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# Internet Addiction and Cognitive Behavioral Therapy

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## Abstract

Internet addiction has become a social and public health problem especially among adolescents and adults. The purpose of this chapter is to describe the Internet addiction and discuss the process of treating Internet addiction by using cognitive behavioral therapy for Internet addiction model (CBT-IA). Among the Internet addiction, I have elected to focus on the studies regarding definition, prevalence, risk factors, negatives consequences, and treatment modalities with focus on CBT-IA. In contrast, research on the CBT-IA is still in its early stages. Till now, there is no clear definition for Internet addiction, and these definitions are based on assessment tools that are developed by researchers. There was a variance in the prevalence of Internet addiction among adolescents and adults, which might be related to many factors including assessment instruments and cultural factors. There are many risk factors for Internet addiction that involve socio-demographic, social, psychological factors, and Internet use practices. Many negative consequences result from Internet addiction such as social withdrawal, lack of relationships with families and peers, and psychological problems including depression and anxiety. The CBT-IA is the most effective treatment for Internet addiction. The CBT-IA model is a comprehensive approach, which can be divided into three phases: behavior modification, cognitive restructuring, and harm reduction therapy (HRT).

**Keywords:** assessment tools, cognitive behavioral therapy, Internet addiction, prevalence, risk factors, treatment

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## 1. Introduction

Internet use has become increasingly popular among the population all over the world. The prevalence of Internet use has increased rapidly, with the current estimated world's number of Internet users in June 2017 is more than 3.8 billion [1]. According to statistics, Asia is considered as one of the most high Internet societies in the world (49.7%) [1]. This widespread

leads to the problem of Internet addiction especially among teenagers. Of course, the problem of Internet addiction (IA) has become more widespread and considered as a social and public health problem. It is known that adolescents and young adults are the high-risk groups and more vulnerable for Internet addiction [2]. Both groups especially adolescents suffer from emotional and social stress, in addition to lack of behavioral control due to incomplete psychological maturity, which motivate them to engage in risk-related factors such as Internet addiction [3].

Yet after the 20 years on evolving the concept of Internet addiction and despite the growth, the popularity, and the increasing prevalence of Internet addiction, there is still no clear definition of this concept. However, it is under investigation and to be included in the classification in the Diagnostic and Statistical Manual for Mental Disorders, Fifth Edition (DSM-5) [4].

A number of literature have been written, which identified many risk factors for Internet addiction and several negative consequences resulting from this problem. Such risk factors include socio-demographic, social, psychological and mental factors, and Internet use practices. It produces physical, social, and psychological problems, in addition to academic performance and career difficulties [5, 6]. Therefore, this problem needs immediate action and treatment. Thus, there are different ways to treat Internet addiction; however, cognitive behavioral therapy (CBT) has been proposed as an effective treatment. There is a specialized type or model to treat this disorder called cognitive behavioral therapy for Internet addiction (CBT-IA).

This chapter presents the data associated with the prevalence of Internet addiction and the risk factors to gather a sense of the scope of the problem. The chapter also provides the cognitive behavioral therapy model for treatment of Internet addiction. This chapter could help in developing two perspectives, the academic and the mental health. From the academic perspective, this chapter helps to identify future areas of research, as new studies in the field continue to emerge. From the mental health perspective, the chapter assists clinicians in developing more empirically sound methods to assess and potentially treat Internet-addicted clients by applying CBT-IA.

## **2. Internet addiction**

### **2.1. Definition of Internet addiction**

There are many definitions of Internet addiction. Some authors defined it as “excessive Internet usage” [7, 8], “problematic Internet use” [9], “Internet dependency” [10], or “pathological Internet usage” [11]. This variation is related to lack of agreement in definitions among studies that investigated the different symptoms and characteristics of IA. Young [7] developed definition for Internet addiction, which was “maladaptive pattern of Internet use that lead to clinically significant impairment or distress”.

