



INTERNET GAMING DISORDER: A SYSTEMATIC LITERATURE REVIEW AND FUTURE IMPLICATION

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Abstract:

Objective: Digital technology use has inevitably increased as a result of the enormous success of online gaming in recent years. This has increased the gaming propensity of the younger generation and led to an exponential surge in excessive video gaming among kids and teenagers. This scoping review summarises the empirical literature on online gaming addiction (IGD) that has been published between 2012 and 2022 and establishes its scope, or coverage. It was carried out to locate and organise the empirical data on IGD that is currently accessible, including information on its prevalence, causes, comorbidities, and health effects.

Material and Methods: To find pertinent articles published between 2015 and 2021, literature searches were conducted in databases such as Google Scholar, the National Centre for Biotechnology Information (NCBI), and PubMed. This was done utilising the PRISMA exclusion and inclusion criteria (recommended reporting items for systematic reviews and the meta-analyses technique). The present study comprises 26 empirical research studies.6672

Results: Since IGD's inclusion in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the International Classification of Diseases (ICD-11), there have been undiscovered areas in the field. Even though its detrimental effects on mental health and well-being are unaffected globally, IGD is expanding quickly and needs serious global attention.

Conclusion: Results increase our understanding of IGD, point out gaps in knowledge, and suggest new lines of inquiry. The assessment, tools, prevention, intervention, and treatment of IGD must be the main areas of investigation and development.

Keywords: DSM-5, ICD-11, Internet gaming disorder, mental health, PRISMA

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Introduction:

Children are developing in an era of digital technology and becoming familiar with computers, mobile devices, and the Internet at early ages. Gaming disorder is emerging as a major mental health problem in children and adolescents worldwide (Ioannidis et al., 2018), even though there remains a debate about whether game playing is beneficial or harmful to children and adolescents. Internet gaming addiction is persistent and frequent use of the internet to play games that significantly impair one's psychosocial functioning or presents mental health issues in daily life. Addiction is defined as the repetition of behaviour with known harmful consequences (APA, 2018, Kovac, 2012). Addiction can occur with any activity that a consumer can develop an excessive appetite. According to media sources, the present epidemic has made online gaming addiction more severe due to children and young adults have increased access to online devices. Half of all mental illness begins by the age of 14 years, and mood regulation problems sometimes begin around the age of 11 years, before puberty (Forbes & Dahl, 2010; Guo et al., 2012). Internet gaming disorder (IGD) and depression interact with each other and share neural mechanisms (Choi et al., 2017; Liu et al., 2018). Similar brain regions show abnormal functioning in both depression and IGD. The amygdala, prefrontal cortex, gyrus, and the connection between the frontoparietal lobe and the amygdala appear similarly disrupted in people with gaming problems and those with depression. The behaviour pattern is of sufficient severity to result in significant impairment in personal, family, social, educational, occupational or other important areas of functioning." Moreover, the pattern of OGA may be continuous or episodic, and in order for a diagnosis to be assigned, it should be normally evident over a period of at least 12 months, although the required duration may be shortened if all diagnostic requirements are met and symptoms are severe (WHO, 2021).

Recent studies indicate that online gaming addiction (IGD) is rampant among children and young people since the COVID-19 epidemic, with 19 percent of males and 7.8 percent of girls being identified as having gaming addiction (Newport Academy, 2021). IG may become much more common within this susceptible group of our society as gaming industry sales are predicted to reach more than \$200 billion globally by 2023 (Statista, 2021). As a result, it requires immediate attention. A systematic review showed that individuals with depressive symptoms are almost three times as likely to develop Internet addiction

than those without depressive symptoms (Carli et al., 2013)

