

VIDEO GAMING ADDICTION IN PAKISTANI ADOLESCENTS: A GROWING CONCERN

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ABSTRACT

Background and objective:

Video game addiction, or gaming disorder, is marked by impaired control over gaming, prioritizing gaming over other activities, and continuing despite negative consequences. This can lead to psychological, social, and occupational impairments. Despite its high prevalence among adolescents, research in Pakistan is limited. This review aims to compare international research on video game addiction and raise awareness about its impact on Pakistani adolescents.

Methods:

Using the PubMed, Google Scholar, and Cochrane databases, a thorough literature search was carried out to find research on video game addiction among teenagers in Pakistan, the USA, Canada, India, and China, aged 13 to 18. One-hundred-fifty-seven articles were found after narrowing the search to include symptoms, diagnosis, and available treatments. Using filters, research on teenagers and the pertinent psychological, social, or physical effects of gaming disorders that were published between 2014 and 2024 and had free full-text availability were included. Fifty papers were shortlisted after inclusion and exclusion criteria were applied. Additional screening made this list smaller, resulting in 26 articles. These publications were then examined for trends in gaming disorder symptoms, diagnosis, and treatment suggestions, with an emphasis on Pakistani teenagers.

Results:

The review highlighted a significant lack of research regarding Pakistani adolescent gamers. Existing studies focused on older youth, leaving a gap in understanding younger adolescents' gaming behaviors and addiction patterns. Internationally, studies revealed associations between gaming addiction and mental health issues such as anxiety, depression, and sleep disturbances. In Pakistan, studies showed high prevalence rates of Internet Gaming Disorder (IGD) among adolescents, significantly impacting their mental and physical health. Similar trends were observed in China, Canada, and India.

Conclusion:

There is a critical need for research on gaming addiction among Pakistani adolescents. The findings underscore the necessity for targeted interventions and support structures. Future research should focus on longitudinal studies to better understand addiction patterns and cultural influences on gaming behavior.

Keywords: Video game addiction, Gaming disorder, Mental health, Internet Gaming Disorder (IGD), Psychological impact Ischemic stroke, Cerebral edema, Intracranial hypertension, Osmotherapy, Hypertonic saline

INTRODUCTION

Video game addiction, or gaming disorder, is characterized by the continuous and repetitive use of video games, often online, involving interaction with

other gamers. The World Health Organization (WHO) defines it as a pattern of gaming behavior marked by impaired control, increased priority given to gaming over other activities, and continuation despite negative

consequences.¹ This addiction can lead to significant psychological, social, and occupational impairments. Psychologically, individuals may experience anxiety, depression, irritability, and disrupted sleep patterns.² Socially, it can result in isolation, withdrawal from face-to-face interactions, and damaged relationships.³ Occupationally and educationally, gaming addiction can cause declining academic performance, decreased productivity, missed deadlines, and job loss.⁴ Addressing this issue requires a multifaceted approach, including psychotherapy, support groups, and promoting a balanced lifestyle.⁵

The American Psychiatric Association (APA) has adopted a conventional approach to proposing new diagnoses for gaming disorders by utilizing the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5). According to the DSM-5, individuals who exhibit five or more of nine symptoms over a 12-month period may be diagnosed with a gaming disorder.⁶ These symptoms include preoccupation with gaming, experiencing withdrawal symptoms such as irritability and anxiety when unable to play, and developing tolerance, which manifests as needing to spend increasing amounts of time gaming to achieve satisfaction. Additionally, individuals may be unable to reduce or stop gaming despite repeated attempts, lose interest in other activities, and continue excessive gaming despite knowing it causes significant issues. They may also deceive family members or others about the extent of their gaming, use gaming to escape from or relieve negative emotions, and risk losing significant opportunities, such as jobs, educational or career opportunities, or relationships, due to their gaming behavior. This set of criteria is designed to identify individuals whose gaming habits significantly impact their personal, social, and professional lives, aiding in the appropriate diagnosis and treatment.⁷ In rare cases, addiction to video games can lead to severe depression and subsequent suicide.⁸

Despite the high prevalence of video game addiction among adolescents, there is a notable lack of research in Pakistan. To address this gap and contribute valid and well-researched literature, we conducted a comprehensive literature review. Our review compares research papers from Pakistan and abroad, aiming to raise awareness about video game addiction among adolescents in Pakistan. A comprehensive literature search was undertaken to identify research on video

gaming addiction in Pakistan, the USA, Canada, India, and China, specifically focusing on the negative effects of gaming disorder among adolescents. The search aimed to provide an overview of symptoms, diagnoses, and treatment suggestions.

