



SOCIODEMOGRAPHIC DETERMINANTS AND RISK FACTORS OF INTERNET GAMING DISORDER AND HAZARDOUS GAMING AMONG MEDICAL STUDENTS

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ABSTRACT

Background: Gaming disorder (GD) has been included in ICD-11 as a behavioral addiction. Medical students are a high-stress group and may be especially vulnerable, but Indian data using ICD-11-consistent tools are limited. **Objective:** This study estimated the prevalence of gaming disorder and hazardous gaming (HG) among medical students using the six-item GDHGS scale and examined associations with gaming patterns, stress, mental health, and functional impairment. **Method:** A cross-sectional study was conducted among 350 medical students (MBBS 1st–4th year, interns, and postgraduates) at a private medical college in North India. A structured proforma assessed demographics, gaming behavior, self-rated stress, and self-reported anxiety/depression. GD and HG were diagnosed using the six-item GDHGS, aligned with ICD-11 criteria. Data were analyzed using descriptive statistics and chi-square tests. **Results:** Prevalence of GD was 21.71% (n = 76) and HG 16.29% (n = 57), yielding 38.00% with gaming-related disorders. Third- and fourth-year MBBS students accounted for 65.7% of GD cases. Gender distribution among GD cases was nearly equal (55.3% male, 44.7% female). Among GD cases, 70.3% gamed daily or multiple times per day and 73.7% played more than 2 hours per day. Responsibility neglect and continued gaming despite consequences were reported by 68.4% and 89.5%, respectively. Educational functioning was impaired in 83.5% and social functioning in 69.2% of those with GD/HG. Stress relief (82%) and escape from reality (55.3%) were prominent motives. Gaming frequency, daily duration, responsibility neglect, and continuation despite consequences were significantly associated with diagnostic category (all $p < .001$). **Conclusion:** More than one in five medical students met criteria for gaming disorder on the six-item GDHGS, with substantial academic and psychosocial impairment. Routine screening, psychoeducation, and stress-management-based interventions in medical colleges are urgently needed.

KEYWORDS : Gaming Disorder, Hazardous Gaming, GDHGS, Medical Students, ICD-11, Behavioral Addiction

INTRODUCTION

The World Health Organization's inclusion of gaming disorder (GD) in the 11th revision of the International Classification of Diseases (ICD-11) formally recognized excessive gaming as a behavioral addiction characterized by impaired control, increased priority given to gaming, and continuation despite negative consequences, accompanied by significant functional impairment (World Health Organization [WHO], 2019). Global estimates suggest GD prevalence between 1% and 10% in community and student samples, depending on assessment methods and cultural context (Mihara & Higuchi, 2017; Stevens et al., 2021).

Medical students experience substantial academic stress, frequent examinations, and often live in hostels with easy access to smartphones and the internet. High levels of stress, anxiety, and depression are well documented in this group (Rotenstein et al., 2016; Yusoff et al., 2013). Digital gaming may serve as an accessible coping strategy but can become maladaptive when it leads to impaired academic performance and social functioning.

METHOD

Design and Setting

A cross-sectional observational study was conducted between January and June 2025 at Krishna Mohan Medical College and Hospital, Mathura, Uttar Pradesh, India.

Study Duration – June 2024 to June 2025

Inclusion Criteria

1. Age range: 18–35 years
2. Both genders will be included to ensure diversity.
3. Students with varying levels of gaming behaviour, including non-gamers, casual gamers, and regular gamers, will be included to capture a broad spectrum of experiences.

Exclusion Criteria

1. Individuals who are not enrolled in MBBS and MD courses will be excluded.
2. Participants unwilling or unable to provide informed consent.

Instruments

Six-Item Gaming Disorder and Hazardous Gaming Scale (GDHGS).

The GDHGS is a six-item clinician-rated scale aligned with ICD-11 (Balhara et al., 2020).

Proforma

The self-report proforma collected:

- Demographics: age, gender, academic year, residence (hostel, PG/apartment, own house, other), and urban/rural background.
- Gaming Behavior: frequency (multiple times/day, daily, several times/week, occasionally, rarely); daily duration (< 1, 1–2, 2–3, 3–4, > 4 hours); preferred game types; primary reasons for gaming (stress relief, entertainment, socializing, competitive challenge, boredom, escape from reality).

Procedure

After institutional permission, data were collected during lectures and postings. Students received study information and signed informed consent. They completed the self-report sections, followed by GDHGS ratings obtained via brief structured interviews by trained psychiatry residents familiar with the scale (Balhara et al., 2020). Completed forms were checked for missing data and entered into a secure database.

Data Analysis

Descriptive statistics (frequencies, percentages, means, standard deviations) summarized the data. Prevalence of GD and HG was calculated as proportions of the total sample. Chi-square tests examined associations between diagnostic category (GD, HG, no disorder) and categorical variables (gaming frequency and duration, stress level, anxiety/depression, responsibility neglect, continuation despite consequences, and impairment). A p value less than .05 was considered statistically significant.

RESULTS

Demographic Characteristics

The mean age was 22.8 years (SD = 2.4; range 19–32). Males constituted 55.1% (n = 193) and females 44.9% (n = 157).