This study provides a thorough analysis of IGD in children and young adults. Children and young adults are particularly drawn to online games, which puts these impressionable people who are still forming their cognitive skills at risk of acquiring a gaming addiction (Klausmeier & Allen, 2014). Another study (Király et al., 2015) suggested that psychiatric symptoms were both directly and indirectly negatively associated with the level of gaming addiction. Estévez et al. (2017) showed that a lack of emotional clarity and control over emotional responses predicted problematic video game involvement in their sample. Some people with emotion regulation difficulties use video game environments to deal with negative affectivity, thus increasing the risk of negative consequences (Kardefelt-Winther, 2014). Higher levels of depression have been associated with higher Internet addictive behaviours (Stavropoulos & Adams, 2017). Online gaming has developed into a crucial instrument for virtual interaction. The popularity of online games with social participation as a core component, such as Minecraft, Fortnite, Fall Guys, and Animal Crossing, is proof of this. According to the social displacement hypothesis, the more time a person spends doing one thing, the less time that may be spent doing another. Children who spend excessive time on Internet gaming typically spend less time interacting with other people (Caplan, 2003). While these games help kids and teenagers interact with their peers, they have also contributed to the growth of IGD. Online or internet gaming addiction is defined by the American Psychiatric Association (Association, 2013) as "persistent and recurrent use of the internet to engage in games, often with other players, leading to impairment or clinically significant distress" in a person's life in a variety of ways. The behaviour pattern is severe enough to significantly affect one's ability to perform in one's personal, familial, social, educational, occupational, or other key domains. A lack of social interaction may lead to negative emotions. Gentile et al. (2011) reported elevated depressive symptoms after video-gaming problems started. Depressive symptoms in adolescents tend to occur before puberty. In terms of genetic vulnerability for a major depressive disorder, the experience of stressful life events or the presence of psychiatric disorders during childhood have been linked to the onset of depression (Piko et al., 2011; Shapero et al., 2014). A diagnosis of IGD must also be made over a minimum of 12 months, though this time frame may be decreased if other diagnostic criteria are met and symptoms are severe (WHO, 2021).

Furthermore, the pattern of OGA may be continuous or episodic. The research has evolved along with the risks and public knowledge of IGD. But because the field is growing so quickly, there is a continuing need to document the state of the profession's knowledge so that it can guide future paths in study, practise, and policy. Additionally, the requirement to investigate IGD's impact on the next generation of citizens provides us with insights into the future structure and culture of our society.

Therefore, the goal of this systematic review is to (a) specifically evaluate and synthesise the conceptual underpinnings in the existing literature, (b) identify the methodological approaches used to study this significant phenomenon, (c) summarise key theoretical frameworks that support the debate, and (d) provide guidance that can help guide future research. Since a review by Kuss and Griffiths (2012) about ten years ago, we are not aware of a comprehensive synthesis of empirical and theoretical research that specifically focus on the younger generation of society. This is a significant vacuum in the research, as evidenced by the developments in the online gaming landscape over the past several years and the pervasive sociocultural conditions.

One benefit of systematic literature review (SLR) is that it offers a repeatable, scientific, and transparent procedure to assess the state of the field at the present time (Rosendo-Rios et al., 2022). However, the topic of online gaming addiction is still a recent one, with numerous research looking at different aspects of it. In order to detect these tendencies and to provide a systematic review that can serve as guide for future research in this burgeoning topic, the goal of this study is to assess the body of existing literature in this field. The suggested directions will assist researchers in identifying difficulties and gaps that have not been fully examined and could serve as the foundation for additional research pathways, starting with the gaps that this review exposes.

Material and Methods:

For this particular study (process showing the selection of publications), the recommended reporting items for systematic reviews and meta-analysis (PRISMA) criteria and checklist were adhered to. The authors use PRISMA procedures to guarantee the accuracy and thoroughness of their systematic reviews and meta-analyses. The PRISMA statement and its explanations were created by the authors to assist researchers in reporting on a wide range of systematic reviews that evaluated the advantages and disadvantages of various medical conditions. This article is a

systematic review of the empirical research on internet gaming addiction and aims to compile the key findings, particularly with regard to prevalence, causes, comorbidities, and health effects.

Using the keywords "internet gaming disorder," "precipitating factors of IGD," "addictive behaviour," "IGD intervention," "problematic behaviour in online games," "stress and anxiety in IGD," "etiological factors of IGD," "IGD in college and university students," "distribution and determinants of IGD," "comorbidities of IGD," and "comorbidities of IGD," a search was conducted on Google Scholar, Web of Science, and "the consequences of IGD on mental health and well-being."

