Non-Substance-Related Disorders: Gambling Disorder and Internet Addiction

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Abstract

Behavioural addictions are highly prevalent in specific subgroups and have a major individual and societal impact. Moreover, given the availability and increase of potentially addictive activities in our societal development (e.g. internet, gaming, online pornography) an increase in these types of behavioural disorders is very likely. Gambling Disorders are best studied among the non-chemical addictions. However, effective treatment interventions need to be further developed, in particular for Internet Addiction. Most of the available evidence supports behavioural interventions as first-line treatment. Specifically for Gambling Disorder, pharmacotherapy can be a useful augmentation. Psychiatric comorbidities are frequent in patients with behavioural addictions and negatively affect the course of non-substance-related disorders. Concurrent treatment of these comorbid disorders is advised, although there is a clear need of conducting studies evaluating the effectiveness of integrated treatment approaches.

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16.1 Introduction

Besides substance-related disorders, several behavioural patterns are suggested to lead to addictions such as eating, working, loving, gaming, having sex, taking exercises, and buying (Sussman et al. 2011; Report on the WHO Collaborative Study on Strategies for Extending Mental Health Care 1984). Nevertheless, for several of these "non-chemical addictions" evidence is limited to speak of an addiction that is comparable to chemical addictions, in terms of genetics, diagnostic criteria, impairment, epidemiology, and treatment. In this chapter, we will focus on Gambling Disorder which is now included in the DSM-5 chapter on Substance-Related and Addictive Disorders (American Psychiatric Association 2013a) and on Internet Addiction which is a rather new phenomenon covering a broad spectrum of Internet activities. Gaming is the most prominent one and is considered as a condition for further study in DSM-5. For both addictions, we will give a definition featuring diagnostic criteria, prevalence estimates, comorbidity rates, and an outline on treatment options.

16.2 Diagnostic Criteria

Both Internet Addiction and Gambling Disorder include criteria that are similar to diagnostic aspects of substance-related disorders such as tolerance, withdrawal, or loss of control but cover as well specific symptoms such as to escape or relieve a negative mood.

16.2.1 Diagnosis of Gambling Disorder

In the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV; American Psychiatric Association 1995), Pathological Gambling was subsumed under impulse-control disorders and described as a "persistent and recurrent maladaptive gambling behaviour". Five of ten criteria had to be fulfilled for diagnosis. Due to the number of similarities between substance-related addictions and Pathological Gambling found in recent research, Pathological Gambling was reclassified in the 5th revision of the DSM as an addictive behaviour in the section "Substance-Related and Addictive Disorders" (DSM-5; American Psychiatric Association 2013b). Changes pertained the reduction to nine criteria due to the elimination of DSM-IV criterion 8 (commitment of illegal acts) and the classification of the severity of the disorder in "mild" (4–5 criteria), "moderate" (6–7 criteria), and "severe" (8–9 criteria) (Table 16.1).

Table 16.1 DSM-5 criteria for gambling disorder (American Psychiatric Association 2013a, b)

Criterion A. The person concerned:
1. Needs to gamble with increasing amounts of money in order to achieve the desired excitement
2. Is restless or irritable when attempting to cut down or stop gambling
3. Has repeated unsuccessful efforts to control, cut back, or stop gambling
4. Is preoccupied with gambling
5. Gambles when feeling distressed
6. After losing money gambling, often returns another day to get even ("chasing")
7. Lies to family members, therapist, or others to conceal the extent of involvement with gambling
8. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
9. Relies on others to provide money to relieve a desperate financial situation caused by gambling

Additionally, the gambling disorder has to be distinguished from gambling behaviour in a manic episode (criterion B)

