



Review article

Clinical approaches to treatment of Internet addiction

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ARTICLE INFO

Article history:

Received 19 June 2013

Accepted 8 October 2013

Available online 2 March 2014

Keywords:

Internet addiction

Psychological therapy

Cognitive behavior therapy

Pharmacologic treatment

ABSTRACT

Background: Internet appearance was one of the main breakthroughs for the mankind in the latest decades. It revolutionized our lives in many aspects and brought about many undeniably positive changes. However, at the same time caused negative consequences. It has led to the emergence of the Internet addiction (IA). The paper is concerned with the issue of treatment of IA.

Method: The paper reviews the current findings on the approaches to IA treatment and evaluates their effectiveness. The main focus of the article concentrates on cognitive and pharmacologic treatment.

Results: The individual approach to IA treatment is advisable. Among drugs for the management of IA, antidepressants, antipsychotics, opioid receptor antagonists, glutamate receptor antagonists, and psychostimulants may be recommended. Some antiepileptics, and especially valproate, are considered as potential drugs for the treatment of IA.

Conclusion: Effective therapy may require an individual approach and best results are expected when psychological and pharmacological treatments are combined.

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Introduction

In the times of rapid development of digital technology and the increasing number of Internet users, we face the emergence of new types of addiction associated with the use of various devices connected to the network. The rising number of publications on the

issue of Internet addiction (IA) reveals the seriousness of this problem [e.g., 4,14,25,27,35]. The main aim of our review is to present different approaches in the therapy of IA with special focus placed on Cognitive-Behavioral Therapy (CBT), pharmacology, and their application in the therapy of IA. EBSCO search (using the following keywords: therapy of IA, pharmacological treatment of IA, psychological therapy of IA) returned 592 records, including such databases as Medline, Eric, PsycArticles, PsycCritiques, PsycExtra, PsycInfo, PsycTest, or Academic Search Complete. The search was limited to full-text papers published up until 2012.

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Recently, there has been a heated debate [e.g., 4,27,42] on whether IA should be included in DSM-5 classification as a distinct clinical disorder or as a subtype of other disorders. There are still some issues that should be dealt with. Byun et al. [6] underlined the ambiguity in defining IA disorder itself, pointed out the lack of standardized inclusive criteria for IA, and criticized methodological shortcomings ranging from inadequate methods for sample recruitment to methods of data analysis. This problem has also been considered by King et al. [22] who especially highlight inconsistencies in the definitions and diagnosis of IA, no randomization and blinding, and the lack of proper control groups. According to the recently published DSM-5, the IA was not included in the new classification; it was classified as a disorder that needs further research.

Cognitive-Behavioral Therapy of IA

CBT has been applied to treatment of many disorders such as substance abuse [e.g., 38], eating disorders [e.g., 2], or affective disorders such as depression [e.g., 43], or anxiety [e.g., 3]. Its effectiveness has also been positively verified in the case of IA [20,42]. The aim of CBT is for the patients to learn how to control their thoughts and feelings that can be detrimental to their functioning and may trigger impulse to escape into the virtual world. The addicts gradually learn how to solve problems in a more constructive way and how to prevent themselves from destructive use of the Internet [42]. At the first stage of the therapy the main focus is put on the behavioral aspects, at subsequent stages the focus is shifted to developing positive cognitive assumptions. During the therapy, addicts identify false beliefs and learn how to modify them into adaptive ones.

