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Original Article

Internet Addiction: The Problem and Treatment*

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Abstract

Internet Gaming Disorder has recently been included in the appendix of the most recent edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) as a condition which requires further research in order to be incorporated in future iterations of the manual. This suggests the research and clinical communities are becoming increasingly aware of a potential mental health concern. This paper will provide brief insight into the issues of Internet and gaming addiction and will then present results of contemporary treatment research. The results indicate no gold standard exists to measure Internet addiction with high sensitivity and specificity, which is compounded by using dissimilar cut-offs across studies for the same assessment tool. To overcome this diagnostic issue, a diagnosis of Internet addiction would significantly benefit from the inclusion of a structured clinical interview administered by a trained professional, and this would help in the elimination of false positives and false negatives in the context of diagnosis.

Keywords

Internet addiction • Internet Gaming Disorder • Treatment • Diagnosis • Therapy

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Internet Gaming Disorder has recently been included in the appendix of the most recent edition of the *Diagnostic and Statistical Manual for Mental Disorders* (DSM-5) (American Psychiatric Association, 2013) as a condition which requires further research in order to be incorporated in future iterations of the manual. This suggests the research and clinical communities are becoming increasingly aware of a potential mental health concern. This paper will provide brief insight into the issues of Internet and gaming addiction and will then present results of contemporary treatment research.

In order to highlight Internet and gaming addiction as a potential mental health concern and assess its prevalence across countries, Kuss, Griffiths, Karila, and Billieux (2014) reviewed the epidemiological literature using the database Web of Science. The following search terms (and their derivatives) were entered concerning Internet addiction, specifically: "Internet" or "online" and "excessive", "problematic", "compulsive", and "addictive". Studies were selected based on the following inclusion criteria: studies had to (i) contain quantitative empirical data; (ii) have been published after 2000; (iii) include an analysis related to Internet addiction; (iv) include a minimum of 1,000 participants; and (v) provide a full-text article published in English. For comparison purposes, studies focusing solely on particular online applications (e.g., gaming or social networking) were excluded from the analysis. A total of 69 epidemiological research papers were identified from the literature search that met the initial inclusion criteria. A total of seven studies used the Internet Addiction Test (Young, 1998) for Internet addiction assessment in adolescents and children aged 8 to 24 years, with sample sizes ranging from 1,618 (Lam, Peng, Mai, & Jing, 2009) to 17,599 participants (Cao, Sun, Wan, Hao, & Tao, 2011). The reported prevalence rates of Internet addiction varied dramatically, ranging from 0.8% in high school students in Italy to 20.3% of adolescents and 13.8% of children in South Korea. Using the Internet Addiction Diagnostic Questionnaire (Young, 1998), Internet addiction was assessed in 11 studies, with sample sizes ranging from 1,270 adolescents in Greece (Fisoun, Floros, Geroukalis et al., 2012; Fisoun, Floros, Siomos et al., 2012) to 10,988 adolescents and young adults in China (Wang et al., 2013). The results indicated prevalence rates ranged from 1.6% of Finnish adolescents (Kaltiala-Heino, Lintonen, & Rimpela, 2004) to 26.6% of adolescents in Hong Kong (Shek & Yu, 2012). Nine studies used Chen's Internet Addiction Scale (Chen, Weng, Su, Wu, & Yang, 2003), with sample sizes ranging between 1,890 and 9,405 Taiwanese adolescents (Ko et al., 2008). Prevalence estimates varied between 10.8% (Ko et al., 2009) and 21% in Taiwanese samples (Kuss et al., 2014; Ko et al., 2006; Ko et al., 2008; Ko, Yen, Yen, Chen, & Wang, 2008; Yen et al., 2008; Yen, Ko, Yen, Wu, & Yang, 2007; Yen, Yen, Chen, Chen, & Ko, 2007).

