

# Internet Gaming Disorder: Investigating a proposed non-substance related addiction among medical undergraduates-a cross-sectional study

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## Abstract

**Background:** Addiction to gaming is similar in many ways to other types of addiction and over the last decade, the concept of pathological involvement with computer or video games has been demonstrated by numerous studies. Hence, the APA considers this concept to be valid enough for inclusion in the DSM-5 as an issue worth further study. It was aimed to study the prevalence of Internet Gaming Disorder (IGD) among medical undergraduate students in the present study.

**Methods:** A Cross-sectional study with written informed consent from participants was carried out to investigate IGD among 325 undergraduate medical (MBBS) students in a medical college after approval from Institutional Ethics Committee. Socio-demographic data was collected using self-administered semi-structured questionnaire and further assessment was done using Internet Gaming Disorder Test (IGD-20 Test) and Internet Gaming Disorder Scale-Short-Form (IGDS9-SF). Data were analyzed using appropriate statistical tests.

**Results:** IGD was present in 8 (2.5%) students of which 6 (75%) were male and all were single. Seven (87.5%) study participants having IGD had average academic performance and all such participants had played internet games in the last month. Multimedia Online Role Playing Games (MMORPG) were played by 50% participants having IGD.

**Conclusion:** IGD is a common behavioral addiction among medical students which is associated with poor social life and declining academic performance. MMORPG are the most commonly played games among such gamers.

**Keywords:** Addictive; Prevalence; Multimedia; Video Games; Internet.

## Introduction

The Internet Gaming Disorder (IGD) refers to prolonged and excessive internet gaming that result in a cluster of behavioural and cognitive symptoms, including progressive loss of control over gaming, tolerance, and withdrawal symptoms which are similar to the symptoms of substance use disorders.<sup>[1]</sup>

Besides Gambling disorder, IGD has been identified by the American Psychiatric Association (APA) as a potential non substance related addiction valid enough to merit inclusion in future revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM).<sup>[2]</sup>

## Proposed DSM-5 criteria for Internet Gaming Disorder:<sup>[1]</sup>

Persistent and recurrent use of internet to engage in games, leading to clinically significant impairment or distress as indicated by five or more of the following in a 12-month period:

- I. **Preoccupation** with Internet games.
- II. **Tolerance**- the need to spend increasing amounts of time engaged in Internet games.
- III. **Withdrawal symptoms** when Internet gaming is taken away.
- IV. **Loss of control**- Unsuccessful attempts to control the participation in Internet games.

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- V. **Loss of interest** in previous hobbies and entertainment as a result of, and with the exception of, Internet games.
- VI. **Continued use** of Internet games despite knowledge of psychosocial problems.
- VII. **Mislead others-** Has deceived family members, therapists, or others regarding the amount of Internet gaming.
- VIII. **Use as escape-** Use of Internet games to escape or relieve a negative mood.
- IX. **Lost** a significant relationship, job, or educational or career opportunity due to internet gaming.<sup>[1]</sup>

Similar to substance-related disorders, individuals with IGD engage in gaming activities for 8–10 hours or more per day while neglecting other responsibilities. They may devote 30 hours or more per week to internet gaming. When prevented from internet gaming, they become agitated and angry. Family obligations & other obligations such as school or work are neglected in pursuit of internet games. Internet Gaming Disorder may lead to poor academic performance, job loss, or marriage failure. Students may show declining grades and eventually failure in school.<sup>[3]</sup>

A prospective study in which subjects were assigned to play Multimedia Online Role Playing Games (MMORPG) for 1 month, reported that as the number of hours spent playing such games increased, interference with real-life social activity and academic performance increased, and health & sleep quality decreased.<sup>[4]</sup>

Achab et al. in their study reported that subjects with IGD when compared to a control group without IGD had significantly more social, financial, marital, family, and/or professional impediments and had higher rates of tolerance phenomena. The authors also reported that the case group had higher rates of low mood, irritability and sleep difficulties.<sup>[5]</sup>

Wiemer-Hastings et al in their study suggested that addiction to online gaming may result in similar negative consequences as with substance use disorder.<sup>[6]</sup>

