

Interconnection between Gambling Addiction (GD) and Internet Gaming Addiction (IGD) and Comorbid Psychopathology Risk and Time Sequence of the Conditions

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ABSTRACT

It is well known that people with gambling addiction and with internet gaming disorders both suffer from other mental disorders too. The current work represents and analyzes interconnection, temporal sequence and risk of development of other mental disorders in individuals with GD and IGD.

Electronic literary search was conducted using PubMed, PsychINFO, Science Direct, Web of Science и Google Scholar.

Object - analysis of existing studies finds a high degree of correlation between IGD and anxiety 92%, with depression 89%, with ADHD Attention Deficit Hyperactivity Disorder (ADHD) 85%, with social phobia/anxiety and obsessive-compulsive symptoms 75%. In the gambling addiction case, the highest comorbidity was found with psychoactive substance use up to 57.5%; with depression 23% - 40%; with anxiety disorder 37.4-60% of players. Thus, psychoactive substance dependence is 5-6 times higher and the incidence of anxiety and mood disorders is 3 times higher in individuals with GD compared to the General population. It has been shown from these studies that comorbid psychopathology joined in more than half of the cases after a person started playing and was associated with problems that arose as a result of behavioral addiction. At abandonment from a game and restore healthy vital activity severity of symptoms decreased. In other studies, it is difficult to establish a temporal sequence.

Gambling addiction can form in individuals without mental disorders, as well as in people with mental disorders at the subclinical or clinical level. But as a result, new mental disorders are added, or existing ones are aggravated. The question is not in any particularly vulnerable group of people, but in the modern products of the gaming industry, which themselves are the main risk factor for GD and IGD development and their accompanying psychopathology.

Keywords: Gambling addiction; Psychopathology; Mental disorders; Depression; Internet gaming addiction

INTRODUCTION

Dependence from the gambling and Internet gaming disorder are behavioral dependencies in the center of which is dependence from a certain type of the gaming behavior over which the control is lost, both in frequency of involvement in the game, as well as in time. A pathological craving for play appears and eventually increases to a compulsive urge, which is constantly embodied almost without a struggle of motives. The dependent person continues to play despite the negative consequences for his mental and physical health, personality, relationships in the family, with friends and in the team, in the professional sphere or in school. The pathological need for the game becomes dominant and replaces all other

interests, hobbies, forms of activity, relationships and even the basic needs: food, sleep, intimacy, child care, etc. At the moment, both of these addictions are recognized as mental disorders and are included in the ICD 11 and in the DSM - V classification as addictive behaviour. GD and IGD show very many common intersections in clinical manifestations and neurobiological changes, as well as in negative psychosocial consequences and comorbid psychopathology.

EPIDEMIOLOGY

In the detailed epidemiological review of 2017, which analyzed studies prior to May 2016, the prevalence of IGD in General

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samples varied from 0.7% to 27.5%. In the vast majority of studies, it was higher among young people under 35 years of age [1]. In European samples from 1.2 to 5.0% [2-6] Analogical prevalence rates in the Middle East. [7,8]. In the US, 0.3-1% [9]. In Asia, from 3.5 to 27.5%. [10,11].

Prevalence of clinical dependencies pathological and problematic gambling according to various studies for the period from 2000 to 2016, it varies from 0.7 to 6.5% among adults and almost 2 times more from 0.2 to 12.5% among adolescents. [12,13] This is despite the fact that gambling by teenagers is an illegal activity. The number of players experiencing serious subclinical problems is 2-3 times more. It is also well known that most problem gamblers never seek professional treatment and no more than 5-10% of applicants. Moreover, studies of prevalence were conducted only in individual countries, they were not global in nature and without constant accounting for changes (they were of a one-time nature). [14,15] Therefore, these figures only very roughly reflect the real picture.

The overall picture of prevalence studies suggests that this issue is poorly understood. And these indicators not even approximately reflect the real picture today.

There is a very wide range of data, which indicates that the criteria for selecting and analyzing data are not standardized. Studies were conducted among different age groups, and in a small number of countries. National studies are generally very rare. The article summarizes data from studies of 5-10 years ago with indicators of recent years. That at this pace of development of the game market is generally unacceptable.

Over the past 20 years, the gaming industry has increased its revenue by more than 100 times: from annual revenue of less than

\$ 200 million at the end of the 90's to \$100 million already in 2017. The number of gamers is also increasing enormously. Active players are 1% of the world's population, 2.3 billion people as for 2017 and 2.73 billion with a forecast for 2021 [16]. And these are mostly children, teenagers, and young people under 35. Now I am presenting data from marketing research of gaming companies. They do not spare money for these studies and clearly define their target audience.

Based on this data, it is not difficult to conclude that the number of active gamers, from which people with IGD appear, increases by hundreds of millions of people a year, not to mention a 5-and 10-year period. This is a completely different reality: what could be observed in 2010 and in 2020.

Some studies have shown that the degree of harm (damage) associated with gambling is similar in scale to major depressive disorder, as well as alcohol abuse and alcohol addiction [17,18] 2.5 times more than for diabetes, and 3.0 times more than for drug use disorders [19].

In General, gambling and gaming addictions lead to various and sometimes very serious negative consequences for mental and physical health, personality, relationships in the family, with friends, work colleagues, for professional activities and education. Up to complete social maladjustment, suicide, and spiritual and moral degradation of the individual. [Table 1]

Neurobiological studies have found that changes in Executive functions, impulsive choice with the inability to postpone pleasure, impaired decision-making with increased risk, and even deliberately losing options, cognitive rigidity with compulsive repetition of self-destructive, inappropriate, template behavior without taking into account feedback, are associated with aberrant

Table 1: Negative psychosocial consequences and psychopathological comorbidity in GD and IGD.