METHODS

A comprehensive literature search was conducted using PubMed, Google Scholar, and Cochrane databases to identify studies focused on video gaming addiction, specifically among adolescents aged 13-18 years in Pakistan, the USA, Canada, India, and China. The search aimed to explore the negative effects of gaming disorders, including symptoms, diagnoses, and treatment options. The search strategy used a combination of keywords and MeSH terms, including: ("Video Games" OR "Gaming Disorder") AND ("Behavior, Addictive" OR "Addiction") AND ("Child" OR "Adolescent") AND "Prevalence," which initially yielded 157 articles. This included 85 articles from PubMed, 54 from Google Scholar, and 18 from Cochrane. Filters were applied to include only studies published between 2014 and 2024, with free full-text availability, focusing on adolescents aged 13-18 years, and conducted in Pakistan, the USA, Canada, India, or China. Articles had to specifically address video game addiction or gaming disorder and its psychological, social, or physical impacts on adolescents. Exclusion criteria involved studies that focused on populations outside this age range, were unrelated to gaming disorder, were non-peer-reviewed articles, opinion pieces, or case reports, or involved participants from countries outside the targeted regions.

After applying these criteria, 50 articles remained and were further screened for relevance. Mujtaba B conducted the initial screening by reviewing titles and abstracts, reducing the pool to 50 articles. Imran H then conducted a full-text review, further narrowing it to 26 articles. Discrepancies between the reviewers were resolved through discussion or consultation with a third reviewer. Figure 1 shows the process of articles selection in the form of a flowchart.

The final 26 articles were analyzed using SPSS version 22.0 to identify patterns in symptoms, diagnoses, and treatment recommendations for gaming disorder, with a focus on adolescents in Pakistan and internationally.

