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Is Internet gaming disorder really a new form of mental disorder? A critical overview

Summary

There is no doubt that the Internet has profoundly modified our daily life, in particular becoming an integral part of young people's life and activities. It is a source for information, a new channel of communication and it is used for various leisure activities. On the other hand, it also carries a potential threat to people's mental health, when people spend excessive amount of time on its use and when time spent gaming online tends to prevail when compared to other activities. The peak time spent on Internet gaming is increasing in young people, with near to 11 hours per day. Computer gaming has been conceptualized as continuum from an enjoyable activity to a pathological and an addictive use. In the new version of the International Classification of Diseases (ICD-11), Gaming Disorder (GD) has been included in the chapter of mental and behavioural disorders. Prevalence rates of Internet Gaming Disorder (IGD) range from 0.2% to 50%, but the true extent of the phenomenon is not yet known due to the lack of specific diagnostic criteria prior to the publication of ICD-11. The inclusion of this new disorder has generated keen debate and raised controversies in the scientific community. Like most behavioural disorders where pathology is identified by variation in norms, it would appear that there is a clear need to define an appropriate boundary between normal Internet gaming and IGD. We believe that considering IGD as proper mental disorder may generate a common ground for assessment, research and development of appropriate treatments. However, high-quality longitudinal multicenter studies are urgently needed in order to identify possible biomarkers of this new disorder and to understand the developmental trajectory of IGD.

Key words

Internet Gaming Disorder • Behavioural addiction • Technology • Impulsivity • Loneliness • Virtual reality

Introduction

There is no doubt that the advent and increased use of Internet around the globe has profoundly modified our daily living and functioning. This has become a major part of the millennial generation (the young people born between 1985 and 2000). The use of social media therefore has become not only a source of keeping in touch but also information and entertainment¹⁻³. The latter functions are likely to affect people's mental health and well-being especially when young people spend excessive amount of time on its use to the detriment of other activities. In particular, effects of new technologies on mental health, especially the Internet, have profoundly modified our daily life, becoming an integral part of young people's life⁴. Internet provides information, it is a new way for communication, and also a leisure activity^{5,6}. Equally important, it also carries a number of problems and potential threats to mental health, especially when its use starts to dominate people's lives as seen when time spent on gaming online becomes predominant over other daily activities and interferes with daily living. Use of the Internet and computer gaming is a frequent activity for children and adolescents. According to recent US data, adolescents spend more than 11 hours per day using mobile phones or computer, or searching web pages. Computer gaming has been recently

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conceptualized as continuum from an enjoyable activity to pathological and addictive use⁷. As a result of this over-activity and spending increasing amounts of time gaming online, there is a serious concern that vulnerable individuals will go on to develop a full-blown clinical disorder^{8,9}. This may lead to a neglect of “real-life” relationships, school or work-related duties, and even basic physical needs, with a detachment from reality and avoidance of social activities. Therefore, Internet gaming is becoming a serious public health concern in Asia where about 30 million internet gamers are recognized as addicted^{6,10}.

In the new version of the International Classification of Diseases (ICD-11)^{11,12} Gaming Disorder (GD) has been included in the chapter of mental and behavioural disorders. Therefore, there is the need to adapt training curricula and clinical practice to modern patients has been recently stated in the mental health field¹³⁻¹⁵. In fact, many traditional mental disorders, such as catatonia, hysteria or hebephrenia, seem to have disappeared from clinical observation, while new forms of mental health problems emerge regularly¹⁶⁻¹⁸. The question arises whether these are proper mental disorders or consequences of modern society, such as the ongoing economic downturn and crisis¹⁹, the migration processes²⁰, the terrorist attacks²¹, the use of novel psychoactive substances²² or response to development of new technologies^{23,24}.

The decision to include the GD in the ICD-11 has generated debates and caused controversies in the scientific community whether this should have been included or not²⁵⁻²⁸. Criticisms mainly refer to the risk of overpathologizing and overtreating a common behavior of young people²⁵⁻²⁷. On the contrary, the need for early detection and early treatment in young people, based on epidemiological and clinical data²⁹, remains the main argument in favour of the inclusion of GD among behavioural addictions and mental disorders.

This paper is a critical overview of recent studies on Internet Gaming Disorder (IGD). The epidemiological, clinical and social characteristics of IGD will be described. The psychopathological characteristics of this disorder will also be highlighted.

