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Internet Gaming Disorder: An Emerging Behavioural Addiction and Public Health Challenge

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Abstract: Background: Digital gaming is a common recreational activity with social, cognitive and educational benefits for many users. A minority, however, develop persistent loss of control over gaming accompanied by marked impairment in personal, family, educational, occupational or social functioning. The World Health Organization recognizes gaming disorder in the International Classification of Diseases, 11th Revision, while the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision describes internet gaming disorder as a condition requiring further research. **Objective:** This narrative review critically examines the definition, epidemiology, determinants, clinical consequences and management of internet gaming disorder, with particular attention to recent international evidence and the Indian context. **Key findings:** Global prevalence estimates vary substantially because studies use different diagnostic frameworks, screening instruments, age groups and sampling methods. A major meta-analysis estimated a pooled prevalence of approximately 3%, which declined to around 2% in studies meeting stricter methodological criteria. Adolescents and young adults, particularly males, are more frequently identified, although disorder can occur across genders and age groups. Gaming disorder is associated with sleep disturbance, academic and occupational impairment, family conflict, depression, anxiety, attention-deficit/hyperactivity symptoms and reduced quality of life. Most evidence is cross-sectional, making directionality uncertain. Cognitive behavioural therapy, motivational approaches and family-based interventions are promising, but treatment trials remain small and heterogeneous. Indian studies report widely varying prevalence, usually below 10%, but nationally representative longitudinal evidence is absent. **Conclusion:** Internet gaming disorder should neither be dismissed as harmless overuse nor inferred solely from prolonged gaming time. Diagnosis requires demonstrable impairment and careful assessment of psychiatric comorbidity, developmental context and gaming-related harms. Public health responses should promote digital literacy, age-appropriate safeguards, family and school engagement, responsible game design, accessible mental-health services and stronger longitudinal research.

Keywords: Internet gaming disorder; gaming disorder; behavioural addiction; adolescents; digital health; India

INTRODUCTION

Video games are now embedded in contemporary culture. They provide entertainment, competition, social interaction, creative expression and, in some contexts, opportunities for learning and cognitive training. Online and mobile games also allow geographically separated players to form teams and communities. Consequently, gaming itself should not be treated as pathological.

Concern arises when gaming becomes persistent, difficult to control and increasingly prioritized over sleep, education, employment, relationships, physical activity or self-care. The World Health Organization (WHO) defines gaming disorder in the International Classification of Diseases, 11th Revision (ICD-11), as

a pattern of digital or video gaming characterized by impaired control, increasing priority given to gaming over other activities, and continuation or escalation despite negative consequences. The pattern must cause significant impairment and is normally evident for at least 12 months, although the required duration may be shortened when symptoms are severe.[1]

The American Psychiatric Association uses the term internet gaming disorder (IGD). In the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR), IGD remains a condition for further study rather than a formally established diagnosis. The proposed framework includes nine features: preoccupation, withdrawal-like distress, tolerance, unsuccessful attempts to reduce gaming, loss of other interests, continued gaming despite problems, deception, gaming to escape negative mood, and jeopardized relationships or opportunities. Five or more symptoms within 12 months, together with clinically significant impairment or distress, are required.[2]

The distinction between the terms is important. ICD-11 gaming disorder includes online and offline gaming and emphasizes three core behavioural features plus functional impairment. DSM-5-TR internet gaming disorder uses a broader nine-symptom framework influenced partly by substance-use and gambling criteria. Research instruments based on these frameworks do not identify identical populations.

The public health challenge is therefore twofold: affected individuals require recognition and treatment, but enthusiastic or culturally unfamiliar gaming should not be medicalized. Time spent gaming may indicate exposure or risk, but it is not sufficient for diagnosis. A competitive player may spend many hours practising while maintaining health, relationships and responsibilities; another person may play for fewer hours but experience severe loss of control and functional deterioration.

Epidemiology and Measurement

Estimates of gaming disorder prevalence vary widely. A systematic review and meta-analysis by Stevens and colleagues estimated a worldwide prevalence of 3.05%. When analysis was restricted to studies with more rigorous sampling criteria, the estimate declined to 1.96%, although the confidence interval remained wide.[3] This difference illustrates how convenience samples, gamer-only samples and low-specificity screening thresholds can inflate prevalence.