16.2.2 Diagnosis of Internet Gaming Disorder/Internet Addiction

Diagnostic approaches to specify Internet Addiction have used criteria from Substance-Related Disorders as well as from Pathological Gambling. While first approaches were not much evidence-driven, meanwhile some empirical studies have proposed specific criteria. The most promising have been from Tao and colleagues (Tao et al. 2010) who proposed eight criteria and Ko et al. (2009b) suggesting nine criteria with both approaches overlapping in several characteristics. While these suggestions cover the broad concept of Internet Addiction which is related to different activities in the Internet such as gaming, watching pornography, using social networks and chats or compulsively downloading or searching specific material or topics, the DSM-5 has focused only on gaming because the evidence is best in this area. Hence, a new category is proposed called Internet Gaming Disorder (IGD), which is part of the chapter on conditions for further study. Criteria are described in more detail with suggestions for items to assess them in Petry et al. (2014). In view of the various approaches in the past and the lack of a consensus, the DSM-5 criteria can be regarded as an important milestone stipulating and streamlining future research. Within DSM-5, it is suggested that five or more criteria indicate IGD (Table 16.2). In a first study coming from Taiwan, this threshold could be confirmed (Ko et al. 2014).

With respect to the broader concept of Internet Addiction, no generally accepted diagnostic criteria exist; however, suggestions that have been made are quite similar to IGD or have been precursors for the respective criteria in DSM-5. Unpublished data on a follow-up sample of excessive Internet users recruited through a large general population study indicate that the IGD-criteria can be applied to other Internet activities such as using Social Networks (Rumpf et al. 2014a).

Table 16.2 Criteria Internet gaming disorder, section III, DSM-5 (American Psychiatric Association 2013a, b)

1. Preoccupation with Internet games as can be manifested by persistent thoughts about previous gaming activity or anticipations of playing the next game. Internet activity evolves to be the dominant activity in daily life.
2. Withdrawal symptoms such as irritability, anxiety, or sadness when playing is not possible.
3. Tolerance as manifested by the need to spend increasing amounts of time engaged in Internet games.
4. Unsuccessful attempts to control gaming.
5. Loss of interest in previous hobbies and entertainment in favour of Internet gaming.
6. Continued excessive Internet gaming despite knowledge of psychosocial problems.
7. Deception of family members, therapists, or others with respect to the amount of Internet Gaming.
8. Internet Gaming to escape or relieve a negative mood such as feelings of helplessness, guilt, or anxiety.
9. Jeopardizing or loosing a significant relationship, job, educational or career opportunity due to excessive use of Internet games.

16.3 Prevalence Estimates

16.3.1 Prevalence of Pathological Gambling

To date, a number of epidemiological studies estimated the prevalence rates of Pathological Gambling. Estimates are varying according to methodological and regional characteristics. Stucki and Rihs-Middel summarized 33 prevalence studies in a review (Stucki and Rihs-Middel 2007). Restricted to 12-month prevalence, the review presented weighted mean prevalence rates from 0.8 % to 1.8 %, depending on measuring tools. Prevalence estimates in Europe were lower (0.2–0.8 %) than in US-American studies (0.5–3.5 %). This is in the same range as a recent epidemiological survey in Germany, the "Pathological Gambling and Epidemiology"-study (PAGE) with 15,023 respondents which found 12-month prevalence rates of 0.3 % and lifetime prevalence to be 0.6 % with increased rates among males, younger age groups, and individuals with migration background (Meyer et al. 2014).

16.3.2 Prevalence of Internet Addiction

Estimates on Internet Addiction or IGD have to be regarded with caution because of various diagnostic assessment instruments and diagnostic thresholds. As a consequence, prevalence estimations differ widely. One paper found prevalence rates between 1 and 14 % (Tao et al. 2010). A systematic review of problematic Internet use of studies on US-youth ranged from 0 to 26 % (Moreno et al. 2011). Sample selection bias is very likely to be a major cause of divergent prevalence estimates. One pitfall is that most studies come from convenience samples recruited via online

solicitations or in sub-populations such as students. In these studies, probability of study inclusion was obviously likely to be confounded with the problem behaviour to be measured and such approaches tend to lead to overestimation. Few studies are representative for the population under study and few data are general population based. Studies focusing on excessive computer gaming found lower rates compared to those on the broader diagnosis of Internet Addiction. In addition, prevalence rates are higher in younger cohorts and as well in Asian countries. With respect to the general population, four studies on Internet Addiction have been published and finding rates ranging from 0.3 % (Aboujaoude et al. 2006) to 2.1 % (Müller et al. 2013).

