

# Analysis of Comorbidities in A Group of Young Patients Diagnosed with Internet Addiction

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**Abstract:** Behavioral addictions represent provocative clinical entities due to their phenomenological complexity and intricate pathophysiology. Neurobiological and psychological components create a specific vulnerability, and various stressors act like triggers for the actual disorder. Moreover, behavioral addictions have a relatively high rate of co-morbidity and psychological complications that negatively influence patients' evolution and prognosis. Configuring a complete image of the patient's actual psychopathology is a necessary step in the establishment of a successful treatment plan. The objective of this research is to find the incidence of psychological and somatic co-morbidities in a group of patients presenting Internet addiction, quantified according to the Internet Addiction Test (IAT). A score of more than 50 on IAT at the initial visit was necessary for inclusion in further evaluations. A number of 12 young patients, 4 female and 8 male, age 19-30, who presented symptoms of Internet addiction, were evaluated using MINI International Neuropsychiatric Interview, and Structured Clinical Interview for DSM IV TR Axis II Personality Disorders (SCID-II). All patients were screened for somatic disorders and received further recommendations according to the diagnoses that have been established. Results showed a co-morbidity rate of 58.3% for any diagnosis, with personality disorders being the most prevalent (50%), followed by anxiety spectrum disorders (33.3%), depressive disorders (25%), drug related disorders (25%), and adjustment disorders (8.3%). Regarding the somatic diseases prevalence, only a few cases had such diagnoses, which is perfectly explainable by the age of selected patients. Nevertheless, knowing the organic status of the patient is necessary if a psychopharmacologic approach is intended, or if the patient already took some medication for its condition, due to possible side effects like drug induced depression, anxiety or even psychosis. In conclusion, we consider that a comprehensive analysis of co-morbidities at the initial visit is needed in cases of any behavioral addiction due to the impact these conditions could have over the evolution, prognosis and treatment plan.

**Key-Words:** Internet addiction, behavioral addiction, psychotherapy, pharmacotherapy, personality disorders, anxiety disorders, depressive disorders, adjustment disorders

## 1 Introduction

Behavioral addictions form a recently defined psychopathological category, and there are still many controversies about their nature. The latest edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM) [1] included behavioral addictions in the official psychiatric terminology, thus consecrating this concept. Gambling disorder and Internet gaming disorder were analyzed by the DSM Work Group for the latest edition of the Manual, and distinct sets of criteria have been created for these two conditions [1].

A strong neurobiological link between behavioral addictions and substance use disorders has been supported by biochemical, functional neuroimaging, genetic and treatment studies [2].

Changes in neurocognitive processes, like cue reactivity, reward and punishment processing and behavioral control have been associated with behavioral addictions [3].

Internet addiction is defined by excessive or poorly controlled preoccupations, urges or behaviors regarding computer and Internet use that leads to dysfunctions or distress [4]. Male preponderance, late 20s and early 30s age group, and a prevalence estimated in general US population to 0.3-0.7% have been reported [4].

Regarding the demographic values in our country no specific data were detected in the existing literature, although main databases (PubMed, CINAHL, Medscape, PsychInfo, Cochrane) have been searched. This could be due to the relative novelty of the behavioral addiction in

the official classifications, and to the need for a higher awareness from the large public regarding this topic.

Internet addiction has been associated in a cross-sectional study (N=250 students) with psychiatric symptoms like somatization, sensitivity, depression, anxiety, phobias, aggression, and psychosis (except for paranoia) [5].

A comparison of data collected using Symptom Checklist-90 before Internet addiction and after the development of this disorder showed that the obsessive-compulsive dimension was abnormal before patients developed the addiction [6]. After the appearance of Internet addiction, significantly higher scores were observed for depression, anxiety, hostility, interpersonal sensitivity, and psychoticism [6].

Psychiatric co-morbidity is frequently reported, especially mood, anxiety, impulse control and substance use disorders [2,4]. In a large sample of children and adolescents screened for the presence of Internet addiction and general psychopathology, children with this form of addiction have also ADHD in 7 cases, while in the adolescent group the more frequently reported diagnoses of co-morbidity were major depressive disorder, schizophrenia, obsessive-compulsive disorder [7].

A review of the literature regarding the association between Internet addiction and psychiatric disorders concluded that substance use disorder, attention deficit/hyperactivity disorder (ADHD), depression, hostility, and social anxiety disorder are the most reported co-morbidities [8].