A more recent meta-analysis of 84 adolescent studies involving more than 640,000 participants reported a pooled prevalence of 8.6%. However, statistical heterogeneity was extreme, with an I^2 value of 100% and a prediction interval ranging from approximately 1% to 48%.[4] The pooled percentage should therefore not be interpreted as a stable global rate. It reflects markedly different populations, instruments and definitions.

Prevalence is generally higher in studies of active gamers than in surveys that include non-gamers. Estimates also vary according to whether participants are children, adolescents, university students or adults; whether interviews or self-report tools are used; and whether functional impairment is mandatory. Screening scales are useful for identifying possible cases but can mistake intense engagement for disorder, particularly when they emphasize frequency or preoccupation without adequately assessing harm.

Males are more commonly classified as having gaming disorder, partly because they are more likely to play certain highly competitive or persistent online genres. This difference should not obscure affected females, whose gaming patterns, motivations and preferred genres may be less well represented in current screening instruments. Gender-diverse populations are also inadequately studied.

Adolescence is a period of particular vulnerability because executive control, identity, social relationships and reward processing are still developing. At the same time, adolescents increasingly use online spaces for normal peer interaction. Assessments must therefore distinguish developmentally appropriate digital socialization from clinically impairing behaviour.

Why Gaming Becomes Problematic

Gaming disorder does not arise from one cause. It reflects an interaction between individual vulnerability, family and social context, game design and broader environmental factors.

Individual and psychological factors

Longitudinal evidence identifies gaming duration, loneliness, depressive symptoms, anxiety, impulsivity, emotional dysregulation and use of gaming as an escape as potential risk factors.[5] Associations are generally modest and bidirectional. Depression may increase reliance on gaming for relief or social contact, while progressive gaming-related impairment may worsen depression through sleep loss, academic failure and social conflict.

Attention-deficit/hyperactivity symptoms may increase vulnerability through impulsivity, reward seeking and difficulty regulating time. Social anxiety may make online interaction feel safer than face-to-face communication. Some players use gaming adaptively during temporary stress; disorder is more likely when avoidance becomes rigid and displaces problem solving, relationships and other coping strategies.

Family, school and social environment

Poor family communication, inconsistent rules, high conflict, low parental monitoring and limited emotional support are repeatedly associated with problematic gaming. These findings do not establish parental causation. Families may become conflictual because a young person is already experiencing severe gaming problems.

Academic pressure, bullying, social exclusion and limited opportunities for recreation may also contribute. In settings where young people lack safe public spaces, affordable sports or supportive peer activities, digital gaming may become one of the few accessible sources of competence and belonging.

Game and platform characteristics

Games differ substantially in their capacity to sustain prolonged engagement. Persistent online worlds, competitive ranking, daily rewards, limited-time events, social obligations to teammates and variable reinforcement schedules can encourage repeated play. Notifications and "streaks" may create pressure to return regularly.

Monetization systems deserve particular attention. Loot boxes and chance-based rewards resemble gambling mechanisms, although gaming disorder and gambling disorder remain distinct diagnoses. Microtransactions, in-game currencies and unclear conversion to real-world money can reduce the psychological salience of expenditure. Children may have limited understanding of probability and persuasive design.

The presence of engaging design does not by itself produce addiction. Most exposed players do not develop disorder. Nevertheless, product architecture can amplify vulnerability and should be included in prevention and regulation rather than placing responsibility entirely on users or families.

Clinical Manifestations and Assessment

The central clinical feature is persistent functional impairment. Warning signs include declining academic or occupational performance, repeated lateness or absence, reversal of sleep schedules, neglect of hygiene and meals, withdrawal from offline relationships, deception about gaming, escalating family conflict and unsuccessful efforts to cut down.

Irritability when gaming is interrupted may occur, but it must be interpreted carefully, especially in adolescents. Ordinary disappointment or conflict over household rules is not equivalent to withdrawal. Similarly, thinking about a valued hobby is not necessarily pathological preoccupation.