It was also defined as “a psychological dependence on the Internet, despite the purpose once logged on” [12]. In his second definition that based on the Diagnostic and Statistical Manual IV (DSM-IV) pathological gambling diagnosis criteria to Internet use, Young [13] defined Internet addiction as an impulse-control disorder and made a definition that consists of eight criteria and requires the fulfillment of five out of eight for the identification of an individual to be addicted. This criteria are (1) excessive mental effort with the Internet, (2) the need for longer time online, (3) repeated attempts to decrease Internet use, (4) withdrawal symptoms when decreasing Internet use, (5) issues in time management, (6) environmental distress (family, friends, school, and work), (7) lying about time spent online, and (8) mood modification through Internet use. Goldberg [14] defined Internet addiction on the basis of the DSM-IV substance addiction criteria as a behavioral addiction functions as a coping mechanism.

Later on, Block [15] defined it as “compulsive behaviors related to any online activities that influence normal activity daily living and lead to stress on social and family relationships, lying, poor achievement, and fatigue”. Other researchers conceptualized it as “an impulse control disorder where individuals loss ability to control Internet use” [16, 17].

## 2.2. Prevalence of Internet addiction

There are many studies focused on studying the prevalence of Internet addiction among adolescents and others focused on adults. The adolescents are considered as a high-risk group for the behavior of Internet addiction. They undergo many developmental changes and stressful events, which result in using Internet that is considered a rich and attractive environment to reduce these stressors [18]. There are many studies concerned to determine the prevalence of this problem among this target group. The prevalence of Internet addiction varies widely. It is documented that the recent prevalence in different countries ranges from 4.0 to 25.3% among school students [19–22]. In USA, the rate was reported between 0 and 26.3% [23] and 0.8 and 13.5% in the European Union [11, 24, 25]. In Asia regions, the prevalence of Internet addiction is reported between 2 and 25.3% [20, 21, 26]. In Middle Eastern, the prevalence was between 1 and 28.4% [19, 22, 27, 28], and the high prevalence was among Turkish students (11.6–28.4%) [28, 29].

Moreover, many studies regarding Internet addiction were conducted among adults in various countries [30–39]. The prevalence rates in studies have used Young’s Internet Addiction Test ranged from 1.2% in the UK [24] to 40% of the Jordanian university students [26]. On the contrary, the prevalence of Internet addiction by using Chen’s Internet Addiction Scale reported 12.3% [36] to 17.9% [33] among Taiwanese adults. However, the prevalence rates of Internet addiction by using the Internet Addiction Diagnostic Questionnaire [13] demonstrated 1.0% among Norwegian adults [31] while 22.8% among Iranian Internet users [35].

From the results, there are differences in prevalence of Internet addiction, which may be related to differences in the definition of possible and serious addiction, using various instruments in the evaluation and sociocultural factors.

### 2.3. Assessment tools of Internet addiction

Many tools have been developed to investigate Internet addiction or similar concepts. However, the main diagnostic assessment instruments used widely in empirical studies involve (1) Young's Internet Addiction Test (YIAT), (2) Internet Addiction Diagnostic Questionnaire (IADQ), and (3) Chen's Internet Addiction Scale (CIAS).

#### 2.3.1. *Young's Internet Addiction Test (YIAT)*

It was developed by Young [10] by adapting Diagnostic and Statistical Manual IV (DSM-IV) criteria for substance dependence and pathological gambling [40], and it is a modification of the previous 8-item scale. The criteria include loss of control, neglecting everyday life, relationships and alternative recreation activities, behavioral and cognitive salience, negative consequences, escapism/mood modification, and deception. It is a self-report scale and consists of a 20 items; each item is scored using a 5-point Likert scale ranging from 1 ("not at all") to 5 ("always"). The score of the total scale ranges from 20 to 100. The Internet users are categorized as follows: a score 70–100 reflects significant problems due to Internet use and 40–69 reflects frequent problems when scoring [13]. It has shown to be reliable and valid [13]. The internal consistency of the Internet Addiction Test (IAT) has been reported as excellent, with a Cronbach's alpha of 0.93 [23].