Methodology

The databases MEDLINE, ISI Web of Knowledge – Web of Science Index, Cochrane Reviews Library and PsycINFO were searched for papers published in the past few years. The key word “Internet Gaming Disorder” has been matched with “prevalence”, “psychopathology”, “pharmacological treatments”, “psychosocial treatments”, and entered in PubMed. Only papers written in English and published in peer-reviewed journals have been included in our analysis. The reference lists

of all papers selected in the primary search have been manually searched for other potential manuscripts. Papers have been grouped in four categories: 1) epidemiological studies; 2) papers related to IGD diagnostic characteristics; 3) psychopathological studies; 4) intervention studies.

Results

Epidemiological studies

The prevalence rates of IGD range from 0.2% in Germany to 50% in Korea^{10,26,30-34}. According to a large-scale study recently carried out in USA using the American Psychiatric Association (APA) criteria for GD²⁶, the prevalence rates are 1.0% in young and 0.5% in adult people. The majority of IGD population is between 15 and 20 years, but younger and older people can also be affected⁷. IGD seems to be more frequent in male adolescents, especially among those who have a low level of education, living in Eastern Asian countries, or in those experiencing psychosocial adversities, such as familial difficulties, divorced parents, been bullied or having friends addicted to videogames³⁵.

Papers related to IGD diagnostic characteristics

In 2013, APA included the diagnosis of IGD in the appendix of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) manual under “Conditions warranting more clinical research before being classified as an official mental disorder”^{10,36}. King et al.³⁷ claimed for the need to define a “gold standard” for the diagnosis of IGD since more than 18 different operational criteria were identified. In fact, several terms defined the same clinical condition, including problematic online gaming, pathological gaming, gaming addiction, excessive gaming, gaming use disorder, videogame addiction, videogame dependency, internet use disorder, pathological internet use, technology use disorder, pathological technology use, compulsive internet use³⁸.

According to the DSM-5, in order to formulate a diagnosis of IGD, five (or more) of the following symptoms should be present in a 12-month period: 1) preoccupation with internet games; 2) withdrawal symptoms when internet gaming is stopped; 3) need to spend increasing amounts of time in internet games; 4) unsuccessful attempts to control the participation in internet games; 5) loss of interest in previous hobbies and entertainment as a result of internet games; 6) continued excessive use of internet games despite knowledge of psychological problems; 7) deceiving about time spent on internet gaming; 8) escaping negative moods through internet games; 9) loss of a significant relationship, job, or educational or career opportunity because of participation in internet games^{10,37,39}.

In the eleventh edition of the ICD for the first time a disorder related to the excessive use of videogames has been officially recognized by the medical community among the pathological conditions requiring clinical attention²⁹. This new edition of the ICD is published exactly 28 years after the ICD-10, which was published in 1990 and operationalized in 1994. It classified over 2000 diseases and related problems, including a specific chapter on mental disorders. The ICD system is more used by European psychiatrists, mainly because many national laws use this system for the reimbursement of benefits⁴⁰. The “Gaming Disorder” (GD) is included in the chapter of “Disorders due to addictive behaviours” and is defined as “a persistent or recurring pattern in gambling behaviour that occurs when videogames are prioritized to the point that they take precedence over other interests and daily activities, and continuation or escalation of video-gaming activity despite the occurrence of negative consequences”. For being considered a disorder, videogame addiction must result in “significant personal, family, social, educational and/or professional harm”.

Psychopathological studies

From a psychopathological viewpoint, the IGD includes two different subtypes: an online form, in which the subject must necessarily be connected to the Internet; and the offline subtype, where the player prefers to be alone⁴¹. These two forms differ substantially; in fact, people with the online IGD subtype have narcissistic characteristics, are highly competitive with a severe risk of addiction. Moreover, they are exposed to social comparison and tend to consider virtual interactions as real ones. On the other hand, people affected by the offline form are usually covert, dependent, socially withdrawn and highly isolated⁴⁰. However, the differentiation between these two subtypes has not been officially recognized yet and their clinical utility is still debated²⁹.

The online gaming has been better characterized in terms of physical and psychological consequences. Physical consequences include visual disturbances, postural problems, chronic back pain, weight gain, obesity and increased cardio-metabolic risk. Online gamers report negative consequences on their psychosocial functioning in terms of reduced social interactions, drop in academic or working performances, and reduced attention skills. Moreover, excessive gaming is also associated with poor sleep hygiene, low self-esteem, loneliness, increased aggression and hostility, and reduced verbal memory^{6,8,30}.