Assessment should document gaming pattern, devices and genres; weekday and weekend use; night-time gaming; spending; triggers; attempts to reduce play; and effects on sleep, education, work, relationships, physical health and finances. Reports from parents or partners may be useful, although differences in perspective are common.

Clinicians should assess depression, anxiety, attention-deficit/hyperactivity disorder, autism-spectrum characteristics, substance use, gambling, self-harm and suicidal ideation. Gaming may be the primary disorder, a coping response to another condition, or part of a mutually reinforcing pattern. Treating only gaming while ignoring underlying depression, bullying or family violence is unlikely to succeed.

Physical examination is not diagnostic but may identify consequences such as obesity or undernutrition, musculoskeletal pain, headache, eye strain and sleep deprivation. Severe cases may involve dehydration, missed medication or prolonged physical inactivity. These outcomes arise from patterns surrounding gaming rather than from gaming content alone.

Health and Social Consequences

Sleep and physical health

Late-night gaming delays sleep and exposes players to cognitive and emotional stimulation when they should be winding down. Competitive play may make disengagement difficult, while international teams and timed events can encourage play across time zones. Sleep restriction subsequently impairs attention, mood regulation, learning and impulse control, potentially reinforcing further gaming.

Sedentary behaviour may displace physical activity, although gaming time and sedentary time are not interchangeable. Some players remain physically active, and active video games may increase movement. Dietary irregularity, frequent snacking and energy-drink use may contribute to metabolic risk in some individuals.

Musculoskeletal pain can result from prolonged sitting, repetitive hand movements and poor ergonomics. In an Indian college study, IGD was associated with playing for more than two hours daily and with reported pain or sensory symptoms; however, the cross-sectional sample was small and causal inference was not possible.[9]

Table 1. Core Features, Differential Considerations and Public Health Responses in Internet Gaming Disorder

Domain	Findings suggesting possible disorder	Important alternative explanation	Assessment or intervention priority
Control over gaming	Repeated inability to stop, reduce or follow agreed limits	Inconsistent household rules or temporary intensive play	Establish pattern over time and review previous attempts to reduce gaming
Priority given to gaming	Gaming displaces sleep, meals, study, work, relationships or hygiene	Time-limited tournament, holiday or social event	Evaluate functional impairment rather than hours alone
Persistence despite harm	Continued play despite academic failure, health problems, financial loss or relationship breakdown	Limited recognition of harm or untreated psychiatric illness	Use motivational interviewing and assess comorbidities
Emotional response to restriction	Severe irritability, anxiety or dysphoria when unable to play	Normal frustration, family conflict or broader mood disorder	Determine severity, duration and whether symptoms occur outside disputes
Escapism	Gaming used as the principal means of avoiding distress	Temporary adaptive recreation	Identify depression, bullying, trauma, loneliness and family stress
Sleep disruption	Night-time gaming, delayed sleep phase and daytime impairment	Insomnia preceding gaming or academic schedules	Restore sleep routine and restrict gaming before bedtime
Academic or occupational decline	Absence, incomplete work and falling performance	Learning disorder, ADHD, depression or adverse environment	Obtain collateral history and coordinate with school or workplace
Financial harm	Uncontrolled microtransactions, loot-box spending or theft	Poor financial literacy or gambling disorder	Restrict payment access, assess gambling behaviour and provide financial safeguards
Physical consequences	Pain, inactivity, irregular meals and neglect of treatment	Independent medical disorder	Address ergonomics, activity, nutrition and medical needs
Prevention in families	Shared rules, age-appropriate access and parental modelling	Excessively restrictive or surveillance-based parenting	Use collaborative family media plans and preserve trust
Clinical treatment	CBT, motivational work, family involvement and comorbidity care	Simple high engagement without impairment	Set functional goals rather than demanding universal abstinence
Population policy	Consumer protection, age safeguards and transparent monetization	Broad prohibition that drives use underground	Apply proportionate, evidence-based regulation and monitor unintended effects

health

Gaming disorder is frequently associated with depression, anxiety, loneliness, stress and attention problems. These relationships are clinically important but should not be interpreted automatically as consequences of gaming. Shared vulnerabilities and reverse causation are plausible.