#### 2.3.2. *Internet Addiction Diagnostic Questionnaire (IADQ)*

This questionnaire was developed by Young [7]. It is a self-report measure which consists of eight items dichotomously. It is based on the diagnostic symptoms of pathological gambling [40]. This questionnaire utilized the following criteria: preoccupation, tolerance, loss of control, withdrawal, negative consequences, denial, and escapism. If the scores were five or more of the criteria, it indicates Internet addiction.

#### 2.3.3. *Chen's Internet Addiction Scale (CIAS)*

This scale was developed by Chen et al. [27] and was the most frequently used scale in the empirical research papers studying Internet addiction. The CIAS is a self-report measurement consists of 26 items on a 4-point Likert scale. It assesses the main symptoms of Internet addiction, tolerance, compulsive use, and withdrawal, as well as related problems in terms of negative impact on social activities, interpersonal relationships, physical condition, and time management. Furthermore, it assesses the weekly online hours and Internet use experience. The scores of 67/68 indicate Internet addiction. It has good internal consistency of the scale, with Cronbach's alpha values between 0.79 and 0.93 for the subscales [27].

### 2.4. Risk factors

Several risk factors have been identified as associated factors for Internet addiction especially among adolescents and adults. Some of these factors are related to socio-demographic variables

such as age (being younger adolescents and younger adults [31, 41, 42]), gender (being male) [3, 11, 17, 24, 25, 27, 30–34, 41–46], female gender [22], higher family income levels [17, 44], living in rural areas (for adolescents) [47], living in urban areas (for adults) [34], single parent (for adults) [24, 33], marital status (for adults) (being single) [24], income (for adults) (financial difficulties), unemployment (for adults) [11], university year level (being in lower-year levels) (e.g., first or second year) [31, 42] and lower school grade levels (for adolescents) [3, 22, 27], and ethnic group (Asian ethnicity) [38].

Moreover, there are factors related to Internet use and patterns of Internet use, which are also recognized as risk factors for developing Internet addiction. Age of using Internet for the first time (being so young or earlier adolescence age) [11, 17, 33], frequency [17], and duration (more than 10 hours daily) of Internet use [17, 22, 27, 31, 35, 36], Internet access at home [12], Internet use at an Internet café [25, 27], purposes of Internet use (e.g., for noneducational purposes [e.g., downloading programs, music or movies, playing online games or chatting, and social networking] [17, 22, 32, 35], online activities and practices [e.g., communicating, playing online games, listening to music, making new friends, and online chatting] [25, 35], Internet use for mood regulation [47], and having a hobby such as reading books [18]), positive outcome expectancy from Internet use, and low self-efficacy toward using Internet [36] have relationships with the development of Internet addiction. In addition to this, parental involvement and guidance regarding Internet behaviors were reported to be correlated with Internet addiction, specifically little parental communication about Internet use and lack of rules about Internet times and use [48]. It is suggested that social factors including poor academic performance (for adolescents) [8] and dissatisfaction with academic performance (for adults) [32, 36], poor relations with school [43, 49], inadequate social adaptation [17], stress [43], leisure boredom [50], presence of peers and siblings consuming alcohol [49], and lack of social support [8, 34, 38, 42] are associated with Internet addiction.

It is reported that family variables were associated with Internet addiction such as family conflict and dissatisfaction [43, 49], an insecure attachment style [36], child maltreatment experiences [32], poor parental relationship [25, 46], poor family love [32], homesickness [33], low parental involvement and supervision [50], and showing positive attitude to adolescent substance use by parents [49].

Health-risk factors such as consuming alcohol, substance use, and smoking have been suggested as risk-factors for Internet addiction. Previous studies have documented a relationship between alcohol, substance use, and Internet addiction [43]. Onen et al. [45] revealed that there was a relationship between Internet addiction and smoking. In addition, a behavioral factor such as a habit of skipping breakfast [34] was correlated with Internet addiction.

It is necessary to recognize that psychological and psychiatric problems and symptoms are also associated with Internet addiction. Several studies have reported a relationship between Internet addiction, depression, anxiety, attention deficit and hyperactivity disorder, social phobia, neurosis, solitude, hostility, aggressive behaviors, suicide, psychological dysfunction, and emotional and behavioral problems [8, 10, 11, 17, 22, 27, 41, 42, 51, 52].