In the absence of a consensus concerning criteria to define and tools to assess Internet Addiction, one study used a statistical approach by performing a latent class analysis in a large general population sample (Rumpf et al. 2014b). In the entire sample aged 14–64, 1 % was classified as having Internet Addiction. Percentages were higher in younger age groups with up to 4 % in participants aged 14–16. There were no overall gender differences while males reported Internet Gaming as main activity and females Social Networks. Unemployment and migration background were related to Internet Addiction.

16.4 Psychiatric Comorbidity

16.4.1 Psychiatric Comorbidity of Pathological Gambling

Pathological gamblers are known to show high rates of co-morbid psychiatric disorders, similarly to individuals with substance use disorders (Crockford and el-Guebaly 1998). The worldwide largest representative study with data for Pathological Gambling, the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) also assessed Alcohol and Drug Use, Mood and Anxiety Disorders, and Personality Disorders (Petry et al. 2005). Of the participants with Pathological Gambling during lifetime, 73.2 % had also a lifetime Alcohol Use Disorder. Additionally, 49.6 % suffered from a Mood Disorder during lifetime, and 41.3 % had an Anxiety Disorder. An Antisocial Personality Disorder was diagnosed in 23.3 % of the participants. Furthermore, an Obsessive–Compulsive Personality disorder was diagnosed in 28.5 % of the pathological gamblers. In a 3-year-follow-up, 53.8 % of the population with Gambling Disorders had developed an incident Axis I disorder (Chou and Afifi 2011).

In another US study, the National Comorbidity Survey (NCS-R), Kessler and colleagues showed that 96.3 % of the pathological gamblers had also suffered of at least one Axis-I disorder during their lifetime (Kessler et al. 2008). The Odds Ratios (OR) were 3.7 for any Mood Disorder, 3.1 for any Anxiety Disorder, and 5.5 for any Substance Disorder.

The German PAGE-study also assessed co-morbid psychiatric disorders. Of the pathological gamblers, 85.1 % had any co-morbid psychiatric disorder (without tobacco dependence) during lifetime with the highest rates for Alcohol Use

Disorders (61.7 %) and Mood Disorders (46.8 %), followed by Anxiety Disorders (38.3 %) (Bischof et al. 2013). Compared to a general population sample, pathological gamblers showed a 3.7 times higher risk for Alcohol Use Disorders, a 3.1 times higher risk for a Mood Disorder, and an OR of 3.8 for Anxiety Disorders.

Taken together and as confirmed by a systematic review by Lorains and colleagues, there is a significant psychiatric comorbidity in pathological gambling, with Substance Use Disorders to be the most prevalent, followed by Mood Disorders and Anxiety Disorders (Lorains et al. 2011).

16.4.2 Psychiatric Comorbidity of Internet Addiction

Quite a number of studies have analysed psychiatric comorbidity of Internet Addiction/Internet Gaming Disorder. A systematic review identified 20 studies most of them coming from Asian countries. Of all studies, 75 % reported significant correlations of problematic Internet use with Depression, 57 % with Anxiety, 100 % of the studies with symptoms of ADHD, 60 % with obsessive-compulsive symptoms, and 66 % with hostility or aggression. None of the studies included in this review reported associations between problematic Internet use and Social Phobia (Carli et al. 2013). The weakest association was found for hostility/aggression and the strongest for depression while associations were higher among males.