Boolean operators, such as and, or, and not, were employed during the search procedure to find accurate and pertinent materials relating to IGD. Searches were conducted independently for each keyword and phrase, such as internet gaming disorder, risk factors of IGD, mental health effects of IGD, etc. The following inclusion and exclusion criteria were used in this study to select articles of importance for the review purpose. Empirical studies reporting IGD in relation to its understanding, screening and psychometric tools, psychological risk factors, consequences, and intervention, as well as studies specifically in the context of internet gaming disorder that had been published in the English language. Additionally, the inclusion criteria for this study only took articles released between 2015 and 2022 into account. Guided by the objective of the review and the inclusion-exclusion criteria, A literature search using several databases turned up 1137 items. Following the removal of duplicates, 821 articles were kept for preliminary evaluation. 780 articles were eliminated based on the exclusion criteria by looking at the titles and abstracts of the 821 publications. This was brought about by the fact that the majority of the 821 articles included one or two factors relating to IGD in addition to internet addiction, social media addiction, and gambling addiction. The study did not include reviews, case studies, s that were not available in full text. The present review included 41 empirical publications. The sample sizes of the empirical research included in this analysis varied from 10 to 1800, and most of them used cross-sectional survey methodologies and online or web surveys. Overall, the method used for this review article involved a systematic search and synthesis of the literature, and a critical analysis of the findings to provide insights into the relationship between body image and self-esteem, as well as strategies for promoting positive body image and improving mental health outcomes

Results

In order to identify and map the empirical data that is currently accessible on IGD, a scoping review was conducted to highlight the important ideas and conclusions from the selected papers. In order to show IGD from a variety of angles, including the prevalence of IGD OGA, determinants of IGD, comorbidities, and health effects of IGD, the existing literature was divided into several categories.

Prevalence of IGD OGA:

Studies on prevalence provide estimates of the population afflicted by a certain ailment and are used in epidemiology. These estimates can be useful for making crucial health-related choices, but they run the danger of being biased. Before relying on the results of prevalence studies, it is therefore believed vital to take features and psychometric qualities of assessment theories and instruments into account. Previously reported prevalence rates of range from 1.2% (Rehbein et al. 2015) to 8.5% (Gentile 2010). As youth continue to increase their Internet gaming into adolescence, we should expect the rates of IGD to increase as well, though a decline might emerge when adolescents enter adulthood (Rehbein et al. 2016). Applying the DSM-5 criteria and using a diagnostic interview, the prevalence discerned herein is at the lower end. Whether the proposed symptoms actually capture a disorder or merely heavy involvement in Internet gaming is much disputed (Griffiths et al. 2016; Kardefelt-Winther 2015; Petry et al. 2014). Two correlated dimensions underlying IGD symptoms, strong gaming involvement and negative gaming consequences resemble previous results (Brunborg et al. 2015); Studies investigating have employed a range of evaluation methods that varied substantially in their structure, characteristics, and function. IGD has been reported to affect 3.6% to 23.0% of university students, schoolchildren, youths, and adolescents in India. The frequency of IGD varies across the world and has been pegged around 0.3% by several research. Recent research suggests that online gaming addiction (IGD) is rife among children and young adults with 19 per cent of boys and 75 percent of girls classified as having gaming addiction (Newport Academy, 2021). With gaming industry revenues expected to reach more than \$200 billion globally by 2023 (Statista, 2021), may become even more prevalent within this vulnerable population of our society and thus, it warrants immediate attention. Online multiplayer gaming practises, spending more time gaming, and more severe depression symptoms are signs of an emerging internet gaming problem. According to

studies, is significantly influenced by a variety of personality traits, domains, and. Future study is needed to identify particular personality qualities that may lead people to pathological gaming. Different personality traits, along with playing, are a vital element in the onset, progression, and maintenance of pathological gaming. Adolescents with IGD exhibited considerably increased global cerebral blood flow in the regions of the brain that are important for executive function, inhibition, conscious drug desires, learning and memory (insula and amygdala). Additionally, adolescents with IGD have less grey matter in the areas related to perception, motor coordination, attention, and working memory. These results are in line with studies on the amount of grey matter in the IGD. As a result of increased activity in brain regions associated with addiction over a longer period of time, gaming addiction led to neuroadaptation and structural changes at the level of neuronal circuitry. On a behavioural level, people with internet and gaming addictions tend to have cognitive limitations in a number of areas. More study and the advancement of addiction treatment techniques will be sparked by the neurological correlates linked to the growth of internet and gaming addiction.