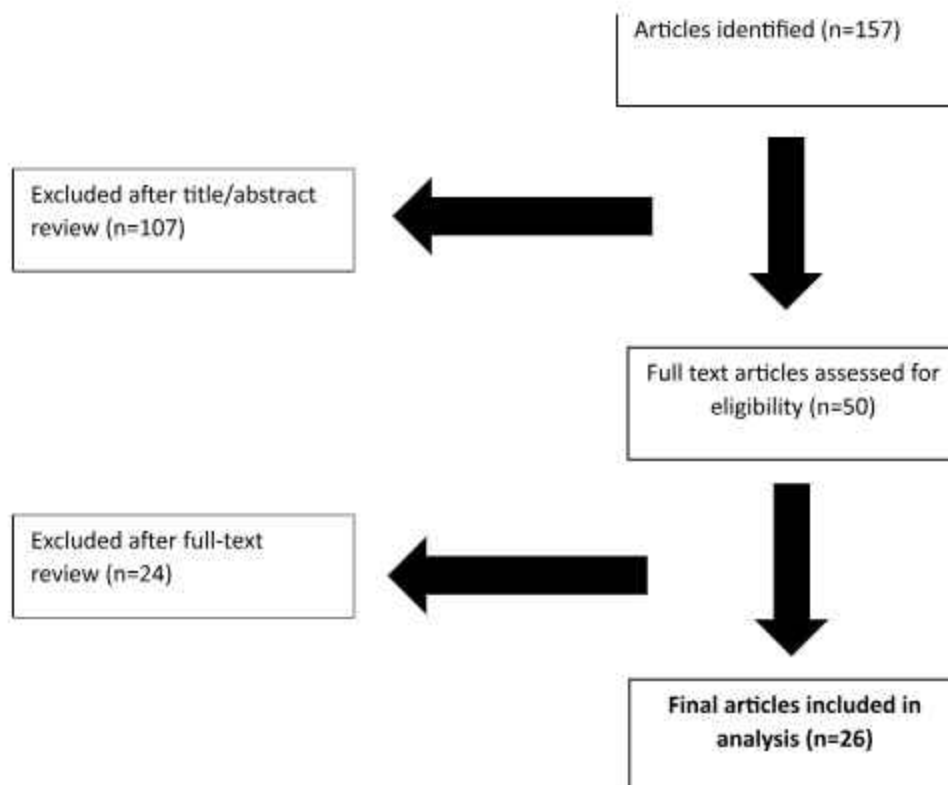


Figure 1: Flowchart of literature search

RESULTS

There is a significant lack of research and academic literature focusing on Pakistani adolescent gamers. Most existing studies target youth aged eighteen and above, leaving a considerable gap in understanding the gaming behaviors, addiction patterns, and associated psychological impacts on younger adolescents. A cross-sectional study conducted in Pakistan, which involved 312 adolescents, revealed alarming findings regarding the impact of gaming addiction on their mental and physical health. The study reported that a substantial number of these adolescents experienced significant mental health issues, including increased levels of anxiety, depression, and stress.⁹ Another comprehensive study, which focused on 600 participants aged 18 and above, revealed that a sizable portion of the sample population experienced notable sleep disturbances and daytime dysfunction linked to gaming addiction. The research highlighted that excessive gaming not only disrupted regular sleep patterns but also led to chronic sleep deprivation.¹⁰

Another study, involving 160 participants aged 19 and older, revealed that gaming serves as a significant

outlet for emotional release, providing a cathartic experience that helps individuals manage and alleviate day-to-day aggression. The findings suggest that gaming can be a therapeutic activity, allowing participants to channel their frustrations and stress in a controlled and engaging environment.¹¹

A recent study statistically examined the prevalence of Internet Gaming Disorder (IGD) among university students in Pakistan, using a sample of 315 students who had been actively playing video games in the previous several months. The study found that 50.8% had developed or were at elevated risk of acquiring IGD symptoms.¹² A similar study conducted by Khalid A et al. reveals a concerning trend: a staggering 58.9% of young individuals engaged in online gaming in Pakistan were afflicted by Internet Gaming Disorder (IGD).¹³ A study sought to evaluate the relationship between video gaming, iron deficiency anemia, and academic achievement in children aged five to 16 years. Excessive video gaming was found to be significantly associated with anemia and lower IQ ($p < 0.001$). Furthermore, anemic children were found to engage in less extracurricular activities and exhibit inferior

academic achievement.¹⁴ Moreover, a study conducted by Fatima A et al reveals a strong association between IGD and depression, anxiety, and stress, which influences therapeutic care.¹⁵

Given the global uniformity of video games and consoles, it was deemed pertinent to incorporate data from beyond Pakistan's borders as well. According to a cross-sectional survey of 1400 Chinese students, children as young as fifth grade used games to distract themselves from their difficulties and feel better. Students were also unable to manage how much time they spent gaming, resulting in a lack of sleep and an inability to meet their day-to-day duties. This addiction was common among 12th grade students as well.¹⁶ Similarly, an examination involving 495 Chinese adolescents revealed a significant observation: individuals of varying ages and educational levels demonstrated cognitive distortions linked to online gaming however, these distortions were shown to respond positively to treatment with Cognitive Behavioral Therapy (CBT).¹⁷ Participating in online video gaming, watching, or chatting for over an hour each day increases the likelihood of developing Internet Gaming Disorder (IGD).¹⁸ Autism was also found to be linked to IGD. Liu S et al. observed that, after controlling for age, gender, and sensation seeking, there was a link between autistic features and poor emotion regulation. As a result, this poor emotion control was associated with decreased school connectivity, which was linked to increased Internet Gaming Addiction (IGA).¹⁹

A comprehensive study involving 5840 adolescents conducted in Canada unveiled the prevalence of anhedonia, initiative-taking aggression, and extreme shyness among a significant subset of participants.²⁰ Additionally, another study, comprising 2832 individuals, highlighted that 18% of participants exhibited frequent gaming habits coupled with challenges related to preoccupation with gaming and disruptions in their academic and familial spheres.²¹ A cross-sectional study conducted in India involving 1729 adolescents revealed that a significant majority, accounting for 79.29% of the participants, engaged in video gaming, with 2.55% exhibiting signs of addiction accompanied by adverse effects.²² This data was further contextualized by another Indian study involving 200 participants, which indicated a prevalence of gaming addiction among adolescents at 17.5%.²³ Adding to this, adolescents' emotional and behavioral difficulties were found to have been linked to their online gaming behavior.²⁴ Moreover, a cross sectional study conducted at a tertiary care hospital OPD showed a notable positive association between gaming addiction and increased levels of aggressive behavior, social difficulties, and rule-breaking.²⁵

Table 1 summarizes the included studies.