<i>Negative consequences in spheres</i>	<i>Gambling disorder</i>	<i>Internet gaming disorder</i>
	<p>Finance - debts that are paid off not only by the player's personal funds, but also by the family's money and property, business funds, firms, and enterprises (embezzlement)</p> <p>In relationships:</p> <ul style="list-style-type: none"> ✓ Lies; conflicts; distrust, manipulation of family members-80%, divorce 35% 	<p>Finance - spending on games, in-game purchases, and your own funds or parents.</p> <ul style="list-style-type: none"> ✓ Fines, losses due to loss of interest in the work and carelessness. <p>In relationships</p> <ul style="list-style-type: none"> ✓ Abandonment of previous hobbies or external activities, which leads to social isolation ✓ Family conflicts and in the collective – lies, manipulations. ✓ The social circle getting smaller and replaces by the game one.
<i>Social negative consequences</i>	<ul style="list-style-type: none"> ✓ Lies and manipulation in relation to friends, colleagues and partners at work. ✓ As a result, the relationship ends or becomes superficial, consumer-oriented ✓ The social circle is replaced by the game one. <p>Education and profession:</p> <ul style="list-style-type: none"> ✓ loss of the job; ✓ Reduced academic performance, exclusion from school. 	<p>Education and profession:</p> <ul style="list-style-type: none"> ✓ Loss of the job because of that the employee comes sleepy, tired and the productivity getting low, many mistakes were done. ✓ Loss in the job interest and satisfaction of what he does. ✓ Bad performance up to exclusion from educational institution.
<i>Legal</i>	<ul style="list-style-type: none"> ✓ 92% stolen money and things from the house up to the complete removal of things; ✓ 22,7% committed these actions outside the house; ✓ 13,3% committed embezzlement of trusted money; ✓ 6% committed robberies. 	No reliable data available

	Damage to health is associated with an extremely unfavorable and destructive way of life:
	<ul style="list-style-type: none"> ✓ Consequences of the chronic stress, stress in which the gamer lives ✓ accompanying the game use of alcohol, drugs and smoking ✓ Disorder of the normal diet and quality of food, sleep and wakefulness
Damage to health	<ul style="list-style-type: none"> ✓ neglect of health, lack of prevention and timely treatment of diseases ✓ on the average, life expectancy of gamblers is 20 years less than in the general population ✓ neglect of health, lack of prevention and timely treatment of diseases ✓ on average, the life expectancy of gamblers is 20 years less than in the general population.
	Associated with emotional stress and sedentary lifestyle:
	<ul style="list-style-type: none"> ✓ Deep vein thrombosis ✓ Visual impairment ✓ Hemorrhoids ✓ Osteochondrosis spinal protrusion and herniated vertebral discs, ✓ Diseases of the gastrointestinal tract due to eating disorders.
mental health problems	<ul style="list-style-type: none"> ✓ Dependence on the use of psychoactive substances (alcohol, drugs) 57.5-72%, ✓ mood disorders (depression and bipolar disorder) 37.9-60%, ✓ anxiety disorders 37.4 - 63% ✓ personality disorders 25-93% ✓ Sleep disruption.
Suicidal risk	<ul style="list-style-type: none"> ✓ Suicidal risk is very high in people with PG and is observed in 50%, ✓ up to 80% report suicidal thoughts, and ✓ 48-49.2% have persistent suicidal ideas of an obsessive nature, ✓ 12-35.8% commits suicide attempts. - The average age of death was 51 years, and the average age of suicide was 32.5 years.37-39 ✓ The main causes of death are self-murder (31%), overtaxing of cancer (16%) and diseases of the circulatory system (12%). ✓ The death rate as a result of suicide was 15.1 times higher for men aged 20-74 than for the General population, and 19.3 times higher in the 20-49 category.

learning of the reward system. Decreased activation is found in brain structures associated with the mesocorticolimbic reward system: that is, hypo reactivity when losing and ambiguous reaction to winnings (then hypo-, then hyper reactivity), but definitely hyper reactivity in response to stimuli associated with the game. Thus, participation in the game becomes the only significant reward [20].

CONCLUSIONS

Analysis of the results of research on psychiatric comorbidity in GD and IGD and the materials of our own clinical practice allow us to determine the clinical prerequisites for the development of comorbid psychopathology. They are:

Altered States of the consciousness (so-called flow-state, flow experience, or dark flow) during the game;

Increase of compulsive attraction to gaming, despite losses and

negative consequences, that is, an increase in the dependence itself; Emotional stress and chronic distress during and after the game, leading to exhaustion of the nervous system, reduced cognitive productivity, and dysregulation of the emotional and motivational sphere;

Increasing negative psychosocial consequences in all spheres of human life.

Cross-sectional studies establish that there is a link between IGD, GD and comorbid mental disorder, and can only indirectly suggest the sequence of development of psychopathology, and longitudinal studies help determine the time sequence. The results of longitudinal studies demonstrate the following post-treatment. There is either a bidirectional relationship between GD, IGD and comorbid psychopathology by the type of mutual influence (strengthening or weakening of symptoms depending

on the severity, or reduction of symptoms of one of the diseases, respectively). Either as the dependence and negative consequences increase, there are prerequisites for the development of a mental disorder in the form of emotional distress, for example, or symptoms of a comorbid mental disorder appear, or its symptoms become heavier if the disorder already existed. When recovering from addiction, emotional balance is usually restored.

Gambling addiction can form in individuals without mental disorders, as well as in people with mental disorders at the subclinical or clinical level. But as a result, new mental disorders are added, or existing ones are aggravated. The question is not in any particularly vulnerable group of people, but in the modern products of the gaming industry, which themselves are the main risk factor for GD and IGD development and their accompanying psychopathology.

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