Similarly, divergent prevalence estimates were identified in adult populations (Kuss et al., 2014). Using the IAT in large samples ranging from 1,034 young adults in Turkey (Canan, Ataoglu, Ozcetin, & Icmeli, 2012) to 13,588 Internet users in Korea (Whang, Lee, & Chang, 2003), prevalence estimates ranged from 1.2% of Internet users in the UK (Morrison & Gore, 2010) to 9.7% of Turkish college students (Canan et al., 2012). Using the IADQ, prevalence rates ranged from 1.0% of Norwegian adults (Bakken, Wenzel, Gotestam, Johansson, & Oren, 2009) to 22.8% of Iranian adult Internet users (Kheirkhah, Juibary, & Gouran, 2010). Seven studies used Chen's Internet Addiction Scale to assess Internet addiction prevalence rates in adult samples ranging from 1,360 university freshmen (Tsai et al., 2009) to 4,456 college students (Lin, Ko, & Wu, 2008). Prevalence rates ranged from 12.3% (Yen, Ko, Yen, Chen, & Chen, 2009; Yen, Yen, Chen, Tang, & Ko, 2009) to 17.9% (Kuss et al., 2014; Tsai et al., 2009). This brief depiction of Internet addiction prevalence rates across cultures and commonly used measurement instruments is a clear indication of the current state of research on Internet addiction. Many of the studies included did not differentiate between different uses of the Internet and it is likely that much of the prevalence derives from individuals' excessive gaming. Derived prevalence rates vary dramatically across countries as well as within countries. Moreover, researchers use different measures and apply different cut-off points, making it difficult to estimate accurate prevalence rates for Internet and online gaming addiction.

Given the recent increasing awareness of Internet and gaming addiction, clinicians have begun using different treatment approaches to help individuals seeking support for their Internet over-use related problems. To account for our current knowledge of Internet addiction treatment, Kuss and Lopez-Fernandez (2016) reported the results of clinical research on Internet addiction and problematic Internet use. Studies were selected based on the following inclusion criteria: studies had to (1) contain quantitative empirical data; (2) have been published after 2000; (3) include clinical samples and/or clinical interventions for Internet and/or gaming addiction; (4) provide a full-text article (rather than a conference abstract); and (5) be published in the authors' native languages of English, German, Polish, Spanish, Portuguese, or French. A total of 46 clinical studies published in peer-reviewed journals were identified and separated into four main types of clinical research studies, namely (i) treatment seeker characteristics, (ii) psychopharmacotherapy, (iii) psychological therapy, and (iv) combined treatment.

Regarding treatment, psychopharmacotherapy included administering selective serotonin reuptake inhibitors (SSRIs), such as escitalopram or anxiolytics, which are typically used in the treatment of anxiety disorders, including OCD, stimulants typically used for ADHD, and atypical antipsychotics typically used for schizophrenia spectrum disorders. Taken together, these studies reported a decrease of Internet

addiction symptomatology and Internet/gaming use times. In the small number of studies conducted, antidepressant medication was used most frequently, suggesting mood disorders may be comorbid with Internet and gaming addiction. Moreover, it was suggested that if other (primary or secondary) disorders are co-occurring (i.e., OCD and ADHD), medication commonly administered to treat these disorders can also be effective in reducing Internet addiction-related symptoms (Kuss & Lopez-Fernandez, 2016).

Additionally, Kuss and Lopez-Fernandez (2016) found that 10 studies used individual and group therapy in order to treat Internet and gaming addiction related problems. From their systematic literature review, cognitive behavioral therapy was identified as the most frequently used form of psychological therapy to treat Internet and gaming addiction. This would typically consist of 8–28 sessions that included the following therapy elements: psychoeducation, problem identification, healthy communication, increasing Internet awareness, and teaching cessation techniques. Further, a similar short-term treatment for Internet and computer game addiction was applied in addition to group therapy, which consisted of systemic therapy, including parents/teachers/peer support and/or multilevel interventions, such as motivational interviewing commonly used in the treatment of substance-related addictions (Miller & Rollnick, 2002).