Table 1: Summary of included studies

Study	Country	Sample Size	Age Group	Type of Study	Key Variables	Key Findings
1) WHO (2023)	Global	Not applicable	Not applicable	Review	Gaming disorder definition	Defines gaming disorder, focusing on impaired control, priority to gaming, and continuation despite negative consequences
2) Weinstein & Lejoyeux (2010)	Global	Not applicable	Not applicable	Review	Internet addiction, excessive use	Overview of internet addiction and its association with excessive internet use
3) Kowert & Oldmeadow (2015)	Global	Not specified	Not applicable	Survey	Social rejection, online gaming	Validates social rejection in online gaming communities
4) Hussain & Griffiths (2009)	Global	Not specified	Not applicable	Qualitative analysis	Attitudes, feelings, experiences	Qualitative analysis of gamers' experiences, feelings, and attitudes
5) King et al. (2011)	Global	Not specified	Not applicable	Systematic review	Internet addiction treatment	Assesses clinical trials of internet addiction treatments
6) Petry et al. (2014)	Global	Not specified	Adolescents	Review	IGD in DSM-5	Internet gaming disorder outlined in DSM-5 criteria
7) American Psychiatric	USA	Not applicable	Adolescents	Diagnostic manual	Diagnostic criteria	Outlines the nine criteria for diagnosing internet

Association (2013)						gaming disorder in DSM-5
8) Mamun et al. (2022)	Pakistan	3	Adolescents	Case study	Suicide, PUBG	Reports on suicides linked to PUBG during the pandemic
9) Shabih et al. (2021)	Pakistan	312	Adolescents	Cross-sectional	Mental and physical well-being	Gaming addiction causing mental health issues (anxiety, depression, stress)
10) Zaman et al. (2022)	Pakistan	600	18+	Cross-sectional	Sleep, gaming addiction	Gaming linked to sleep disturbances and daytime dysfunction
11) Shabbir et al. (2020)	Pakistan	160	19+	Cross-sectional	Gaming addiction, aggression	Gaming used as a therapeutic outlet for aggression
12) Zahra et al. (2019)	Pakistan	315	University students	Cross-sectional	Internet gaming disorder (IGD)	50.8% of students were at risk of IGD symptoms
13) Khalid et al. (2022)	Pakistan	Not specified	Adolescents	Path analysis	IGD, impulsivity, emotional intelligence	58.9% of youth engaged in online gaming had IGD symptoms
14) Rehman et al. (2022)	Pakistan	Not specified	Children	Cross-sectional	Anemia, academic performance	Gaming associated with anemia and poor academic performance
15) Fatima et al. (2024)	Pakistan	Not specified	Adolescents	Cross-sectional	IGD, mental health	Strong association between IGD and depression, anxiety, stress
16) Khorsandi & Li (2022)	China	Not specified	Children, adolescents	Multi-analysis	Video gaming addiction	Gaming used as distraction, causing lack of sleep and inability to manage daily tasks
17) Li & Wang (2013)	China	495	Adolescents	Cross-sectional	Cognitive distortions, gaming addiction	Cognitive distortions linked to gaming addiction, treated with CBT
18) Yang et al. (2021)	China	Not specified	Children	Cross-sectional	IGD, anthropometric correlates	Daily gaming over one hour linked to increased risk of IGD
19) Liu et al. (2017)	China	Not specified	Children	Cross-sectional	Autistic traits, emotion regulation	Autistic traits linked to poor emotion regulation, which in turn is linked to IGD
20) Lau et al. (2018)	Canada	5840	Adolescents	Cross-sectional	Anhedonia, aggression	High prevalence of anhedonia,