IGD symptoms frequently co-occur with those of other mental disorders especially with those with onset in children or adolescents, such as attention-deficit/hyperactivity disorder (ADHD), conduct disorders, depression, and anxiety. In particular, the relationship between de-

pression and IGD has been deeply investigated, with a higher incidence of depressive symptoms in online gamers⁴². A possible explanation could be that some young depressed patients cope with their negative emotional feelings by playing games on the Internet, while other patients with IGD may experience depressive symptoms as a consequence of social withdrawal from real-life relationships. Obviously, it can also be that depressive disorder and IGD share the same biological liability.

The development and expression of problematic gaming behaviors remains heterogeneous and dependent on multiple interacting factors^{8,43,44}. Individuals who are socially isolated or have poor interpersonal skills are particularly attracted to games that allow to develop online relationships and take on new personalities³³. Moreover, some personality factors, such as low levels of self-esteem, high impulsivity, negative affectivity, and perceived loneliness are associated with a higher risk of developing IGD⁴⁵. Brand et al.⁴⁶ have highlighted the role of dysfunctional coping strategies as another risk factor for the development of IGD, suggesting that adolescents not able to cope with everyday life stressors may downregulate their negative emotions through online gaming⁴⁵⁻⁴⁷ (Tab. I).

Intervention studies

Only a few randomized controlled trials are available for evaluating the efficacy of pharmacological and non-pharmacological treatments in patients with IGD (Tab. II). As regards pharmacological treatment, available studies have investigated the efficacy of bupropion compared to placebo^{48,49} or to a no-treatment control condition⁵⁰. In a recent study by Bae et al.⁵¹, a 12-week bupropion treatment improved the severity of IGD as well as the associated clinical symptoms; moreover, a significant correlation between the changes in clinical scales and the changes in brain functional connectivity was found. In another study, bupropion was combined with cognitive-behavioural therapy (CBT) and the association was effective; however, it shall be noted that this study included patients presenting with depression in comorbidity with IGD⁵². Therefore, the limited available data support the use of bupropion in patients with IGD, but these findings should be cautiously considered since samples are small and the follow-up periods are short.

Among psychological approaches, CBT has been proposed as a useful strategy for managing addictive behaviours. In particular, Young et al.⁵³ tested the efficacy of a CBT-based approach specifically tailored on Internet addiction in 128 patients. At the end of the intervention, a majority of patients reported to be able to manage their symptoms both on short and long-term. In a study by Liu et al.⁵⁴, the efficacy of a multi-family group

TABLE I. Risk factors associated with the development of IGD.

Author	Year	Risk factors
Petry et al., USA	2015	Low sociability and social competence
Lemmens et al., The Netherlands	2015	Impulsivity
Rho et al., Korea	2015	Time spent in gaming during the week Years spent in playing games Time spent in game community membership Offline community meeting attendance
Brand et al., Germany	2016	Dysfunctional coping strategies
Laconi et al., France	2017	Tendency to escape from reality
Mihara & Higuchi, Japan	2017	Low levels of self-esteem Negative affectivity Perceived loneliness

TABLE II. Available treatments for patients with IGD.

Authors, country	Year	Treatment
Pharmacological treatment		
Han et al., China	2010	Bupropion
Han & Renshaw, China	2012	Bupropion compared to placebo
Song et al., South Korea	2016	Bupropion and escitalopram
Nam et al., Korea	2017	Bupropion and CBT
Bae et al., South Korea	2018	12-week bupropion treatment
Non pharmacological treatment		
Young, USA	2013	Cognitive Behavioural Therapy adapted to Internet Addiction, including behavior modification to control compulsive Internet use, cognitive restructuring to identify, challenge, and modify cognitive distortions that lead to addictive use, and harm reduction techniques to address and treat co-morbid issues associated with the disorder
Li & Wang, China	2013	Group CBT of 6-week duration
Wölfling et al., Germany	2014	Standardized cognitive-behavioral therapy program
Liu et al., China	2015	Six-session multi-family group therapy intervention
Park et al., Korea	2016	Cognitive behavior therapy or virtual reality therapy
Santos et al., Brazil	2016	Modified CBT, conducted individually, once a week, over a period of 10 weeks associated with pharmacotherapy
Sakuma et al., Japan	2017	Multimodal therapeutic residential camp, including psychotherapy, psychoeducational therapy, and cognitive behavioural therapy

therapy was tested in patients with IGD and their relatives. At the end of the intervention, patients reported an improvement in addictive behaviours supporting the need to involve parents when adolescents are affected by this mental disorder. Other approaches have been tested more recently in patients with IGD, combining CBT and pharmacotherapy⁵⁵⁻⁵⁷, or combining CBT with virtual reality⁵⁸ or with residential programmes⁵⁹. Ac-

cording to a recent systematic review⁶⁰, the extent of benefits of these approaches is not yet clear.

