

## Internet Gaming Addiction in Medical Students, Cross-Sectional Study

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### **Abstract:**

Background: Exposure to internet gaming is unavoidable for human life which is associated with physical and mental health problems. Prevalence of Internet Gaming Disorder (IGD) and comorbidities requires study in MBBS students who are supposed to use internet frequently for academic purpose. Internet addiction is known to cause Aim: To assess the nature and extent of psychiatric morbidities associated with gaming addiction in medical students. Objectives: To study the prevalence of gaming disorder and addiction, the prevalence of depression and study the prevalence of anxiety in same population. Methods: Data collected from 385 Medical students of Tertiary care Medical College and Hospital, Ghaziabad, U.P. India with IGDS9 –SF and self-assessment scales for depression and anxiety after taking institutional ethical clearance. Semi-structured pro forma used to collect the socio-demographic data. The study was done over a 1 year period. Patient anxiety and depression symptoms were assessed on self-rating scale. Results: The prevalence IGD found to be 3.12%, depression is significantly associated with IGD (66.66%), and prevalence of anxiety was 8.31%. Conclusion: Males are at high risk of IGD. The association with more comorbid conditions as depression and anxiety was present. Prospective studies are required further.

**Keywords:** addiction, internet, gaming disorder, depression, anxiety.

## INTRODUCTION

Internet known to cause addiction, may present as impulse control disorder or substance use disorder (Young et al., 1978). The behavioral addiction found in many as increased time spending, getting restless if away from internet, prolonged use, ignoring other pleasurable activity and disturbances at work place and in relationship (Petry et al., 2015).

Thus the use of internet is more common and frequently done activity. The availability of internet games exposes individual to physical and mental health problems. Psychological problem manifestation observed throughout the world with the gaming (Ferguson et al., 2011). The DSM-5 included the internet gaming disorder in section III of psychiatric nomenclature as a condition with further study (Martin et al., 2008). The diagnosis required 9 criteria's which are similar to gambling disorder.

Similarly the WHO in year 2014 based on suggestion of experts searched for the syndrome and after the inclusion of Internet Gaming Disorder in DSM-5 in 2013 as condition for further study. The clinical syndrome was recognised as leading to distress or impairment in the social, family, educational and personal functions. The pattern of gaming behavior was identified with preference over other activities and continued or increased use despite having negative outcomes by people engaged in digital games or video games activities. In month of July, 2018 WHO released ICD-11 with inclusion of "Gaming Disorder" coded as 6C51.

These online games cause physical and mental health problems. Common physical problems online gamers have strain injuries, wrist, neck and back pains and even serious disorder as game-provoked seizures, vision problems, obesity and weight gain. Mental health problems associated are depression, poor motivation and emotion regulation, interpersonal conflicts, social anxiety and suicidal thoughts (Alimoradi et al., 2019).

The IGD appear after psychiatric disorder or IGD itself have negative results as mental health problems or lastly both IGD and Psychiatric disorders have similar biological, psychological and sociodeographic pathologies (Dong & Potenza, 2022). Depression frequently occurs in person with IA or IGD (Strittmatter et al., 2015). There is significant appearance of depressive symptoms with IGD and diminution of symptoms during remission from IGD.

Various psychiatric disorders such as anxiety, depression, attention-deficit/hyperactivity disorder, obsessive-compulsive disorder (Andreassen et al., 2016) and relationships between IGD and psychological distress (Pontes, 2017). Thus research is needed about association of internet gaming with demands rapid reactions and continuous attention over a period of time which impact sleep quality and psychological distress

## METHODOLOGY

This is a cross sectional study with sample collected from the tertiary care hospital in Ghaziabad, U.P. Includes all undergraduates and postgraduate students, data was collected for one year period and the sample size was calculated 385.

### Inclusion criteria

1. Undergraduates and postgraduates in tertiary care hospital in Ghaziabad
2. Those who have given written informed consent.