Of special interest are studies with longitudinal study designs to analyse if specific characteristics in terms of comorbidity are risk factors for the development of Internet Addiction or other outcomes. One study conducted follow-ups of a sample of adolescents from ten junior high schools in Taiwan over a period of 2 years (Ko et al. 2009a). Aim was to evaluate if psychiatric comorbidities or personality characteristics predict the onset of Internet Addiction. Among those without this disorder at the baseline assessment but with Internet Addiction at follow-up, Depression, ADHD, Social Phobia, and hostility were found as predictors. Regardless of gender, ADHD and hostility were the strongest predictors. As a shortcoming it has to be mentioned that the assessment of the comorbid disorders were based on rather brief questionnaires instead of in-depth diagnostic interviews. Another study focused on gaming and followed-up school children in Singapore over a period of 24 months (Gentile et al. 2011). This study used a longitudinal latent class approach to identify distinct groups of participants who started, continued or stopped to be pathological Internet gamers within the follow-up period or who never had problematic gaming. Predictors of pathological gaming were lower social competence and empathy, poorer emotional regulation skills and greater impulsivity. Important to notice is that depression, anxiety, social phobia (as well as lower school performance) were found to be sequelae of the pathological gaming not precursors. This is very important because Internet Addiction or Internet Gaming Disorder is often regarded as a symptom of another (underlying) disorder. These data speak against this hypothesis. Although studies are rare, to date it can be summarized that psychiatric comorbidity may as well play a role in the development of Internet Addiction as well as being a consequence.

One German study has followed-up individuals from a large general population sample (Rumpf et al. 2014b) exploring signs of excessive internet use and psychiatric comorbidity. In those who fulfilled at least 5 DSM-5 criteria for Internet Gaming Disorder and who reported that gaming was their main activity in the Internet, high proportions of comorbid disorders were found: Substance Dependence 46.7 %, Mood Disorders 46.7 %, Anxiety Disorders 23.3 %, Cluster A personality disorder 4.%, Cluster B personality disorder 12.0 %, Cluster C personality disorder 24.0. Findings were comparable for other Internet activities showing that between 28 % and 33 % (depending on main activity) had at least one personality disorder.

16.5 Therapeutic Approaches for Pathological Gambling and Internet Addiction

Similar to substance-related disorders, behavioural addictions are regarded as repetitive, excessive behavioural patterns that increasingly turn into an automatized action, which is difficult to control intentionally and causes harm to the afflicted individual. Learning processes reinforces this automatic behaviour. Treatment aims at finding alternatives for gambling/gaming activities and to re-establish social contacts. This subchapter provides an overview of studies assessing the effects of different psychotherapeutic—as well as pharmacological interventions and gives a more detailed description of psychotherapeutic treatment options.

16.5.1 Psychosocial Interventions for Pathological Gambling

A recently published Cochrane Collaboration meta-analysis assessing the efficacy of psychological interventions in the treatment of pathological gamblers (PG) reported a superiority of cognitive behavioural therapy over other psychological treatments (Cowlishaw et al. 2012). This is very similar to the treatment of chemical addictions (Magill and Ray 2009). However, in the case of PG given the small samples and the high variation of therapeutic procedures within the interventions, the reported therapy effects should be interpreted with caution.

Overall, patients with PG can be treated safely and effectively either within a psychiatric clinic (i.e. inpatient and day patient treatment) or on an outpatient basis. The treatment choice depends on the symptom severity and other comorbidities. The overall aim of the intervention is to motivate and support patients in the achievement of gambling abstinence as well as to help them in taking responsibility in managing their problems. The treatment of pathological gamblers generally involves group as well as individual settings. The key elements in the treatment of PG are:

– To inform the patient about the PG disorder (psychoeducation) and to involve him/her in the development of an individualized explanatory model

- The identification of dysfunctional and harmful cognitions (e.g. the belief of not being good enough at home or at work) as well as the restructuring of these negative core beliefs that otherwise lead to the weakening of self-esteem and the reduction of self-efficacy in staying abstinent
- Identification and analysis of high-risk situations for gambling relapses
- Restructuring of gambling-related cognitive distortions (e.g. "The winnings when gambling depend on my skills" or "If I had concentrated more, I would have won")
- Training on money management
- Skills training for dealing with emotional instability and stress.

The process of working on an individual explanatory model together with the patient improves the person's understanding of his/her dysfunctional gambling behaviour. Furthermore, in doing so helps the patient to learn about neurobiological, genetic as well as social factors influencing and maintaining PG.