Third-year MBBS students made up 34.6% of the sample and fourth-year 30.3%. Most students lived in hostels (79.1%), and 67.4% reported an urban background.

Prevalence of Gaming Disorder and Hazardous Gaming Of 350 students, 76 (21.71%) met criteria for GD and 57 (16.29%) for HG. Thus, 133 (38.00%) had gaming-related disorders and 217 (62.00%) had no disorder.

Table 1 Distribution of Diagnostic Categories (N = 350)

Category	n	%
Gaming disorder	76	21.71
Hazardous gaming	57	16.29
No disorder	217	62.00

Third- and fourth-year MBBS students accounted for 50 of 76 GD cases (65.7%) and 37 of 57 HG cases (64.9%). Among GD cases, 55.3% were male and 44.7% female, mirroring the overall gender distribution.

Stress and Mental Health

Moderate stress was the most commonly reported level in all diagnostic groups: 68.4% of GD, 59.6% of HG, and 60.4% of no-disorder students. High stress was reported by 15.8%, 14.0%, and 17.5%, respectively. Self-reported anxiety/depression was present in 36.8% of GD, 31.6% of HG, and 24.9% of those without disorder, indicating greater psychological distress in the GD/HG groups.

Gaming Frequency and Duration

Gaming frequency differed significantly across diagnostic groups ($p < .001$). Among GD cases, 23.7% played multiple times per day and 21.1% daily; in total, 70.3% reported daily or more frequent gaming, compared with 34.6% of students without disorder.

Daily gaming duration also showed significant group differences ($p < .001$).

Table 2 Daily Gaming Duration by Diagnostic Category

Duration	GD (n = 76)	HG (n = 57)	No disorder (n = 217)
> 4 hours	14 (18.4%)	4 (7.0%)	6 (2.8%)
3–4 hours	18 (23.7%)	8 (14.0%)	12 (5.5%)
2–3 hours	24 (31.6%)	16 (28.1%)	32 (14.7%)
1–2 hours	14 (18.4%)	18 (31.6%)	84 (38.7%)
< 1 hour	6 (7.9%)	11 (19.3%)	83 (38.2%)

Among GD cases, 73.7% played more than 2 hours per day and 42.1% more than 3 hours per day; the corresponding figures in the no-disorder group were 23.0% and 8.3%.

Motivations, Responsibility Neglect, and Consequences

In the GD group, common reasons for gaming were stress relief (82%), entertainment (about 78%), socializing (around 71%), boredom (59%), competitive challenge (about 64%), and escape from reality (55.3%). Escape from reality showed a clear gradient, being much less frequent among those without disorder, supporting compensatory Internet use models (Kardefelt-Winther, 2014; González-Bueso et al., 2018).

Responsibility neglect was reported by 68.4% of GD, 38.6% of HG, and 17.5% of no-disorder students ($p < .001$). Continuing to game despite known negative consequences was reported by 89.5%, 31.6%, and 12.9%, respectively ($p < .001$), making it the most discriminating behavior, consistent with longitudinal evidence that persistence despite harm is central to problematic gaming (Gentile et al., 2011).

DISCUSSION

This study found a high prevalence of gaming-related problems among medical students: 21.71% met criteria for gaming disorder and 16.29% for hazardous gaming on the six-item GDHGS. Overall, 38% of students had some form of problematic gaming, a figure toward the upper end of

international estimates for student and young adult populations (Mihara & Higuchi, 2017; Stevens et al., 2021).

Notably, gender distribution among GD cases was nearly equal, contrasting with many earlier reports showing male predominance (Stevens et al., 2021). This may reflect increasing gaming engagement among women, similar academic stress across genders, and widespread smartphone access in Indian medical colleges.

The concentration of GD in third and fourth years aligns with the onset of intensive clinical responsibilities and examination pressure, in line with evidence of heightened stress and depression in later phases of medical training (Rotenstein et al., 2016; Yusoff et al., 2013). Behaviorally, high-frequency and prolonged gaming, responsibility neglect, and continuation despite consequences strongly differentiated GD/HG from no disorder and closely mirror ICD-11 criteria (WHO, 2019).

The prominence of stress relief and escape from reality as motives supports models of compensatory Internet use, where gaming serves to regulate negative affect or avoid real-life stressors (Kardefelt-Winther, 2014; González-Bueso et al., 2018). However, such coping is maladaptive when it produces significant educational and social impairment, as observed in this cohort. Given the importance of sustained academic performance and professional identity formation in medical education, these impairments have potential downstream implications for clinical competence and patient care.

Strengths of this study include the use of a six-item ICD-11–based instrument developed in India (Balhara et al., 2020), a relatively large sample with complete data, and detailed assessment of functional impairment. Limitations include the single-center, cross-sectional design, reliance on self-report for stress and mental health, and absence of structured psychiatric interviews for comorbidities.

CONCLUSION

Gaming disorder and hazardous gaming are highly prevalent among medical students in this North Indian medical college and are strongly associated with frequent and prolonged gaming, stress-related motives, neglect of responsibilities, and significant academic and social impairment. Routine screening using brief tools such as the six-item GDHGS, coupled with psychoeducation, stress-management training, and ready access to mental health services, should be integrated into medical college health programs to identify and support affected students at an early stage.

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