### Exclusion criteria:

1. Those who do not give informed consent.
2. GHQ score of less than 5.

The IEC provided the ethical clearance for the study in the institute. All the participants provided with written and informed consent form for consent. Those participants who will be giving their consent will be included in the study. Participants were given instructions for filling the semi-structured form and other psychiatric rating scales. Data collected will be entered in Statistical Package for the Social Sciences (SPSS) sheet according to various categories and SPSS version 24 was used to analyze the data.

Following psychiatric rating scales used for collection of data: - General Health Questionnaire 28, Semi-Structured Proforma For Socio-Demographic Data, The Zung Self Rating Depression Scale, The Self Rating Anxiety Scale Of Zung, Gaming Disorder Scale - IGDS9 –SF.

## RESULTS

This study represents IGDS9 – SF score < 22 in females (56.70%) and >22 in males (73.40%) with statistical significance (p value 0.00001). Thus males have high prevalence of problematic gaming than females similar to other study (Griffiths et al., 2004).

Our study found that depression was significantly more (p value < 0.002) in students having Internet Gaming Disorder (66.66%) while the prevalence of depression in students not having IGD was lower than 10%.

Prevalence of depression among participants age less than 25 years was around 10% while the prevalence of 7% was observed among participants having age more than 25 years. It was found that Depression among unmarried participants is more than married participants. But the difference in prevalence of depression among unmarried (9.04%) and married (11.11%) was not statistically significant among parent study participants.

In the current study, among all participants with IGDS9-SF score > 32 majority were male (n=10, 83.33%) whereas, among participants with < 32 IGDS9-SF score equal distribution was found in both genders.

Table 1: Distribution of study subjects according IGDS9-SF Score

IGDS9-SF Score	Grand Total	Percentage
< 32	373	96.8%
≥ 32	12	3.12%

Table 2: Gender wise distribution of patients according to <32 and ≥32 IGDS9-SF Score

	IGDS9-SF SCORE				Test
	< 32		≥ 32		Chi Square Test
Gender	n	(%)	N	(%)	5.2934
Male	185	49.60%	10	83.33%	p value: 0.021406
Female	188	50.40%	2	16.67%	
Total	373	100%	12	100.00%	

## DISCUSSION

In this study, it showed that 385 students (100%) were involved in some or the other kind of gaming activity and it was a relatively common activity among medical students. However, when this activity consumed majority of the time of the students and causes difficulties in their personal, professional, academic and social life, it was considered to be a predictor for developing internet gaming addiction.

### IGD Prevalence

In our current study, among total 385 medical students the mean age was 25 years with standard deviation of 3.10 years. It showed that playing internet video games was a relatively common activity among medical students. However, a small proportion of total study sample (3.12%) were found to be having an internet gaming disorder. Most studies have similar results as found prevalence of internet gaming among medical student 3.05%, (Stevens et al., 2021) a community based survey 3.64%, (Kuss et al., 2013) faculty of Medicine, Germany 3.21% (Wartberg et al., 2017) except a survey had lower prevalence of 2.11% (Müller et al., 2014)

### Age, Gender and IGD

In this study Internet gaming disorder had no association with age of the subjects. The difference between age and IGDS9-SF score was not found to be statistically significant.

Present study included almost equal number of male and female subjects so the distribution among gender was not significant and comparison of variables with gender could be done.

The percentage of IGD in male students is almost twice as many as that of female students similar to other study reports that male more prone to play internet games than females (Sublette & Mullan, 2012), similarly IGD prevalence of 4.5% in males and 1.7% in females (Qin et al., 2020).

### **IGD and Depression**

Participants without Depression majority had less than 32 IGDS9-SF score. Even mildly depressed participants were also seen in less than 32 IGDS9-SF score group. In contrast to that none of the moderately depressed participants were found with IGDS9-SF score more than 32.

### **IGD and Anxiety**

In our study, prevalence of anxiety among participants was 8.31% according to Self -Rating ZUNG Anxiety scale. The difference in prevalence of anxiety among age groups was not significant. Out of total 195 male, 93% were normal scale score. Whereas 7% had reported mild to moderate anxiety. Out of total 190 female, 91% were normal and 9% had anxiety. Although anxiety was found 2% higher in female, the difference was not found statistically significant.