Although Young [41] recognized the similarity between IA and other compulsive syndromes, she indicated the specificity of this disorder and proposed a unique model of treatment based on CBT specially designed for handling IA. The first phase is about behavior modification and setting a specific and realistic goal that helps to avoid relapse. Patients will keep a daily Internet log in which they will record their online activity (e.g., day, duration, event, online activity, outcome). The aim is to reduce the number of hours spent online as well as to structuralize online activity, to eliminate all the temptations in the form of favorite files or websites, and to learn to control one's Internet usage. The therapist creates a new schedule in order for the patient to gain new habits. In the second stage, the therapy is concentrated on the cognitive aspects of addiction: the thoughts that trigger excessive online activity. It is aimed at reducing maladaptive cognitions. The whole process of change is labeled as cognitive restructuring; it is supposed to reveal the pattern of engagement in online activity and to show what kind of need addicts seek to satisfy in the virtual world. In this phase, patients face the problem and get rid of the false assumptions about their Internet use. In the third phase, they deal with real problems existing in their lives that led to addiction. Harm reduction therapy is applied as well in order to reduce coexisting problems such as addiction to drugs or alcohol, anxiety, or depression. In the case of modeling new habits, Young [41] points out that it is difficult to use and inadvisable to recommend total abstinence from the computer and the Internet, because they have become a regular part of almost every job/education. Total abstinence may apply only to those devices that are central to the main symptom itself, such as massively multiplayer online role-playing game. In addition, the patient must learn new behaviors while deriving the benefits of technology.

Du et al. [10] investigated the effectiveness of CBT in a group of addicted adolescents. Fifty six patients aged 12–17 years participated in the study. The therapy improved time management skills with regard to the use of time and control over time usage. It

reduced emotional (especially anxiety-related), cognitive, and behavioral symptoms. A study was done by Kim et al. [21] on 65 depressed adolescents with excessive online game play. During the therapy, the severity of Internet use, depression, anxiety, life satisfaction, and school adaptation were measured three times: at the beginning, 8 weeks after the therapy, and in the 4-week follow-up post-treatment period. In one of two groups, CBT was applied in combination with bupropion. Those participants who were subjected to CBT therapy scored higher on life satisfaction and lower on Young Internet Addiction Test. Anxiety was only increased in the control group without CBT treatment. There was no significant change in reference to depression. Young [42] investigated the effectiveness of CBT on 114 patients of Center for Online Addiction. CBT had a positive influence on their behaviors, and the number of symptoms of compulsive Internet use decreased in the majority of the participants. After the therapy, patients exhibited a more proactive lifestyle. Fang-ru and Wei [12] examined the effectiveness of integrated psychosocial intervention in a group of 52 adolescents with IA disorder. Solution-Focused Brief Therapy (SFBT) was applied together with family therapy for 3 months. The symptoms of IA and the amount of time spent online decreased, general psychological functioning improved. Rong et al. [29] proved the effectiveness of psychotherapy, especially cognitive and behavioral therapy, among 23 middle school students. Some of the programs offer elements of CBT. Kim [21] has proposed applying Reality Therapy Group Counseling Program, based on Choice Theory or Reality Therapy. Offered to Korean students, the therapy includes techniques such as: control theory, five basic needs, total behavior, friendly involvement, and making a plan. The author also proposes introducing cognitive-behavioral elements into the therapy, for instance time management techniques or reminder cards. German scientists [19] have examined short-term treatment of Internet and computer addiction (STICA). The proposed therapeutic program is based on the cognitive-behavioral approach, with both individual and group therapy sessions, which last four months. Individuals are randomly selected for the STICA and the control group. The STICA therapy puts the emphasis on the reintegration of the patient's life, controlling the time spent at the computer and changes in social habits.

Psychological treatment of IA is shown in Table 1.

Pharmacotherapy in the treatment of IA

According to the recent findings by Liu et al. [23], an involvement of the reward system in the pathophysiology of IA seems quite obvious. This conclusion was based upon the results of functional magnetic resonance for adolescent Internet addicts. The results provided data indicating distinct synchronization between frontal cortex and limbic lobe and between cerebellum, brainstem, and limbic lobe. However, as suggested in a review by Camardese et al. [8], the neuroimaging data on IA are limited and thus cannot give any helpful clues on pharmacologic treatment. These authors believe that one may rely on striking similarities between behavioral or substance addiction and IA. To be true, some pharmacologic interventions in Internet addicts have been taken based on recommendations extrapolated from other forms of addiction. Some treatments described in the existing literature are reviewed below.

Antidepressant drugs

Considering that major depression may be relatively frequently encountered in Internet addicts [31,38], some antidepressant drugs have been tried against IA. One of the examples is escitalopram, an S-enantiomer of citalopram, belonging to

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