Comorbidities and health consequences of IGD Consequences of IGD :

As captured by studies by King & Delfabbro (2018), Kuss & Griffiths (2012) and Gentile et al (2011) include: mood changes and feeling bored, angry and/or irritable; depression, anxiety and increased risk of suicide; poor physical health, disrupted sleep patterns and poor diet, including overconsumption of caffeine; conflict in social situations and interpersonal relationships leading to loss of friendships, feelings of isolation and even divorce; financial insecurity and reduced productivity at work, with absenteeism and drop-out Symptoms of IGD co-occur with the most prevalent psychiatric disorders in childhood and adolescence, or symptoms of such disorders, including attention-deficit/hyperactivity disorder (ADHD), conduct disorders, depression, and anxiety (Kim et al. 2016; Kuss et al. 2016; Mihara and Higuchi 2017). Given that there is little symptom overlap with other common disorders in childhood and adolescence, also including impulse control disorders and ADHD, co-occurrences are likely to have other reasons than shared symptoms of IGD with other mental disorders (Angold et al. 2000; Wichstrøm et al. 2018). Co-occurrence is therefore more likely a result of causal mechanisms, as IGD may influence or be influenced by other disorders, or confounding

factors that influence both IGD and other disorders. Notably, all IGD studies of comorbidity have relied on questionnaires. Thus, assessment of co-occurring symptoms of disorders as defined by the DSM system and by means of clinical interviews is lacking. Etiological models of IGD and other potential Internet addictions are just beginning to emerge (Brand et al. 2016; Dong and Potenza 2014; Young and Brand 2017). Despite some differences, several important communalities exist between these models, which inform the present research. First, a range of core personal characteristics are hypothesized to predispose the youngster to IGD, including psychopathology, personality factors (e.g., low self-esteem, high impulsivity and negative affectivity), and a set of social cognitions (e.g., perceived loneliness, poor social competence) (Mihara and Higuchi 2017). Second, impaired cognitive attentional and behavioural control may increase the risk through lack of suppression of gaming urges relative to long term goals (Dong and Potenza 2014; Wei et al. 2017), but impaired executive control may also result from heavy gaming and thus enter into a vicious circle, maintaining or even aggravating IGD (Brand et al. 2016; Dong and Potenza 2014). Online gaming addiction and co-occurring depression are associated with more pronounced psychiatric phenomenology and a larger psychiatric load. In a research of 24 young males who met the DSM-5 criteria for (IGD) and 25 matched controls, it was discovered that patients also had greater levels of psychopathological comorbidity and chronic daily stress. In a 2019 research, Archana et al. discovered that among Indian teenagers, there were lifestyle abnormalities and a significant correlation between depression, anxiety, and stress and IGD. The most prominent health risks include weight loss from a limited diet (or weight gain from over intake), physical issues such as discomfort from bad posture and repetitive strain injuries, less sleep, and sleep reversal cycles that result in exhaustion and sluggishness. Numerous research indicated that IGD has a wide range of unfavourable psychological and behavioural effects. A variety of temperaments, including impatience, wrath, and dull conduct, have been documented in several research. Negative effects of IGD include suicidal ideation, depression, and anxiety. Some studies reported that people with IGD had conflict with near and dear loved ones and a smaller number of real-world friends; inducing social isolation and social phobias. Some individuals reported sleep quality issues, which had an impact on their health. Young children and adolescents were shown to have a high percentage of school absences, low academic

performance, and school dropouts. The likelihood of financial insecurity, low self-efficacy, separation, and divorce all rise as a result of IGD, which also causes significant interruptions in work and productivity. Time spent playing video games leads to missed opportunities, dissatisfaction, and disruption of daily life and work, including important tasks (such as sleep, feeding, and personal hygiene), real-world social contact (such as talking to strangers, seeing friends in person, and visiting family), and important obligations (such as education, job, pet care, and children).