Yet another analysis of the cross-sectional studies reported high co-morbidity of Internet addiction with affective disorders (including depression), anxiety disorders (generalized anxiety disorder, social anxiety disorder), and ADHD [9]. Predictive factors for Internet addiction are personality traits, parenting and familial factors, alcohol use, and social anxiety [9].

Due to the high rate of multiple diagnoses in patients suffering from Internet addiction, a thoroughly initial evaluation of each case in considered necessary. This recommendation could have a positive impact over the patients' prognosis and evolution due to the personalization of the treatment plan in relation to the co-morbidities and concomitant administered drugs. For example, a patient who is diagnosed with a behavioral addiction, but who is also a heavy drinker will need a different therapeutic approach than a patient with only one diagnosis. If both conditions are treated concomitantly, the probability for obtaining

response and remission is higher than if only one condition is approached.

## 2 Objectives

The main objective of this research was to find the incidence of psychological and somatic co-morbidities in a group of patients presenting Internet addiction.

The secondary objective was to verify if more severe Internet addiction cases had more frequent co-morbidities.

## 3 Methods

A number of 12 young patients, 8 female and 4 male, age 19-30, who presented symptoms of Internet addiction, were evaluated using MINI International Neuropsychiatric Interview, and Structured Clinical Interview for DSM IV TR Axis II Personality Disorders (SCID-II).

A clinical evaluation for somatic disorders was conducted, and confirmatory investigations were recommended whenever needed. All documented diagnoses of organic diseases from the personal history were verified and, if confirmed, were introduced in the statistical analysis.

Severity of the main diagnosis was quantified according to the Internet Addiction Test (IAT).

Inclusion criteria: age between 19 and 30, and a score of more than 50 on IAT, inpatient or outpatient.

Exclusion criteria: age over 30 and under 19, IAT score lower than 50.

Demographic and clinical characteristics are represented in Table 1. A synthetic view of these characteristics reflects a preponderance of male in the study group, with most subjects in the lower age range, most of them being single and with medium to high income.

Educational background was high, and subjects were still students or postgraduates involved in master or doctoral programs. Only 5 of them were employed, and 3 of them were studying also in different faculties.

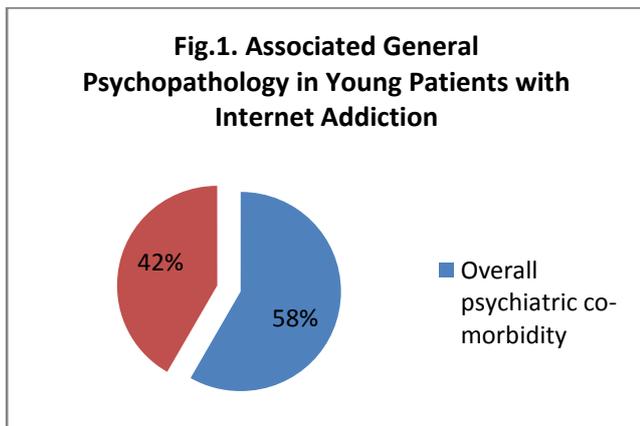
Severity of their addiction was medium, but two cases had significant impairment due to this condition. Impairments were reflected in their professional (absenteeism and/or low performance), and in their relationships (increased interpersonal conflictuality).

**Table 1. Characteristics of the analyzed group**

Variable	Values
Age	19-30 Mean age 22.6
Gender	
Male	8
Female	4
Severity of Internet addiction	
-mean IAT score	65
-minimum/maximum value	50/88
Marital status	
Single	9
Married	3
Employment	
Yes	5
No	7
Academic/professional school in present	
Yes	4
No	8
Educational background	
Mean school duration	13
Minimum/maximum duration of scholar years	10/17
Income	
Low	1
Medium	6
High	5