The prevalence of IGD is not clear due to use of varying questionnaires, criteria and thresholds for its study, but it is reported to be highest in Asian countries and in male adolescents 12–20 years of age. The point prevalence among adolescents (age 15–19 years) calculated using a threshold of five criteria was 8.4% for males and 4.5% for females.<sup>[1]</sup>

Thomas & Martin in 2010 assessed 2,031 secondary, college and university students for Internet Gaming

addiction and reported a prevalence of 5% for IGD among the study population.<sup>[7]</sup>

Jeong & Kim in 2010 assessed 600 middle and high school students for addiction to internet games and found that 2.2% of students had IGD.<sup>[8]</sup>

Research exploring IGD is at an early stage.<sup>[2]</sup> In the Indian subcontinent, understanding of this subject is in initial phase and there is a dearth of studies on Internet gaming addiction available from India.<sup>[9]</sup>

The present study is planned to investigate the prevalence of IGD among medical undergraduate students.

### Materials and Methods

A cross-sectional study aimed to know the prevalence of Internet Gaming Disorder (IGD) was carried out among undergraduate medical (MBBS) students in S. N. Medical College and HSK Hospital after approval from Institutional Ethics Committee. Sample size was calculated using open-epi version 2.3.1. At 95% Confidence level, taking 12% (Prevalence of Internet gaming disorder),<sup>[10]</sup> Sample size calculated was 323. Formula used for calculation-

Sample size  $n = [DEFF * Np(1-p)] / [(d2/Z21-\alpha/2 * (N-1) + p * (1-p))]$ . For statistical convenience, it was decided to have a sample size of 325. Written informed consent was taken from all study subjects, before enrolment in the study. Medical Undergraduate students who did not give informed consent were excluded. Students were randomly enrolled from all years of academic course and assurance was given that the information provided by them would be anonymous and confidential to avoid reporting bias. Data collection was done using self-administered semi-structured questionnaire consisting of questions about socio-demographic data and relevant information about internet gaming.

Further assessment was done by using following scales-

1. **Internet Gaming Disorder Test (IGD-20 Test):** IGD-20 Test is a self administered questionnaire including 20 items which reflect, nine DSM-5 criteria for IGD and is based on the theoretical framework of the components model of addiction<sup>[11]</sup>
2. **Internet Gaming Disorder Scale-Short-Form (IGDS9-SF):** IGDS9-SF is a brief self administered psychometric questionnaire comprising 9 items based on the DSM-5 diagnostic criteria for IGD.<sup>[12]</sup>

### Statistical Analysis:

Data were entered in MS-Excel and analyzed using SPSS V22. Percentages were used for representation of descriptive statistics. Chi-square was applied to find significance.  $P < 0.05$  was considered as statistically significant.

### Results

A total of 325 MBBS students were included in the study. Table 1 shows important characteristics of the study population with regard to internet gaming. Fifty three percent students were male, 89.2% were single, 44% had good academic performance (Figure 1), 57.5% played internet games in the last month and 1.5% spent 31-40 hours on internet gaming per week. MMORPG were the most common (24.6%) type of games played (Figure 2). 37.8% students played internet games for the first time at the age of 15-20 and mobile was the most commonly used device for internet gaming used by 69.5% study participants. IGD as indicated by IGD-20 score  $\geq 71$  and IGDS9-SF  $\geq 36$  was present in 8 (2.5%) students of which 6 (75%) were male and all were single. Seven (87.5%) study participants having IGD had average academic performance and all such participants had played internet games in the last month. Statistically significant association was found between IGD and academic performance in last exam with p value being 0.006. MMORPG were played by 50% participants having IGD.