Suicidal thoughts and self-harm have been reported among people with severe problematic gaming, particularly when depression, family conflict, financial loss or academic failure coexist. Gaming-disorder screening should therefore include direct suicide-risk assessment rather than assuming that reduction of gaming alone will resolve the crisis.

Educational, occupational and family effects

Young people may miss classes, postpone assignments or remain awake through the night. Adults may experience reduced productivity, absenteeism or job loss. Repeated promises to stop, concealment of play and unauthorized spending can erode trust within families.

Parents may respond by abruptly removing devices, leading to confrontation or, occasionally, aggression. Safety planning may be required in highly conflictual households. A negotiated, structured reduction plan is generally preferable to punitive confiscation unless immediate safety or financial protection requires restriction.

Treatment and Clinical Management

There is no universally accepted treatment protocol and no medication specifically approved for gaming disorder. Treatment should be individualized according to age, severity, comorbidity, family context and readiness to change.

Psychological interventions

Cognitive behavioural therapy is the most frequently studied approach. It seeks to identify triggers, challenge beliefs that maintain gaming, develop alternative coping strategies, restructure routines and prevent relapse. A 2023 systematic review identified only seven randomized controlled trials. Short-term cognitive behavioural therapy, group counselling, craving-focused behavioural intervention and an acceptance-and-cognitive-restructuring programme showed benefit, but included studies had medium-to-high risks of bias.[6]

The evidence is therefore promising rather than definitive. Small samples, inconsistent diagnostic criteria, short follow-up and lack of blinded outcome assessment limit confidence. Reduction in scale scores does not always translate into restored education, employment or relationships.

Motivational interviewing can be useful when individuals do not view gaming as problematic. Confrontation may strengthen resistance, particularly when gaming provides valued friendships. Treatment should acknowledge these benefits while examining costs and discrepancies between gaming and personal goals.

Family-based care

For children and adolescents, family involvement is often essential. Interventions may address communication, consistent limits, parental modelling, reinforcement of offline activity and reduction of conflict. Parents should avoid using gaming unpredictably as both a reward and a punishment.

Complete abstinence is not always required. For many patients, the goal is controlled gaming that no longer compromises functioning. Temporary abstinence may be useful when control is severely impaired or when gaming is linked to aggression, gambling-like spending or acute educational failure.

Pharmacological treatment

Medication may be indicated for independently diagnosed depression, anxiety or attention-deficit/hyperactivity disorder. Improvement in gaming symptoms after treatment of a comorbid disorder does not establish that the medicine directly treats gaming disorder. Off-label pharmacological studies remain too limited to support routine medication specifically for IGD.

Severe depression, suicidality, violence, psychosis, profound self-neglect or uncontrolled spending may require urgent psychiatric care. Inpatient treatment should be reserved for clinical severity and safety, not simply for high gaming time.

Public Health Significance

Gaming disorder affects a minority of gamers, but its public health importance arises from the enormous exposed population, early age of engagement and potential effects on education, family functioning and mental health. Even a low population prevalence can translate into a substantial number of affected young people.

A public health response must avoid moral panic. Gaming can foster social connection, collaboration and enjoyment. Stigmatizing all gamers may discourage affected individuals from seeking care and undermine communication between adolescents and parents.

Prevention should focus on function and balance: adequate sleep, physical activity, education, relationships and financial safety. Schools can teach digital self-regulation, persuasive-design awareness and help-seeking skills. Screening entire school populations with low-specificity questionnaires may produce false positives; stepped assessment is more appropriate.

Industry practices also influence risk. Age-appropriate default settings, spending notifications, parental controls, transparent odds for chance-based rewards, accessible play-time information and friction before large purchases can reduce harm. Public policy should address manipulative monetization while preserving legitimate recreation and innovation.

Indian Perspective

India's rapid expansion of affordable smartphones and mobile internet has made gaming accessible across socioeconomic and geographic groups. Unlike markets historically dominated by consoles or personal computers, gaming in India is primarily mobile, portable and readily available throughout the day.