It is also reported that negative personality characteristics including depressive thoughts, low self-esteem, poor self-perception and concept [38, 53], novelty seeking, harm avoidance, low reward dependence [38], impulsivity [36, 49], introversion, low agreeableness, and emotional instability [54], escapism and fantasy [30], could lead to the development of Internet addiction. Furthermore, the following internal characteristics were documented as risk factors: low life satisfaction [17], low well-being [54], loneliness, lack of confidence [17, 30], preference for online social interaction, negative life outcomes [47], and seeking for enjoyment and entertainment [49].

## 2.5. Negative consequences of Internet addiction

Internet addiction results in experiencing physical, social, and mental or psychological problems. It has been linked to physical problems like sleep disturbance, eating problems, limited physical activity, back strain, eyestrain, and others [52]. Research literature has been demonstrated that Internet addiction leads to a poor health condition, excessive daytime sleepiness, insomnia, nightmares, difficulty in falling asleep and night awakenings [2], loss of energy, physiological dysfunction, weakened immunity [17], overweight and obesity, and impaired vision [55].

The Internet addicts transfer their social lives into the Internet world. Internet addiction leads to many social issues such as disturbing family, social, and workplace relations, where it isolates the persons from family and society and keeping them away from social interactions [27]. It has a negative effect on interaction with peers and friends, family life, academic life, and social life [41].

It is important to understand that Internet addiction may lead to negative effects on psychological development for population. The worst effects are Internet anxiety [38, 46], depression [30, 32, 33, 36, 51], suicidal ideation [51], social phobia and phobic anxiety [41], schizophrenia, obsessive-compulsive disorder [30], antisocial/aggressive behaviors [49], self-injurious behavior [56], harmful alcohol use [46], and sleeping disorders [31]. In a Chinese study conducted among school students, the results indicated that the scores for comorbid disease and impulsivity were higher among students experienced Internet addiction [52].

## 2.6. Treatment for Internet addiction

Treatment for Internet addiction is similar to treating any other types of addiction. It involves cognitive behavioral therapy, interpersonal psychotherapy, and support groups.

- **Cognitive behavioral therapy (CBT)** is a short-term and problem-focused type of behavioral treatment. It focuses on helping clients consider the relationship between beliefs, thoughts, and feelings and following behavior patterns and actions. During CBT, clients learn that their perceptions influence directly on responses to specific situations. In particular, a client's thought process guides his or her behaviors and actions. Cognitive

behavioral therapy is not a discrete treatment technique, but it is a general term refers to a group of therapies [57]. Through treatment by CBT, the therapists use many techniques including relaxation, social, physical, and thought exercises to raise a client's awareness of his or her emotional and behavioral patterns, challenging beliefs, mindfulness-based interventions [57], journal writing therapy or writing therapy [58], and time management methods [59].

- **Interpersonal therapy** is a type of treatment concentrating on enhancing interpersonal connections and actual social relationships with friends, parents, and others. Therefore, this therapy purposes to find new methods of interaction and includes the following interventions: encouraging influence, developing communication techniques and strategies, modeling, and role-playing.
- **Support groups** may be helpful in the treatment of Internet addiction. These support groups should be applied to help addicts in attaining appropriate support that facilitate recovery. Moreover, couples counseling could be a necessary part of recovery among Internet addicts, whose marital and familial relationships have been negatively affected by Internet addiction.

## 2.7. Cognitive Behavioral therapy for Internet addiction (CBT-IA)

This is the first model of its kind and the most effective type of therapy for Internet addiction that is focusing on cognitive behavioral therapy (CBT). Researchers have documented that using cognitive behavioral therapy (CBT) is an effective treatment for Internet addiction [53]. The CBT in general helps addicts to realize addictive feelings and actions, while learning new coping skills and methods to prevent a relapse. The CBT usually takes 3 months of treatment or approximately 12 weekly sessions. The focus of this therapy is to assess the client's patterns of use and then develop new schedule to change the past formed patterns. External influences such as activities that demand the addict to leave Internet could be applied. There are also treatment programs that help the client in identifying goals about the time needed for using the Internet.