Often, patients exhibit a negative self-concept that becomes apparent in negative core beliefs such as being terrible and worthless. These beliefs in turn induce negative feelings and physical tension that maintain the vicious circle to use gambling as a coping strategy. Thus, gambling-associated triggers (situations, feelings, or gambling stimuli) activate the dopaminergic reward system in the brain and entail hedonistic feelings. This in turn leads to the ignorance of negative long-term consequences.

The issue that most patients are not aware of the variety of triggers inducing craving for gambling leads to a relapse in many cases. Therefore, the therapist assesses these underlying situational processes together with the patient, trying to underline the connections between the triggers (e.g. an interpersonal conflict with the spouse), the cognitive, emotional and behavioural reactions as well as the short-term and long-term consequences. This behavioural assessment, as the SORC model differentiates between S—Stimulus or antecedent conditions that trigger gambling (e.g. an interpersonal conflict with the spouse), O—Organismic variables related to the problematic behaviour (e.g. the patient is harm avoidant), R—(Responses): physical (e.g. tension in shoulders, increased heart frequency), emotional (e.g. feelings of anxiety, anger, sadness, anxiety to loose someone, craving), cognitive (e.g. thoughts of wanting to go out of this conflict) and behavioural (gambling) as well as C—Consequences of the problematic behaviour.

Studies assessing PG-influencing personality traits indicate that patients show a high degree of impulsivity (O-variable), which in turn impacts and impairs the behavioural control over gambling (Blaszczynski et al. 1997). Inhibitory control deficits are one of the main etiological factors increasing the risk for both substance-related and non-substance-related addictive behaviour (Goldstein and Volkow 2002; Goudriaan et al. 2008; Blanco et al. 2009; Blaszczynski et al. 1997). Individuals exhibiting a high degree of impulsivity often show deficits in the perception and management of feelings. These persons have to deal with tension felt in their body and nervousness without being able to identify the main underlying feelings or to localize the cause of their problem. The tension is often

induced by distorted perceptions and emotions arising through negative past experiences.

Exercises to reduce this emotional dysregulation are specifically described in the techniques of Dialectic behavioural therapy (DBT; Linehan 1993). DBT can be regarded as a sub-form of cognitive-behavioural therapy and includes the training in which the patients learn skills enabling them to deal consciously with feelings and interpersonal conflicts. One exercise is the specific use of mindfulness techniques, described as a mental training to learn self-awareness and self-regulation in order to manage own negative reactions and impulses.

A further relevant basis for therapy, especially in the outpatient treatment, is writing a diary. Every day, the patient is asked to describe his/her degree of craving for gambling, previous negative or positive situations together with the related feelings, the gambling duration, and monetary loss as well as the skills that enabled the patient to avoid gambling. This overview gives a treatment-update for both patient and therapist and helps summarizing learned skills as well as identifying high-risk situations still difficult to handle for the patient.

Another aspect of PG-therapy is the work on a patient's attitude towards money. Most pathological gamblers report that money itself lost its high value for them. For example coins are just thrown into a slot machine until none are left. This appraisal is also underlined by neurobiological studies indicating that it is not the monetary win per se that activates the dopaminergic limbic reward system in the brain. Rather, continued gambling despite negative consequences is thought to be driven by strong feelings of uncertainty to win or lose money, which trigger the striatum of the dopaminergic limbic reward system (Chase and Clark 2010; Linnet et al. 2012) and influences the development of addictive, habitual gambling behaviour.

Additionally, gambling-related cognitive distortions also reinforce the maintenance of problematic gambling (Ladouceur 1996). For instance, the cognitive distortion termed "G*amblers Fallacy*" involving the belief that a frequent loss in a game increases the likelihood of a win in the next (Ladouceur 1996) can be regarded a strong predictor for continuing gambling (Goodie and Fortune 2013).