**Table 1. Characteristics of the study population with regard to Internet Gaming**

Characteristics	Frequency	Percent
<b>Gender</b>		
Male	172	52.9%
Female	153	47.1%
<b>Relationship Status</b>		
Single	290	89.2%
In Relationship	34	10.5%
Married	1	.3%
<b>Academic performance in last exam</b>		
Excellent	53	16.3%
Good	143	44.0%
Average	110	33.8%
Below average	19	5.8%
<b>Internet gaming in last month</b>		
Yes	138	42.5%
No	187	57.5%
<b>Approximate no. of hours spent on internet gaming per week</b>		
<7	197	60.6%
8-14	27	8.3%
15-20	13	4.0%
21-30	11	3.4%
31-40	5	1.5%
>40	3	.9%
<b>Most played games</b>		
Multiplayer online role playing games	80	24.6%
Simulation games	5	1.5%
Adventure games	56	17.2%
Strategy games	17	5.2%
Online puzzles	41	12.6%
Action and Violence based games	16	4.9%
Combat games	10	3.1%
Sports based games	22	6.8%
Educational games	10	3.1%
Not played	68	20.9%
<b>Age at first time of internet gaming</b>		
10-15	118	36.3%
15-20	123	37.8%
20-25	18	5.5%
25-30	1	0.3%
Never played	65	20.0%
<b>Device most used for internet gaming</b>		
Mobile	226	69.5%
Computer	18	5.5%
Gaming console	13	4.0%
Others/Not played	68	21%