The CBT-IA model is a comprehensive approach which can be divided into phases, including (1) behavior modification, (2) cognitive restructuring, and (3) harm reduction therapy (HRT). The first phase or the early stage of therapy is behavior modification that is focusing on specific behaviors and situations where the impulse control disorder causes the significant difficulty and is used to control compulsive Internet use and reduce the time spend online by addict. The second phase is a cognitive restructuring that is applied to identify, challenge, and adjust cognitive disruptions and negative beliefs that cause a compulsive usage of Internet and effect on this behavior of addiction [53]. The third phase is harm reduction therapy (HRT) that is a new and untested therapy, which is used for continuation of recovery and prevention of relapse. The HRT is used to recognize and cure psychiatric problems related to Internet addiction and treat social problems in relationships with families, peers, and friends. We will discuss each in turn.



### 2.7.1. Phase 1: Behavior modification

In this phase of the CBT-IA, behavior therapy is applied to examine both computer behavior and noncomputer behavior. Computer behavior deals with actual online use, with a main purpose of abstaining from questionable applications while maintaining controlled usage of the computer for legal purposes [53]. This could be explained by the example of a university student who was addicted to Internet porn movies would need to learn to refrain from these movie Websites while still being able to use Internet for academic activities, social networking, and conducting e-mails to his contacts. Noncomputer behavior concentrates on assisting clients to promote favorable life style activities without the Internet. The activities that do not encompass the computer usage are examined and may involve activities related to social or job-related functioning [53].

A previous study [60] found that Internet addicts felt a sense of displacement when online and were incapable to handle the main aspects of their lives due to increasing preoccupation with Internet usage, which affect their work (e.g., ignoring and skipping the deadlines of their work), relationship with their families (e.g., giving little time for their families), social relationships with their friends, colleagues, and community, and their normal routines. As Internet addiction progressed, addicts become expanded with their online activities such as Internet games, chatting, and gambling, which lead to ignorance of social life instead of being alone in front of the computer [61]. Time management for Internet addicts is the primary aim of CBT-IA [62].

It is always important to be aware of the main goal in this phase, which is modifying unhealthful computer behavior to healthful one. In the beginning of implementation of this phase, the therapist should assess the client's present use of the Internet. A daily Internet activity dairy could be adopted to evaluate client's behavior and develop a plan for treatment [53]. This dairy should include date and time of each session, event, Internet activities (e.g., mailing, chatting, Web surfing, and shopping), situations, duration, feelings that trigger excessive online usage, and outcome of the Internet session (what activities were achieved, what activities were stopped while online). The recovery success among Internet addicts could be measured through reduced online hours and abstains from any contact with problematic online applications. According the results of the daily dairy, therapist could review the duration and favorite times of online.

It is necessary for the clients to get rid of any problematic online behavior. This could be achieved by using computer restructuring or reorganization strategy. The clients should remove bookmarks or favorite files and sites that lead to the problem online. Then, the therapist puts time management goals with the addicts and uses many methods to help them interrupt old patterns of addictive online behavior such as taking routine computer breaks, using alarm or timer as reminder to do another activity (e.g., walking through the office or garden or home, or see what family is doing in the living room) and using filtering software that could be used to block access to some online sites and can help clients to self-regulate online use.

### 2.7.2. Phase 2: Cognitive restructuring

In application of this phase of treatment, many methods are used including assessment of the type of disturbance, problem solving methods, coping techniques, modeling, support group, and self-thought monitoring [62].