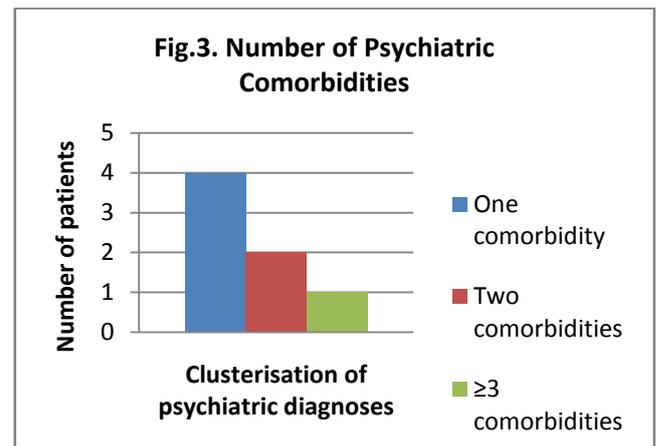
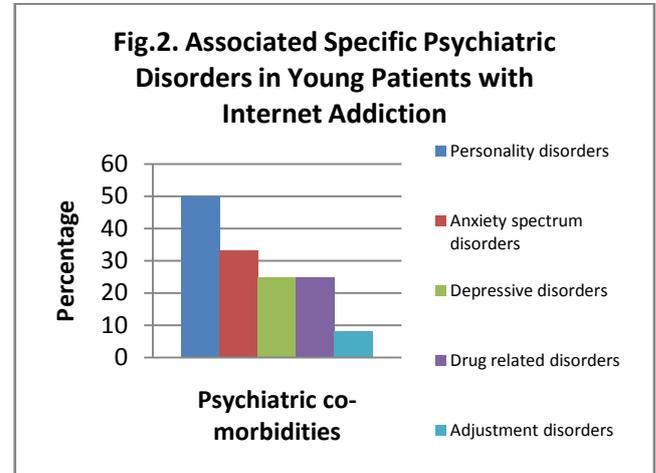
**4 Results**

Data analysis showed an overall co-morbidity rate for psychiatric disorders of 58.3% (Fig.1).

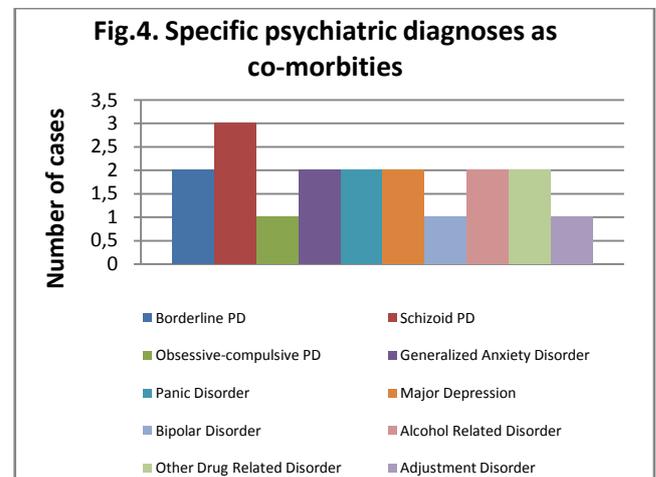


The most prevalent co-morbid diagnoses were personality disorders (50%), followed by anxiety spectrum disorders (33.3%), depressive disorders (25%), drug related disorders (25%), and adjustment disorders (8.3%) (Fig.2).

There were cases of multiple co-morbidities, d.e. personality disorder and major depressive disorder, or multiple personality disorders. A graphic representation of this diagnostics distribution is represented in Fig.3.



The most prevalent diagnosis was of “avoidant personality disorder”, followed by “generalized anxiety disorder” and “major depressive episode” (Fig.4).



Regarding the somatic diseases prevalence in our group, only a few cases had such diagnoses, which is perfectly explainable by the age of selected patients. Two patients presented such a history of organic pathology, one of them being diagnosed with systemic lupus erythematosus for 3 years previously to the current visit, and one with viral C hepatitis and blood hypertension (both conditions being diagnosed recently).

The second objective of this research, verifying if the correlation between the IAT score and the number of co-morbidities, implied using of Pearson correlation coefficient. The calculated value of  $r$  was 0.22, which is considered to be a weak correlation.

When compared to existing data in the literature, our results support a high incidence of psychiatric co-morbidities in patients diagnosed with Internet addiction. We didn't find any cases of ADHD, but this could be related to the age we selected for inclusion in this evaluation. Also, as a secondary observation, no psychotic spectrum disorder was identified.

## 5 Conclusion

Knowing the psychological and organic status of the patient is necessary no matter if a psychopharmacologic, psychotherapeutic or combined treatment is intended.

A case manager could formulate the best therapeutic plan only if he/she takes into the consideration all the variables involved in the current clinical status of the patient.

In conclusion, we consider that a comprehensive analysis of co-morbidities at the initial visit is needed in cases of any behavioral addiction due to the impact these conditions could have over the evolution, prognosis and treatment plan.

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