A 2026 scoping review identified 71 Indian studies. Among 29 studies reporting prevalence, estimates ranged from 0.8% to 39%, although 20 reported rates between 0% and 10%.[8] Sixty of the 71 studies were cross-sectional, most prevalence studies had fewer than 1,000 participants, and college students were overrepresented. No included study was nationally representative or longitudinal. These limitations prevent a credible single national prevalence estimate.

A cross-sectional study of 150 college gamers in Gujarat reported a prevalence of 5.3% using the nine-item IGD scale.[9] Such studies are useful for hypothesis generation but cannot be generalized to India's diverse population. Estimates obtained only among gamers also differ from prevalence in all students or the general population.

Indian research consistently reports associations with male gender, longer gaming time, sleep problems, psychological distress, academic difficulty and family factors. However, these associations are predominantly correlational. The culturally important role of parents may influence both the development of difficulties and pathways to treatment. Family-based interventions should therefore be adapted rather than imported unchanged from Western settings.

India has emerging specialist services for technology-use problems, including the Service for Healthy Use of Technology clinic at the National Institute of Mental Health and Neuro Sciences. Such services provide valuable clinical experience but remain concentrated in urban tertiary centres. Capacity is needed within child and adolescent mental-health services, medical colleges, district mental-health programmes and school counselling systems.

Policy must also distinguish gaming from online gambling and real-money gaming. Products involving wagering, financial stakes or chance-based monetary returns create different legal and clinical risks. Conflating all gaming with gambling can produce ineffective regulation and confuse diagnostic assessment.

Recent Advances

Recent research has increasingly adopted longitudinal designs, distinguishing predictors from correlates. A systematic review of 39 longitudinal studies involving more than 37,000 participants identified multiple modifiable intrapersonal and interpersonal factors, but found relatively little research on environmental determinants such as school context and game design.[5]

There is also growing interest in objective behavioural data, including play duration, session timing, spending and interruption patterns. Such data could improve assessment beyond self-report but raise major privacy concerns. High playtime recorded by a platform should never be treated as a diagnosis without evidence of impairment and clinical consent.

Digital interventions, including online cognitive behavioural therapy and self-monitoring applications, may offer scalable support. Their effectiveness is still uncertain, and the paradox of treating a digital behavioural problem through additional screen-based engagement requires careful design.
Research is also shifting from simple screen-time limits towards game-specific risks, motivations, social context and functional outcomes. This is an important advance because one hour of compulsive, financially harmful play is not equivalent to one hour of collaborative recreation.

Challenges and Limitations

Diagnostic disagreement remains a major challenge. ICD-11 and DSM-5-TR differ in terminology and criteria, and screening tools vary in thresholds. Some criteria, such as tolerance, withdrawal and preoccupation, may pathologize intense enthusiasm if impairment is not assessed carefully.
Most prevalence studies rely on self-report questionnaires rather than clinical interviews. Convenience samples, online recruitment and gamer-only populations further limit generalizability. Cultural differences in parental expectations, academic demands and acceptable leisure may influence responses.
Causal evidence is weak. Depression and gaming disorder may reinforce one another, but cross-sectional studies cannot establish which occurred first. Treatment evidence is similarly limited by small samples, short follow-up and inconsistent comparators.
Commercial influence requires scrutiny. Researchers may depend on access to industry data, while companies have financial incentives to maximize engagement. Transparent declarations of interest and independent data access are necessary.
Finally, restrictive policy may have unintended effects. Abrupt time limits can shift players to unregulated platforms, encourage identity circumvention or disrupt healthy social networks. Regulation should be proportionate and evaluated rather than assumed to be beneficial.