Discussion

In terms of prevalence, causes, comorbidities, and health effects, this study evaluates and attempts to summarise empirical data on internet gaming disorder. Nowadays, playing video games is highly widespread around the world. An example of a behavioural addiction is online gaming addiction, which is thought to have neurological abnormalities in common with other addictive illnesses. There is very limited room for outside physical activity, and playing computer games tends to lead to a sedentary lifestyle. This has been more prevalent recently since playing video games and internet gaming has become a common pastime for most teenagers. IGD is a dynamic disorder that causes injury to both the body and the mind. It has several symptoms that call for therapy. The Internet Gaming Disorder Scale (IGD-9) and Patient Health Questionnaires (PHQ-9) should be administered concurrently to assess for comorbid problems. Eliminating gaming behaviour that are impeding self-care, relationships, and other life obligations is the main goal of therapy. Cognitions aid in the development of a therapeutic formulation and guide treatment plans. The issue in this field is the dearth of useful information, such as full explanations of the methods and techniques used in IGD treatment trials or standardised, step-by-step treatment manuals. In order to treat a gaming condition, psychological treatment, including both individual and group therapy, is the most often employed method. Furthermore, the age at which IGD first manifests itself may be a helpful indicator of the prognosis for IGD. Because the causes of gaming disease are complex and involve several biopsychosocial factors, treatment is difficult, making prevention all the more important. Further research in varied gaming groups is needed to understand the aetiology, prevalence, and related risk factors, as well as youth-specific prevention and treatment approaches. Numerous research recommended restricting the usage of video games and investigating the following actions to be taken: Parents should restrict the amount of time and

gaming material their kids may spend playing on the computer.

Future research direction on Internet gaming disorders

Internet addiction has been widely explored, but shockingly harmful video gaming or online gaming by young people has garnered very less attention in India and internationally. However, research on IGD from across the world also discusses a wide range of other difficulties and worries in addition to its related components. As a result, a portion of the population is more vulnerable to the dangers of excessive digital gaming, especially children and young adults. These results overwhelmingly show that young people are more susceptible to IGD. Researchers and clinicians should investigate the ultimate effects and all-inclusive approaches to treating IGD in greater detail in light of these persisting conditions, which warrant and frighten them both. Further research is needed to determine whether the nine IGD OGA symptom parameters and the cut-off points currently proposed are ideal or should be re-evaluated. The dynamic nature of online gaming and its monetization over time has made it similar to gambling. The transition in nature of gaming systems and their interface with other tasks should be taken into account for future study. Many aspects of gaming disorders are still being disputed. For example, (1) the extent to which online gaming addiction is considered a mental illness; (2) the negative effects of gaming addiction; (3) the relationship between IGD OGA and other comorbid psychological disorders; (4) the clinical manifestation of gaming addiction; and (5) the aetiology and progression of OGA. This scoping review addressed the type and scope of scientific evidence on IGD. Future research on IGD should focus on: (1) its epidemiological investigation, (2) the expansion and standardisation of diagnostic tools for better diagnosis and treatment, (3) the persuading factors of game behaviour, (4) neurological factors, and (5) treatment and prevention in light of the extensive drawn and included empirical findings. At the same time, while IGD is undeniably a rising problem for all developing nations, the scarcity of research on it necessitates an urgent need to analyse and study as a multidimensional concept, with many causes and risk factors from a global viewpoint.

Conclusion

The findings of this study provide new information to support a better understanding of the psychological factors behind the development and maintenance of IGD among students. (Snodgrass et al., 2018)). Adolescents with IGD had

relatively increased global cerebral blood flow in the regions of learning and memory. IGD is now becoming a serious health hazard in many underdeveloped nations. Many persons with IGD difficulties go untreated, causing disruptions in their personal, professional, and social lives. Childhood is a risk period for the development of both depression and IGD(Wei et al. 2017). These two disorders frequently co-occur in childhood and are associated with significant functional impairment in later life. Given the ongoing development of mental characteristics throughout adolescence and early adult life, a better understanding of the directionality of the onset and course of these disorders during childhood will be helpful in developing more effective preventive and treatment strategies. Finally, the most significant research, therapeutic effort, and advancement in this subject are restricted to a few age groups, which must be broadened to include all age groups. There is an urgent need not only for an adequate and authoritative health care policy but also for awareness-raising and the construction of specialised clinics throughout the world to give options for removing oneself from virtual reality.

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Conflict of interest

There are no conflicts of interest to disclose

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