Critical commentary

IGD is a growing public health concern, and as such it should be detected and treated as soon as possible⁶¹⁻⁶³. However, the clinical utility of this new diagnostic category in the international classification of mental

disorders is still debated, since it has been argued that this disorder is not adequately supported by evidence-based findings and that online gaming cannot be compared with other behavioural addictions²⁵⁻²⁸. DSM-5 includes the condition in the group requiring further research, whereas the WHO has decided to include it among the list of proper mental disorders. Therefore, a lack of consensus for diagnostic criteria and the lack of reliable assessment tools further limit the utility of such diagnosis in routine clinical practice. Including the GD in the international classification of diseases can impact poorly on the public image of psychiatry, already seen as unscientific and blamed for the over-treatment of many normal conditions²⁷. On the other hand, King et al.²⁹ have highlighted the need to define an appropriate boundary between normal gaming and GD, and recognizing that the new diagnosis of GD does not have a negative impact on normal gaming. Thus, refining criteria for GD diagnosis would benefit from the collaboration of all stakeholders, including gamers who could collaboratively discuss ideas and share perspectives and experiences that may not be immediately evident to researchers and clinicians.

As reported by Király and Demetrovics²⁹, considering IGD as a proper mental disorder has several advantages in terms of creating a common ground for assessment, research and development of appropriate treatments. The need to recognize this new diagnosis is confirmed by the dangers associated with excessive gaming and by the increasing number of people seeking for specific treatments for their gaming-related problems²⁸.

The adoption of a formal diagnosis can reduce the stigmatization on the problematic gaming, not considered anymore as a personal weakness. Recognizing a disorder in a classification system represents the first essential step for developing appropriate therapeutic strategies⁶⁴. Further high-quality longitudinal multicenter studies will be helpful in order to identify possible biomarkers of this new disorder and to fully understand the developmental trajectory of such behavioural addiction.

Markey et al.²⁷ and Przybylski et al.²⁶ emphasise that videogame addiction represents a growing phenomenon, but its addictive potential is not directly comparable with that of gambling or alcohol, blaming the risk of overtreatment normal behaviors adopted by kids and young adults. However, preventive strategies for reducing the maladaptive use of videogames and Internet should be developed and implemented at family, school and individual levels. At the family level, parents need to reduce the time spent using smartphones and tablets when they are at home with their children. It may be useful to improve family communication, avoiding isolation in a real world and seeking social access and links in

the virtual world. At school level, awareness campaigns should be carried out in order to provide adolescents with information on benefits and risks related to the use of Internet and of other new technologies. At an individual level, gamers should be made aware of the risk of excessive time spent on gaming activities and should be supported in engaging in real-world and in-person activities⁶⁵.

From a psychopathological viewpoint, this disorder shares common elements with many mental disorders, including personality disorders, major depression, psychoticism, autism, addictions. Therefore, a better characterization of the psychopathological ground of IGD is urgently needed, also in order to establish a treatment plan.

As regards the efficacy of available interventions, the only tested drug is bupropion, whose effects remain unclear. CBT has been extensively studied, but trials conducted so far are of poor quality and lack long-term follow-ups. The quality of study design and consistency of research in the area of behavioural addictions is important as these disorders lie on a continuum between normal and pathological behaviours. Moreover, there is a need to understand which aspects of CBT work better in which patients with IGD, to define the optimal duration of treatment, the format of the intervention (individual or group therapy) and the long-term stability of treatment responses.

Conclusions

IGD represents a new disorder for which mental health professionals and psychiatrists are not yet equipped. Epidemiological naturalistic follow-up studies should be promoted in order to understand the exact incidence rate, the long-term complications, the associated societal and personal burden. IGD has a significant impact on a personal level, but also on a micro- and macro-social level. For these reasons, the introduction of a new diagnostic category in the ICD should be welcomed by the scientific community, since it can represent the basis for a common scientific ground in order to adequately manage and treat these patients. Obviously, implementing research protocols and developing clinical guidelines for the management of this disorder are needed. Finally, national and international associations of stakeholders, scientific societies and policy-makers should work together in order to effectively manage this new disorder of the modern society.

Conflict of Interest

The authors have no conflict of interests.

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