						aggression, shyness among gamers
21) Turner et al. (2012)	Canada	2832	Adolescents	Cross-sectional	Problematic gaming, academic impact	18% of participants showed frequent gaming habits, affecting academics and family life
22) Amudhan et al. (2021)	India	1729	Adolescents	Cross-sectional	Gaming addiction, technology use	79.29% of participants engaged in gaming, with 2.55% showing signs of addiction
23) Navaneetham & Chandran (2018)	India	200	Adolescents	Cross-sectional	Gaming addiction, study habits	17.5% of adolescents had gaming addiction, negatively impacting study habits
24) Singh et al. (2020)	India	Not specified	Adolescents	Cross-sectional	Emotional, behavioral issues	Online gaming linked to emotional and behavioral problems
25) Gupta et al. (2022)	India	Not specified	Children	Cross-sectional	ADHD, disruptive behavior	Positive association between gaming addiction, aggression, and social difficulties
26) Mohammad et al. (2023)	Global	Not specified	Adolescents	Systematic review	Symptoms, mechanisms, treatments	Review of symptoms, mechanisms, and treatment options for gaming addiction

DISCUSSION

Video game addiction has grave consequences and requires immediate intervention. It is characterized by prolonged internet gaming, which frequently involves interaction with other gamers, and can have negative consequences across several life areas. Players commonly fall into addiction, resulting in a wide range of social, educational, and health-related difficulties.^{20,27} Many IGD-affected teenagers will jeopardize their health, struggle academically, and may become isolated and depressed. There is some evidence that IGD does not impact everyone, but that the disorder is developed and maintained by a combination of personal, familial, and environmental risk factors, as well as concomitant conditions.²⁸

There is a significant lack of comprehensive research on teenagers in Pakistan and India. In contrast, a large body of study has been undertaken among the

populations of China and Canada, providing light on the distinct lack of focus paid to understanding the experiences and issues that teenagers confront in the former locations.

The American Psychiatric Association has historically used a standard technique to introduce new diagnoses for gaming disorders, relying on the criteria stated in DSM-5.²⁹ Individuals who match these criteria exhibit a fixation with gaming, have withdrawal symptoms upon quitting, struggle to disengage from gaming, and may imperil various aspects of their lives, including job, education, career aspirations, and interpersonal relationships.³⁰ Another unresearched symptom is sleep disruption caused by screen viewing related to gaming. Exposure to blue light causes problems since newer forms of light emit massive amounts of blue light (440-500 nm), which causes photochemical damage.³¹

Our study found a strong link between excessive gaming and negative psychological, social, and academic outcomes among Pakistani adolescents, which is consistent with findings from the international literature. Similarly, our analysis reveals astonishingly high rates of gaming addiction among Pakistani teens. According to studies, more than half of the studied population suffers from IGD, which has a substantial impact on their mental and physical well-being. The observed psychological distress, which includes anxiety, sadness, and stress, highlights the critical need for tailored therapies and support structures to alleviate its impacts.³²

Several limitations must be acknowledged when interpreting our literature review findings. The scarcity of studies focusing especially on Pakistani adolescent gamers limits the generalizability of our findings. Furthermore, relying on self-reported data and cross-sectional study designs may create biases and restrict causal findings. Future research using longitudinal designs and a variety of approaches can provide a more complete picture of gaming addiction

among Pakistani teenagers.

Moving forward, further studies may delve deeper into the patterns of gaming addiction over time among Pakistani teenagers. Understanding how addiction develops, and its long-term consequences can help guide more effective interventions. Furthermore, we need to investigate how cultural characteristics particular to Pakistan influence gaming habits and treatment outcomes. This entails bringing together professionals from several sectors to create interventions that are appropriate for the cultural setting.

CONCLUSION

Our findings highlight the critical need for focused interventions and effective support networks to combat gaming addiction in Pakistani teenagers. By matching our findings with worldwide research trends, we hope to build evidence-based solutions that benefit Pakistan while also contributing to international efforts in prevention, intervention, and policymaking.

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Hamza Imran; Concept, design, data collection, data interpretation, manuscript writing

Batool Mujtaba; Concept, design, data collection, data interpretation, manuscript writing

Hamza Waheed; Data interpretation, manuscript writing, manuscript review

Muhammad Ibrahim; Data interpretation, manuscript writing, manuscript review

All the authors have approved the final version to be published and agree to be accountable for all aspects of the work.



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