In our study, marital status was not considered a risk factor for the development of anxiety nor was associated with the presence of anxiety in students that were single, married, or with partner. These results were similar to what was reported by Kang et al. (Kang et al., 2020). In contrast, Tan et al (Tan et al., 2020) reported that marital status was significantly associated with the presence of anxiety and reported marriage as a variable of risk factor.

### **Time Spent**

In the study, 12 subjects had > 32 IGDS9-SF score, among them 83% (10) participants spent more than 6 hours per day to play game, whereas only 0.5% participants < 32 score spent more than 6 hours for gaming. The difference is statistically significant with p value >0.00001. The findings are similar to other studies [20] having subjects who spending more time on video gaming are exposed to risk of having IGD.

### **Problematic Gamers**

On the other hand, subjects having score > 22 are considered to have Problematic Gaming Disorder. In our study, among 385 participants, a total of 94 participants had a score of more than 22 and were considered as Problematic Gamers. It was seen that problematic gamers play more than casual gamers.

## SUMMARY

It was observed that subjects with Internet Gaming Disorder belonged to < 25 years of age as compared to subjects > 25 years of age. There was a significant difference between the age groups. Mean age of the participants was of 25 years.

Male subjects were found to have higher prevalence of having Internet Gaming Disorder than females which was statistically significant. This was also seen in concordance with other studies.

We found the disorder higher in subjects belonging to Upper class according to socioeconomic status as compared to upper middle or lower class (p value < 0.00001)

It was also observed that depression in subjects with Internet Gaming Disorder were mostly found to be in unmarried people as compared to married people. We observed that subjects having Internet Gaming Disorder were more depressed than having not with the disorder. Also, among depressed participants, majority were males than females. This finding was also confirmed with other studies.

We found that in our study, subjects having Internet Gaming Disorder had no significant correlation with anxiety (p value > 0.997) It was also observed that people having Internet Gaming Disorder had a significant association with substance use according to DAST (p value < 0.00001). This was also observed in confirmation with other studies. According to DAST classification, upper class (6.36%) followed by upper middle class (2.58%) and only 2.32% in lower class had substance abuse.

We found that subjects who spent > 6 hours on playing internet games had internet gaming disorder than subjects who played internet games < 6 hours (p value > 0.00001)

It was also observed that subjects with a score > 22 on IGDS9 were found out to be problematic players. Majority of them came under the age group of < 25 years. It was also seen that males were having more prevalence than females and also had association with DAST (p < 0.05)

The findings also suggest that subjects having Internet Gaming Disorder had more comorbidities than subjects not having Internet Gaming Disorder.

## CONCLUSION

Males are at high risk of IGD. IGD subjects are at high risk of comorbid depression and anxiety. Longitudinal studies are further required.

