|----------|
| <b>1. Internet Gaming Disorder (IGD)</b> | -        | .507**   | .605**   |
| <b>2. ADHD (Part-A)</b>                  |          | -        | .748**   |
| <b>3. ADHD (Part-B)</b>                  |          |          | -        |

*Note:* N= 200 \*\* $p < .001$

From the above table, it is concluded that there is a highly significant positive relationship among IGD and both the symptoms of ADHD.

## DISCUSSION

This study reveals a positive and significant relationship between symptoms of Attention-Deficit/Hyperactivity Disorder (ADHD) and Internet Gaming Disorder (IGD) in young adults. Individuals with ADHD are more likely to engage in excessive gaming, and this behavior may escalate into addiction due to the overlapping characteristics of both conditions, including impulsivity, poor attention regulation, and a heightened need for stimulation.

According to Hayes and Milyavskaya, individuals with ADHD are especially drawn to video games because of their fast-paced, reward-based structure, which aligns with their neurocognitive profile. The immediate feedback and sensory stimulation provided by video games temporarily fulfill the cognitive and emotional needs of individuals with ADHD, making gaming more reinforcing and harder to control<sup>11</sup>. Similarly, another study found that adolescents with ADHD scored significantly higher on measures of problematic gaming compared to those without ADHD, indicating a clear comorbidity between the two<sup>12</sup>.

This positive relationship is further explained through neurobiological mechanisms. Both ADHD and IGD are associated with dopaminergic dysfunction—particularly involving the brain's reward system. Gaming artificially stimulates dopamine release, providing short-term pleasure and focus, which individuals with ADHD may struggle to achieve through typical daily activities<sup>12</sup>. As a result, gaming becomes a form of self-medication or emotional regulation, reinforcing repeated and prolonged use.

A meta-analysis concluded that higher ADHD symptom severity, particularly impulsivity and inattention, significantly predicts greater vulnerability to gaming disorder. The study emphasized that ADHD is not just a correlating factor but a potential risk factor for the development of IGA. This pattern was observed across different age groups, game types, and cultural backgrounds, indicating the robustness of the association <sup>13</sup>.

It is also reported that up to 23% of frequent gamers show addiction-like symptoms, and this percentage is notably higher in individuals diagnosed with ADHD. Their findings support the idea that ADHD-related cognitive difficulties create a context where gaming easily turns into compulsive use <sup>4</sup>.

Although some scholars acknowledge potential cognitive benefits of structured gaming such as improved attention or working memory, these benefits do not counteract the risks in ADHD populations. In fact, as noted 2024, these cognitive gains are often absent in casual or excessive gamers with ADHD, where gaming is not guided or balanced, but compulsive and emotionally driven <sup>8</sup>.

In sum, the positive correlation between ADHD and Internet Gaming Addiction is now well-established in current literature. Individuals with ADHD are at higher risk of developing IGA due to both neurobiological predispositions and behavioral vulnerabilities. This relationship underlines the importance of early assessment, preventive strategies, and targeted interventions for at-risk youth. However, this study also holds some limitations such as data was collected specifically from the universities and colleges, only students were part of the study. So, results cannot be generalized on all emerging adults.

## **CONCLUSION**

It is concluded that internet gaming is a very common phenomenon in emerging adults, and it is causing serious mental health problems such as ADHD, specifically in Asian countries.

## **RECOMMENDATIONS**

In future studies, the data may not only be limited to the colleges and universities only and may include other factors, i.e. depression, anxiety, stress and aggression etc.

## **CONFLICT OF INTEREST**

The authors declare no competing interest.

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## **DISCLOSURE**

This article has been written as a part of the thesis for 'Bachelors in Psychology' at GCWUS.

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