In general, the psychological studies that included a control group to compare the results of the treatments showed varying results, making it difficult to produce an overall assessment of psychotherapy effects. Only two studies (out of four experimental studies) showed a clear effectiveness of psychological therapy, and both of these used a group approach. Kim (2008) used a quasi-experimental design with group psychotherapy and found a significant decrease in Internet addiction symptoms and significantly increased self-esteem in the experimental group relative to the control group. Liu et al. (2015) determined that their multi-family group therapy approach was effective in three ways: it resulted in a significant decrease in time spent online (decreased by ca. 50% relative to the control group), a reduction in the Internet addiction assessment score, and increased parental satisfaction with the child's Internet activities. Furthermore, the most significant factor to decrease Internet addiction in this study was the relationship between the parents and their children (Kuss & Lopez-Fernandez, 2016).

Six studies combined psychological treatment (primarily CBT) with other psychological therapies, such as Motivational Enhancement Therapy, a Lifestyle Training Program, psychopharmacotherapy (i.e., antidepressants and anxiolytics), or with electroacupuncture therapy. In particular, Poddar, Sayeed, and Mitra (2015) developed a Motivational Enhancement Therapy approach that was used

in combination with CBT. This form of therapy used a number of stages: (1) a contemplation stage (i.e., initial sessions of rapport building, a detailed interview, and case formulation); (2) a preparation stage (i.e., sessions delivered in an empathetic atmosphere to emphasize psychoeducation, including managing physiological and emotional arousal through relaxation techniques, and a cost-benefit analysis of gaming addiction); and (3) a contract stage with the patient, a parent, and the therapist (i.e., behavior modification of gaming, reducing time spent online and promoting healthy activities). Using this form of therapy, symptoms associated with addiction were decreased, and the affected adolescents were able to make progress regarding their school achievements (Kuss & Lopez-Fernandez, 2016). The on-the-job lifestyle training program that was assessed by one study (van Rooij, Zinn, Schoenmakers, & van de Mheen, 2012) consisted of eliciting and strengthening the motivation to change, choosing a treatment goal, gaining self-control, preventing relapse, and coping skills training (Kuss & Lopez-Fernandez, 2016). Finally, electroacupuncture as an adjunct to CBT was applied at acupoints Baihui (GV20), Sishencong (EX-HN1), Hegu (LI4), Neiguan (PC6), Taichong (LR3), and Sanyinjiao (SP6), and retained for 30 minutes once every other day in one study (Kuss & Lopez-Fernandez, 2016; Zhu, Jin, Zhong, Chen, & Li, 2008).

In summary, combined therapy was effective in all groups as Internet addiction was found to be effectively treated in both post-treatment and follow-up measures. Specifically, applying electroacupuncture together with a psychological treatment improved therapy effectiveness for Internet addiction more than offering cognitive-behavioral treatment only. This indicates that the innovative treatment approach electroacupuncture is effective in treating Internet addiction. Nevertheless, replication of this study to verify the positive results is suggested. In contrast and based on the results from the presented studies, psychopharmacotherapy does not always appear as efficacious for other comorbid psychological problems, including major depression, in comparison with its effectiveness for Internet and gaming addiction. This is interesting, as it appears that Internet addiction commonly co-occurs with other psychological disorders. Consequently, combining various forms of therapies may be a good choice for some individuals. However, this should be managed by interdisciplinary treatment and social support teams, which will offer the best support possible for individuals facing problems regarding their Internet use (Kuss & Lopez-Fernandez, 2016).

In the reviewed literature, various psychometric measurements have been applied in order to ascertain Internet and gaming addiction, sometimes involving an expert assessment by an experienced professional. As has been stated in previous research (Kuss et al., 2014), no gold standard exists to measure Internet addiction with high sensitivity and specificity, which is compounded by using dissimilar cut-offs across

studies for the same assessment tool. To overcome this diagnostic issue, a diagnosis of Internet addiction would significantly benefit from the inclusion of a structured clinical interview administered by a trained professional, and this would help in the elimination of false positives and false negatives in the context of diagnosis (Kuss & Lopez-Fernandez, 2016).

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