Another relevant aspect in PG-therapy is a possible involvement of relatives, who are helpless and exhausted in many cases. Often, they develop serious health problems such as affective disorders, suicidal tendencies and addictions to medication or alcohol (Grüsser and Albrecht 2007). Relatives often do not know how to handle PG patients, who might betray trust by promising to quit gambling to the point of stealing money. Furthermore, relatives might be overwhelmed by the financial and social problems caused by a patient's excessive gambling. The therapist informs the relatives about the PG-etiology and maintaining factors.

Relatives are encouraged to seek additional help if necessary which may include psychotherapy. Additionally, advice on self-help groups for relatives and further clinical possibilities in the case of psychological and physical problems is provided.

In conclusion, the severity of the PG disorder, psychosocial factors as well as comorbidities should be considered in the choice of treatment for a patient with pathological gambling.

The focus of psychotherapeutic interventions lies on characteristics underlying emotional regulation, the (re-) configuration of relationships as well as on a reduction of the often occurring negative self-evaluation of PG patients.

16.5.2 Psychosocial Interventions for Internet Addiction (Gaming)

The treatment of Internet addictive behaviours is still in its infancy and only a limited number of studies have been conducted so far. Moreover, comparison and interpretation of these studies is difficult due to the many methodological differences and shortcomings (King et al. 2011).

Most of the studies come from Asian countries and explore different types of behavioural interventions. However, although positive treatment effects have been found, these results are not overall consistent (Su et al. 2011; Du et al. 2010). In the USA, Young (2007) studied the effect of a (group) cognitive behavioural intervention. An overall increment of symptoms associated with computer as well as Internet addiction was reported. However, the reported findings lack validated measures for psychosocial symptoms.

Currently, a multicentre trial, STICA (Short-term Treatment for Internet and Computer game Addiction) is running in Austria and Germany (Jager et al. 2012). Main goals of the treatment are (1) abstinence of the problematic behaviour/reduction of online time to normal use, (2) relearning of alternative behaviours that might have been reduced like former hobbies. Additionally social contacts should be reactivated. (3) Treatment of psychiatric comorbidities, (4) individual problem understanding.

The therapy is based on eight single and fifteen group sessions in an outpatient setting. Thus the social life and the embedding in the original social environment as well as relapse can directly be integrated in the psychotherapeutic process and treatment. Especially the group setting provides the chance to learn on the model of others by observing relapse or therapy success and related emotional and personal reactions. The decision to consume the internet ongoing leads to psychosocial, emotional and cognitive behavioural patterns that are not necessarily conscious to the patient, but effect their behaviour and life significantly. During an individual observation of play the processes that are leading to an ongoing play are identified and further understanding of this process is elaborated. Exposure training with the treatment seekers' avatars is common part of the treatment. A paper print of the avatar is used to transfer the digital avatar to physical presence in the therapy setting. The patients evaluate these avatars. The evaluation of the own avatar by other patients is a highly emotional moment for the patients. Patients' task is to describe positive and negative aspects of the—over years—developed avatar. The culmination of this situation finds patients themselves choosing parts of the avatar that would stay online (negative ones) and positive aspects that might be transferred to the patients' everyday offline life. A clear distance to the online game is highly supporting the abstinence from online games. It is often hard for the patients to bid farewell to their—second life—avatar. The reason is that the avatar represents so

many time, online experience, endurance, thoughts, and wishes. Patients describe the group setting and its support as well as reactivate or newly created social contacts as most effective in the therapy process. The chance of stabilization of the therapy success beyond the psychotherapeutic treatment is increased by rediscovery of self-reflection, rediscovered corporeality, direct emotional as well as social feedback and newly implemented coping mechanisms. The delineated multicentre STICA RCT is currently evaluating the outcomes of the described CBT modules (Jager et al. 2012).