The therapy classifies the maladaptive cognitions that are employed as triggers for excessive use of the Internet. For example, some addicts are suffering from distorted thoughts concerning themselves such as rumination (e.g., they are continuously thinking and concerning regarding the problems related to their Internet use) and intense self-concepts that serve their availability online (e.g., we have no value offline; however, we are other persons in online world). The Internet addicts experience distorted thoughts regarding their world, for example, "We do not like the people because nobody appreciate us" and "the Internet world is the only site where we are respected and appreciated." These extreme thoughts are distinguished by all or nothing thinking that intensifying and preserving the clients' online addiction. This could be explained by the following example: In Internet games, the addicts who carry out their goals in these games could realize the offline world as not desired, which results in psychological dependence on using the online to enhance their self-esteem. Online addicts have a cognitive bias that they are treated with respect in their virtual world, but they feel unhappiness and lack of satisfaction with real lives. These thoughts encourage them to engage in the online. Cognitive restructuring is used to breach this pattern of behavior. In this stage, the therapist puts the addict's thoughts "under the microscope," and the addict is challenged by rewriting the negative thinking related to him/her. Moreover, CBT-IA assists addicts to recognize that they use the Internet to keep away from any situation or feeling.

Cognitive restructuring will help addicts reevaluate the rationality and validity of these interpretations. For example, addict who uses Internet games to build self-esteem will begin to understand that using Internet is for the satisfaction of the unfilled needs in his or her real life. When the addicts have awareness of their patterns of mistaken thinking, they start to challenge these thoughts more independently of therapy. In this way, they will have difficulty to reason or justify their online usage and to break the cycle of connecting online usage with the best life. Through faults in addicts thinking, they feel worsted because they overestimated difficulties and lessen the potential of corrective actions.

The CBT-IA assists addicts to determine the main problems or consequences caused by Internet addiction in order to help them stay concentrated on treatment goals. In addition, the therapist asks the addict to make a list of the five main problems result from Internet addiction and a list of the five main advantages for lowering or avoiding online use in order to identify consequences. Clients' reassurance is very important because it is making their decision list broad and all comprising, and it should be honest as possible. The therapist should learn the worthy skill of clear-minded assessment of consequences for any recovery from online addiction and relapse prevention.

This phase is used to deal with denial that frequently exists among Internet addicts and to resist the defense mechanism of rationalization that clarifies excessive Internet use. Online

addicts have ambivalence feelings toward treatment. They may enter the treatment sessions with mixed feelings because they are not taking responsibility for their behavior and are not certain from their desire to quit their online use. The addict considers Internet as a healthy outlet just to rationalize his behavior, "This behavior does not cause any harm to anybody else", this is not a big deal, "The Internet is not a problem in my life, it is the stress." They also lower from the hurt that causes to loved ones: "It is a device," "It is not a sexual relation outside marriage," "It is only words on the screen."

In this therapy, the addicts are faced when they conflict themselves. At the first session, they admit to have an addiction. The next session, they lower the same behavior of addiction. In this stage, the treatment assists addicts to take the responsibility of the problem. The addicts recognize that they will stick to a structured online time management plan, if they admit their addiction, which is the important focus in this stage of therapy because it remains addicts that they take a daily commitment, and if they are not ready to take this appointment for themselves, and someone else, then abstaining will be difficult to preserve.

### 2.7.3. Phase 3: Harm reduction therapy (HRT)

During this stage, the therapist identifies and addresses the factors related to development of Internet addiction including personal, situational, social, psychological, or occupational issues [63]. The addicts suppose that they are recovered once stopping this behavior and say "We are recovered." However, there is much more to complete recovery than merely stopping the Internet. Full or complete recovery means examining the fundamental issues lead to the compelling behavior and finding solutions to these issues in a healthy way; on the contrary, relapse is probable to happen. As a part of recovery, the HRT is considered as an important method for the addict to indicate the main issues leading to the addiction [63]. It is necessary to explain that addicts begin to be dependent on the Internet because it provides an urgent and acceptable means of temporarily avoiding psychological or situational problems.

The harm reduction therapy (HRT) is used to identify the coexisting issues in the online addicts' lives. Internet becomes a fantasy world that can take them away from their problems. Through using the Internet, people recognize a safe and easily accessible way to escape. The HRT stresses on identifying and treating underlying psychiatric problems coexisting with compulsive online usage by administering, when indicated, appropriate medications. It focuses on treating dual diagnosis with depression, anxiety, or obsessive-compulsive disorder that is common among Internet addicts, as well as comorbid addiction to alcohol or drugs. Later on, 12-step recovery may be involved as part of treatment.