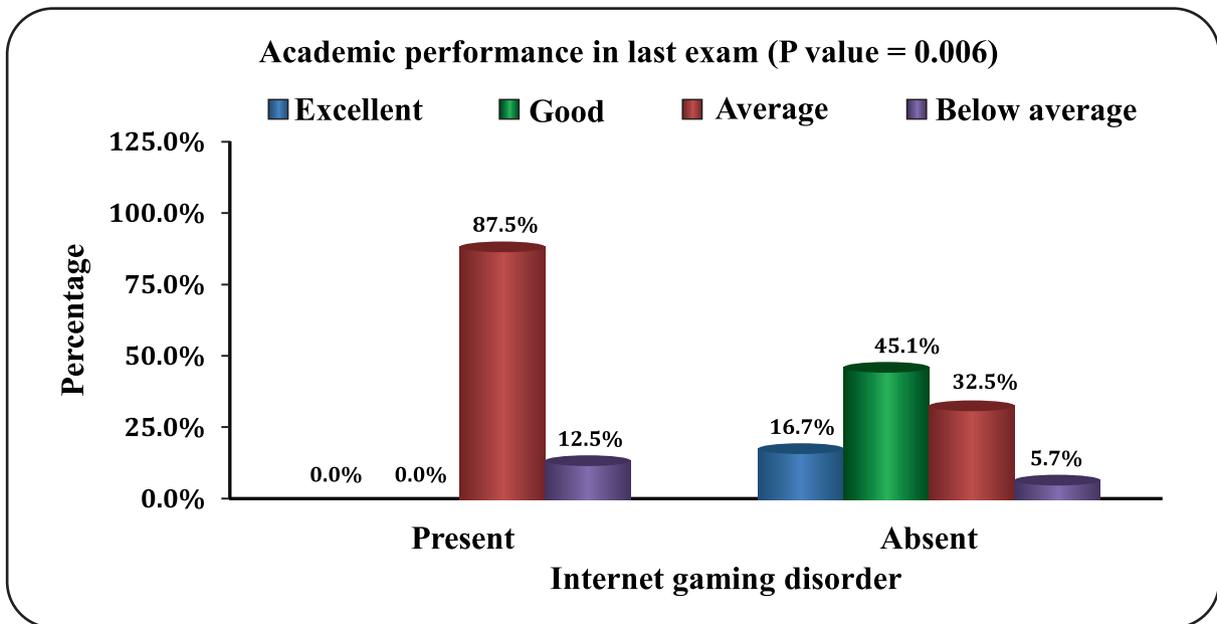


Figure 1. Academic performance in last exam and Internet Gaming Disorder

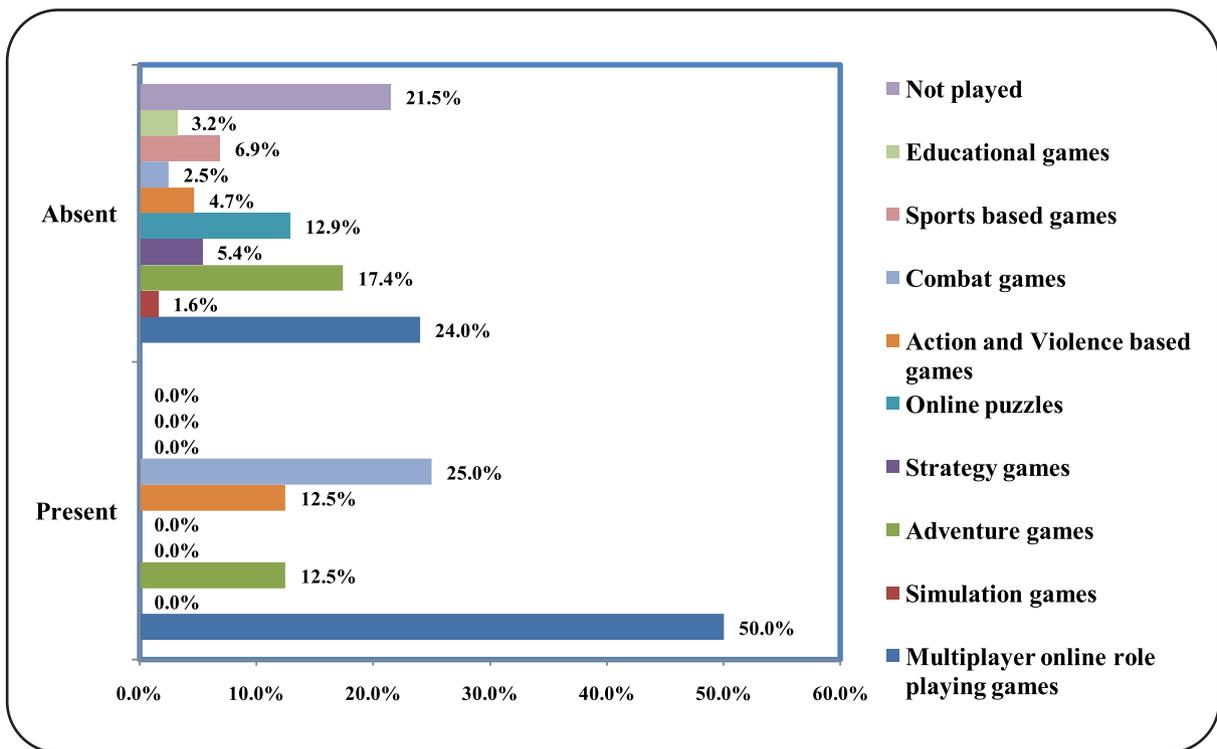


Figure 2. Types of internet games and internet gaming disorder

**Discussion**

Over the last decade, the concept of pathological involvement with computer or video games has been demonstrated by numerous studies. For this reason, the APA considers this concept to be valid enough for inclusion in the DSM-5 as an issue worth further study<sup>[13]</sup>

Our study attempts to investigate this relatively new phenomenon, among medical undergraduates. We specifically focused on young adults as this age group generally plays computer games more frequently than adults<sup>[14]</sup> and they are considered to be more susceptible to gaming addiction than adults.<sup>[15]</sup>

Our findings reveal that 2.5% of study subjects were

suffering from IGD. These findings are in accordance with the study conducted by Jeong & Kim who reported a prevalence of IGD among middle and high school students as 2.2%.<sup>[8]</sup>

As per findings of our present study, IGD was more prevalent among males. Rehbein et al also reported similar findings in their study stating IGD to be more common among males.<sup>[16]</sup> Our findings are in accordance with their findings.

In our present study subjects suffering from IGD were single and had average academic performance. According to study done by Kuss DJ and Griffiths MD, subjects suffering from IGD devote most of their time to gaming and neglect other sources of social engagement. These findings indicate that such individuals may show declining grades and their social and academic life may suffer due to excessive playing of internet games.<sup>[3]</sup>

According to our study, MMORPG were found to be the games most commonly played by subjects suffering from IGD.

Kuss DJ and Griffiths MD in their study report that MMORPG are the most preferred type of internet games, in which players often socialize in groups and cooperate with each other to achieve game-relevant goals. Moreover, such games are played by taking on virtual personalities. These personalities may be referred as avatars. These kinds of games enable the player to explore boundaries between the real and the imagined, between the fantasy and the reality, between the self and the other.<sup>[3]</sup>

### Limitations:

Cross-sectional design and smaller sample size are important limitations of the present study. This study was conducted among medical students and results cannot be generalized to students of other academic courses.

### Conclusion:

Present study provides valuable insight in the relatively new phenomenon of IGD. The results indicate that IGD poses a significant health problem among young adults. Screening and Assessment of such addictive behavior should be done and further studies are required to understand this phenomenon in detail.

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