16.5.3 Psychopharmacological Treatment of Pathological Gambling

Given the similarities between substance use disorders and pathological gambling, not surprisingly, efforts have been made over the past two decades to investigate the potential benefits of pharmacological treatments in pathological gambling. Recently, Grant et al. (2014) presented a systematic review of the 18 double-blind placebo-controlled pharmacotherapy studies conducted for the treatment of pathological gambling. The trials reviewed include studies on antidepressants, opioid antagonists, mood stabilizers, atypical antipsychotics, glutamatergic agents, and atypical stimulants. Among substances influencing the glutamatergic system N-acetyl cysteine, a glutamate-modulating agent, seems promising with 83 % responders compared with 28.6 % of those assigned to placebo. Especially the opioid antagonists Naltrexone and Nalmefene have demonstrated their efficacy in treating symptoms associated with pathological gambling. In contrast antidepressant, mood stabilizers and atypical antipsychotics have shown inconsistent results. Among the limitations of the published study are relatively small sample sizes, short duration, and often the exclusion of psychiatric comorbidities. Further shortcomings are the use of different response measures, the heterogeneity of samples, atypical gender distribution, and the missing use of a validated instrument among others.

In summary, Grant et al. (2014) conclude that opioid antagonists and glutamatergic agents seem promising for individuals with PG suffering for intense urges. Considering the fact that several studies consistently demonstrated the efficacy of opioid antagonists they should currently be considered the first-line treatment for PG.

16.5.4 Psychopharmacological Treatment of Internet and Computer Game Addiction

Pharmacological studies on Internet Addiction are very limited and small sample sized (King et al. 2011). Han and colleagues conducted a clinical trial on 62 children aged between 8 and 12 years with ADHD and comorbid Internet addiction (Han et al. 2009). The primary endpoint regarded to efficacy of Methylphenidate (18 mg/d) on symptoms of Internet Addiction. After 8 weeks of medication, significant

reduction of symptoms of Internet Addiction was observable. Additionally, improvements in visual attention became evident.

In a second study by the same authors (Han et al. 2010), 19 patients (aged between 17 und 29 years) with internet addiction were included in a trial, with Bupropion (a dopamine–norepinephrine reuptake inhibitor). A comparison between the treatment group and a wait list control was conducted with a self-report score and cue-induced cortical reactivity (assessed by fMRI) as primary endpoints. After 6 weeks of treatment there was a significant decrease regarding craving for online games and daily use of online games. Additionally, a decrease of cue-induced dorsolateral prefrontal activity was found among the treatment group.

However, given the paucity of studies, currently no recommendations on the use of pharmacological treatments for Internet Addiction can be given.

16.5.5 Treatment of Comorbid Behavioural Addictions and Psychiatric Disorders

Although studies show a high prevalence of psychiatric comorbidity within individuals suffering from PG or Internet Addiction, very few studies have been conducted on the treatment of these dual disorder patients. This is specifically pitiful given the negative impact of these comorbidities on patients' disease course. Indeed, psychiatric comorbidity is common among pathological gamblers and is associated with greater severity of clinical problems (Ibanez et al. 2001). As indicated earlier in this chapter, substance use disorder, mood and anxiety disorders are respectively the most frequent psychiatric disorders to be dealt with in PG patients. Less is known for Internet Addiction, where among children and adolescents also ADHD are a frequently found.

Although no studies currently are available providing evidence for integrated treatment interventions, it is in our view warranted to state that concurrent treatment for both the addictive and the other psychiatric disorder needs to be available for and actively offered to the comorbid patient.

Conclusions and Recommendations

Behavioural additions are highly prevalent having major individual and societal consequences. Given the availability and increase of potentially addictive activities such as gambling, gaming, and online pornography, an increase of these types of behavioural disorders is very likely. Although there are promising psychosocial treatments for pathological gambling and specifically for gaming, effective treatments need to be further developed and established in the health care. Most of the available evidence support behavioural interventions very similar to addiction treatment such as behavioural assessment, cognitive restructuring, emotion management and involvement of relatives as first line treatment. Specifically in gambling disorders, pharmacotherapy can be a useful augmentation. Psychiatric comorbidities are frequently found in patients with behavioural addictions and negatively affect the course of the disorders.

Concurrent treatment of comorbid disorders is advised. However, there is a clear need of studies that evaluate the efficacy and effectiveness of integrated treatment approaches.

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