Harm reduction focuses on the client's strengths and capacity to change as the starting point. In this phase, the main focus of the treatment sessions is raising awareness toward the issues leading to compulsive online use. Addicts are encouraged to participate in setting up the treatment and selecting the useful goals and strategies. The addicts work to find healthy ways to deal with feelings of low self-esteem without Internet use. In addition, the addicts

learn more effective stress management methods to assist them to relax instead of depending on the Internet in order to control job stress. The addicts are helped to find new jobs or career opportunities if they suffer from work difficulties. This thing minimizes the harmful consequences of Internet abuse and helps the recovered addicts develop new and healthy coping strategies.

## **2.8. Clinical applications regarding the effectiveness of CBT-IA**

Relatively little research have been done to evaluate the efficacy and effectiveness of CBT in treatment of Internet addiction. In a previous study conducted by Orzack et al. [64] to evaluate the effectiveness of using group therapy treatment, readiness to change (RtC), cognitive behavioral therapy (CBT), and motivational interviewing (MI) interventions and to examine the impact of comorbidity on the outcomes of the treatment among 35 males suffered from problematic Internet-enabled sexual behavior (IESB) for 16 weeks. The addicts were classified into three groups: anxiety, attention deficit hyperactivity, and mood. The findings showed significant improvements in clients' quality of life and scores of depression symptoms; however, no significant improvement was reported in Internet use. Concerning comorbidity, the anxiety group reported the best response to treatment, while mood group response was positively relative and attention deficit hyperactivity showed no response.

Young [53] conducted a study on 114 Internet addicts by using cognitive behavioral therapy. The outcome variables were evaluated on the third, eight, and twelve sessions and over a 6-month follow-up. The results showed that the majority of clients achieved apparent clinical improvement in managing their complaints at the end of the eight session, and the clients had ability to maintain their improvements in symptoms management at a 6-month follow-up. Online time management was reported as the highest improvement in the early times of the therapy. Social problems including restoration of non-Internet relationships and attachment in non-Internet activities were resolved upon the 12<sup>th</sup> session. Non-Internet sexual functioning was reported as the least improvement. Many clients reported keeping away from sexual chats and online pornography, but there were problems in their marital relationships. Five clients were divorced because of inability to restore a satisfactory sexual relationship with their partners.

In another study, Du et al. [65] studied the effect of a cognitive behavioral group therapy in treatment of Internet addiction. Two groups were selected randomly, in which the first group consisted of 32 clients aged between 12 and 17 years who had the school-based group CBT and the second group consisted of 24 clients who did not expose to any intervention. The clients were evaluated three times: pretreatment, immediately after treatment of eight sessions, and in the sixth month. The results showed the treatment group had improvements in time management skills, emotional, cognitive, and behavioral symptoms.

In a recent study, Young [59] evaluated the effectiveness of the model of CBT-IA in treatment of Internet addiction. A total of 128 addicts were recruited, the Internet Addiction Test (IAT) was used to assess and classify them, and then, they received twelve sessions of CBT-IA/week. The effect of treatment was evaluated at the end the 12 weeks, 1 month,

12 months and at 6-month posttreatment. The findings found that more than 95% of the clients had ability to manage the problem at the end of the 12 weeks, and 78% maintained recovery 6 months after treatment.

### 3. Conclusion

This chapter tried to review and describe epidemiological Internet addiction research. The prevalence of Internet addiction was identified, and the conceptualization of this issue was also assessed by using various assessment instruments. However, to date, there is no gold standard for Internet addiction diagnosis and assessment. Moreover, the risk factors and negative consequences were highlighted. Generally, research has suggested that CBT-IA model was effective at improving symptoms related to Internet addiction after 12 weekly sessions and over a period of time after therapy extended to 6 months. The results considered in the previous section suggest that future research for long-term effects of the model should be addressed.

While the efficacy of the cognitive behavioral therapy (CBT-IA) approach described in this chapter has been relatively well documented, future studies should be conducted to compare CBT-IA with other treatment modalities to determine its therapeutic effect.

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