## References:

- Alimoradi, Z., Lin, C.-Y., Broström, A., Bülow, P. H., Bajalan, Z., Griffiths, M. D., Ohayon, M. M., & Pakpour, A. H. (2019). Internet addiction and sleep problems: A systematic review and meta-analysis. *Sleep Medicine Reviews*, 47, 51–61. <https://doi.org/10.1016/j.smr.2019.06.004>
- Andreassen, C. S., Billieux, J., Griffiths, M. D., Kuss, D. J., Demetrovics, Z., Mazzoni, E., & Pallesen, S. (2016). The relationship between addictive use of social media and video games and symptoms of psychiatric disorders: A large-scale cross-sectional study. *Psychology of Addictive Behaviors*, 30(2), 252–262. <https://doi.org/10.1037/adb0000160>
- Dong, G.-H., & Potenza, M. N. (2022). Considering gender differences in the study and treatment of internet gaming disorder. *Journal of Psychiatric Research*, 153, 25–29. <https://doi.org/10.1016/j.jpsychires.2022.06.057>
- Ferguson, C., Coulson, M., & Barnett, J. (2011). En metaanalys av patologisk spelutbredning och komorbiditet med psykisk hälsa, akademiska och sociala problem. *Journal of Psychiatric Research*, 45, 1573–1578.
- Griffiths, M. D., Davies, M. N. O., & Chappell, D. (2004). Online computer gaming: A comparison of adolescent and adult gamers. *Journal of Adolescence*, 27(1), 87–96. <https://doi.org/10.1016/j.adolescence.2003.10.007>
- Kang, L., Ma, S., Chen, M., Yang, J., Wang, Y., Li, R., Yao, L., Bai, H., Cai, Z., Xiang Yang, B., Hu, S., Zhang, K., Wang, G., Ma, C., & Liu, Z. (2020). Impact on mental health and perceptions of psychological care among medical and nursing staff in Wuhan during the 2019 novel coronavirus disease outbreak: A cross-sectional study. *Brain, Behavior, and Immunity*, 87, 11–17. <https://doi.org/10.1016/j.bbi.2020.03.028>
- Kuss, D. J., Van Rooij, A. J., Shorter, G. W., Griffiths, M. D., & van de Mheen, D. (2013). Internet addiction in adolescents: Prevalence and risk factors. *Computers in Human Behavior*, 29(5), 1987–1996.
- Martin, C. S., Chung, T., & Langenbucher, J. W. (2008). How should we revise diagnostic criteria for substance use disorders in the DSM-V? *Journal of Abnormal Psychology*, 117(3), 561–575. <https://doi.org/10.1037/0021-843X.117.3.561>
- Müller, K. W., Glaesmer, H., Brähler, E., Woelfling, K., & Beutel, M. E. (2014). Prevalence of internet addiction in the general population: Results from a German population-based survey. *Behaviour & Information Technology*, 33(7), 757–766.

- Petry, N. M., Rehbein, F., Ko, C.-H., & O'Brien, C. P. (2015). Internet gaming disorder in the DSM-5. *Current Psychiatry Reports*, 17(9), 1–9.
- Pontes, H. M. (2017). Investigating the differential effects of social networking site addiction and Internet gaming disorder on psychological health. *Journal of Behavioral Addictions*, 6(4), 601–610. <https://doi.org/10.1556/2006.6.2017.075>
- Qin, L., Cheng, L., Hu, M., Liu, Q., Tong, J., Hao, W., Luo, T., & Liao, Y. (2020). Clarification of the Cut-off Score for Nine-Item Internet Gaming Disorder Scale–Short Form (IGDS9-SF) in a Chinese Context. *Frontiers in Psychiatry*, 11, 470. <https://doi.org/10.3389/fpsy.2020.00470>
- Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2021). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry*, 55(6), 553–568. <https://doi.org/10.1177/0004867420962851>
- Strittmatter, E., Kaess, M., Parzer, P., Fischer, G., Carli, V., Hoven, C. W., Wasserman, C., Sarchiapone, M., Durkee, T., Apter, A., & others. (2015). Pathological Internet use among adolescents: Comparing gamers and non-gamers. *Psychiatry Research*, 228(1), 128–135.
- Sublette, V. A., & Mullan, B. (2012). Consequences of Play: A Systematic Review of the Effects of Online Gaming. *International Journal of Mental Health and Addiction*, 10(1), 3–23. <https://doi.org/10.1007/s11469-010-9304-3>
- Tan, W., Hao, F., McIntyre, R. S., Jiang, L., Jiang, X., Zhang, L., Zhao, X., Zou, Y., Hu, Y., Luo, X., Zhang, Z., Lai, A., Ho, R., Tran, B., Ho, C., & Tam, W. (2020). Is returning to work during the COVID-19 pandemic stressful? A study on immediate mental health status and psychoneuroimmunity prevention measures of Chinese workforce. *Brain, Behavior, and Immunity*, 87, 84–92. <https://doi.org/10.1016/j.bbi.2020.04.055>
- Wartberg, L., Kriston, L., & Thomasius, R. (2017). The Prevalence and Psychosocial Correlates of Internet Gaming Disorder. *Deutsches Ärzteblatt International*. <https://doi.org/10.3238/arztebl.2017.0419>
- Young, R. C., Biggs, J. T., Ziegler, V. E., & Meyer, D. A. (1978). A rating scale for mania: Reliability, validity and sensitivity. *The British Journal of Psychiatry*, 133(5), 429–435.