Future Directions

Research requires standardized case definitions that make functional impairment central. Population studies should combine validated screening with clinical confirmation and report prevalence among all participants as well as active gamers.
Longitudinal cohorts are needed to clarify developmental trajectories, remission, relapse and bidirectional relationships with mental disorders. Studies should include girls, younger children, adults, rural populations and culturally diverse groups.
Treatment trials should compare well-described psychological and family interventions, use functional outcomes, and follow participants for at least 12 months. Research should determine who benefits from controlled-use goals and who requires abstinence.
India needs nationally representative surveillance rather than further isolated convenience surveys. Multilingual tools should be culturally validated, and studies should distinguish gaming disorder, general internet overuse and gambling-related harm.
Public policy should require greater transparency around monetization and age-targeted design. Independent researchers need privacy-protecting access to platform data. Schools and primary-care services should use brief functional screening followed by specialist assessment where needed.
The central aim should not be to minimize gaming time across society. It should be to prevent loss of control, identify harm early, strengthen protective environments and ensure that affected individuals receive non-stigmatizing, evidence-based care.

CONCLUSION

Internet gaming disorder is a clinically meaningful behavioural disorder affecting a minority of people who play digital games. Its defining feature is not enthusiasm or prolonged use, but persistent loss of control accompanied by substantial impairment.
Prevalence remains uncertain because diagnostic criteria, instruments and sampling methods differ markedly. Associations with sleep disturbance, psychological distress, family conflict and educational impairment are consistent, but causality is often unclear. Cognitive behavioural and family-oriented treatments are promising, although the evidence base remains limited.
India faces distinctive challenges arising from rapid smartphone-based gaming expansion, a young population and limited access to specialized mental-health care. Existing studies indicate concern but do not provide a reliable national prevalence estimate.

A balanced public health approach must protect young and vulnerable users without stigmatizing normal recreation. Clinical assessment, family support, digital literacy, responsible game design, proportionate regulation and better longitudinal research are all required. The objective is not a society without games, but one in which gaming remains a chosen activity rather than a behaviour that progressively displaces health, relationships and life opportunities.

REFERENCES

1. World Health Organization. Gaming disorder [Internet]. Geneva: World Health Organization; 2020 [cited 2026 Aug 7]. Available from: WHO Gaming disorder
2. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM-5-TR*. 5th ed, text rev. Washington (DC): American Psychiatric Association Publishing; 2022.
3. Stevens MW, Dorstyn D, Delfabbro PH, King DL. Global prevalence of gaming disorder: a systematic review and meta-analysis. Aust N Z J Psychiatry. 2021;55(6):553-568. doi:10.1177/0004867420962851.
4. Satapathy P, Khatib MN, Balaraman AK, Roopashree R, Kaur M, Srivastava M, et al. Burden of gaming disorder among adolescents: a systemic review and meta-analysis. Public Health Pract (Oxf). 2025;9:100565. doi:10.1016/j.puhip.2024.100565.
5. Zhuang X, Zhang Y, Tang X, Ng TK, Lin J, Yang X. Longitudinal modifiable risk and protective factors of internet gaming disorder: a systematic review and meta-analysis. J Behav Addict. 2023;12(2):375-392. doi:10.1556/2006.2023.00017.
6. Chen Y, Lu J, Wang L, Gao X. Effective interventions for gaming disorder: a systematic review of randomized control trials. Front Psychiatry. 2023;14:1098922. doi:10.3389/fpsyt.2023.1098922.
7. Mihara S, Higuchi S. Cross-sectional and longitudinal epidemiological studies of internet gaming disorder: a systematic review of the literature. Psychiatry Clin Neurosci. 2017;71(7):425-444. doi:10.1111/pcn.12532.
8. Shreenath TR, Varghese KJ. Internet gaming disorder and gaming in Indian gamers: a scoping review to understand an emerging public health concern in India. Discov Psychol. 2026;6:41. doi:10.1007/s44202-026-00579-w.
9. Gurjar YJ, Nikita S, Himalay J, Margi J, Rajveersinh J, Abhishek J, et al. The prevalence of internet gaming disorder and its associated factors among college students in Saurashtra region, Gujarat, India. Addict Health. 2024;16(1):11-16. doi:10.34172/ahj.2024.1451.
10. Saunders JB, Hao W, Long J, King DL, Mann K, Fauth-Bühler M, et al. Gaming disorder: its delineation as an important condition for diagnosis, management, and prevention. J Behav Addict. 2017;6(3):271-279. doi:10.1556/2006.6.2017.039.