Article

Assessing the Reliability, Dimensions, and Variance of Young's Internet Addiction Test by Applying it to Adolescents at the National Psychiatric Hospital in Costa Rica

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Abstract

Background: The Internet Addiction Test (IAT) was the first instrument created specifically to assess Internet addiction (IA). Although it was not validated during its creation, its validity has since been confirmed thanks to subsequent studies. The IAT is the first global psychometric measure tested worldwide that has been used in several studies as a research tool. Regarding the dimensions of the IAT, they were not reported by the creator of the test, during the performed factor analysis. Nonetheless, different studies have defined the test as being one-dimensional and others as having three, four, five, and six dimensions.

Methods: In the present study, seven dimensions were identified; however, there is still a lack of consensus about the number of dimensions that accurately define this test.

Results: Hence, Young's Internet Addiction Test presents a shortcoming that may be explained by the influence of several factors such as how it was applied, the place where it was applied, and the population to which it was applied. All of these are factors that could be linked to the sociocultural aspects of the adaptations that have been made to the test.

Conclusions: Moreover, the first dimension of the IAT found, the loss of self-control, is extremely important because it explains 34% of the variance of the data. However, 74% of the variance is explained by applying the 7 dimensions identified in this research. Also, the reliability analysis showed that the IAT is 89% reliable, which indicates that the elements comprising the test used in this research are suitable for measuring the construct of Internet addiction.

Keywords

Internet addiction; Internet; Young's Internet Addiction Test; adolescence

Introduction

Regarding Internet and social media addiction (ISMA) [1], Goldberg [2] was one of the first researchers to use the term Internet addiction (IA). However, subsequently, this highly controversial concept has been studied by many other authors.

Since 1992, when the World Wide Web appeared, the phenomenon of globalization has arisen, allowing worldwide connections between people from anywhere in the world. As a result, the so-called new Information and Communication Technologies (ICT) have been developed, of which nowadays almost all of us are extremely familiar. Many of us live with the need to always be in contact with everything and everyone around us, and social networks and new technologies facilitate this task.

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Table 1. Symptoms by which Internet use could be classified as addictive behavior.

1. Deprive yourself of sleep (less than 5 hours) to stay connected.
2. Abnormally high internet connection times.
3. Neglecting social and family relationships, study and self-care.
4. Receive complaints from someone close to you, such as parents or siblings, about Internet use.
5. Have constant thoughts in relation to the network, even if you are not connected at that moment.
6. Present irritability when you do not have access to it, the connection fails or the connection becomes slow.
7. Losing track of connection time.
8. Try to reduce the time spent connected without achieving it.
9. Lying about the actual connection time.
10. Social isolation and lower performance in studies.
11. Feeling an abnormal euphoria when connected.

The emergence of the Internet and social networks has led to the progress of societies because these tools provide many opportunities that generate advances in science, education, and medicine, among other areas. However, this technology can also lead to a series of negative consequences if used in excess [3].

Dr. Kimberly Young (1996) of the University of Pittsburgh and creator of the Center for On-Line Addiction established a set of criteria for diagnosing Internet Addiction Disorder or IAD.

In the latest revision of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR), ISMA is not considered a pathological process and therefore no diagnostic criteria exist in the manual [4]. However, according to the International Classification of Disease (ICD-11) [5], addiction to massive online video games is already included within diagnostic categories. Additionally, Young [1] established a series of symptoms by which Internet use could be classified as addictive behavior (see Table 1).

In response, different diagnostic questionnaires (tests) have been developed that seek to assess Internet and social media addiction. Among these tests, it is worth mentioning the Social Media Addiction Test (*Test de Adicción a las Redes Sociales* [*TARS*]). This test was applied in a study carried out in 2013 by Basteiro Monje *et al.* [6] in Spain, where its validity was verified. In addition, variables identified from the study were also analyzed. However, one of the best-substantiated and most widely used tests is the Internet Addiction Test (IAT) by Young [1], which has been validated on several occasions. Young [1] considers Internet addiction to be an impulse control disorder, which does not involve the use of drugs and is quite similar to pathological gambling. Some Internet users may develop an emotional attachment to friends and the online activities they create on computer screens, and may generally enjoy aspects of the Internet that allow them to indulge, socialize, and exchange ideas. Internet addicts use virtual fantasy worlds to connect with real people, instead of real, personal, and face-to-face human contact which they are sometimes unable to achieve. Young's IAT was the first instrument created specifically to assess Internet addiction. Specifically, the test determines Internet addiction by measuring whether excessive Internet use affects productivity at work, affects a person's social life or daily routines, such as sleeping patterns, and whether it produces or exacerbates feelings of anxiety or depression. It is worth mentioning that the IAT was not validated at the time of its creation, but thanks to subsequent studies, its validity has been proven in different parts of the world, making it the first global psychometric measure. The IAT has been used in several studies, including at the international level. For example, Ha *et al.* [7] (2007) carried out a study aimed at assessing the relationship between depression and ISMA among 452 Korean adolescents. The study concluded that Internet addiction was significantly associated with symptoms of depression and obsessive-compulsive behavior. In terms of temperament and character, it was determined that behavioral patterns such as high levels of harm avoidance, low self-directedness, low cooperativeness, and high levels of self-transcendence were also correlated with Internet addiction.

In France, Weinstein and Lejoyeux [8] conducted a literature review on IA and topics related to diagnosis, phenomenology, epidemiology, and treatment. These authors reviewed scientific literature published in Medline and PubMed between 2000–2009 and found that studies performed in the United States and Europe reported prevalence rates of IA between 1.5% and 8.2%. However, the criteria and assessment questionnaires used for diagnostic purposes varied among countries.

Table 2. Factor analysis of the dimensions of the IAT.

Items	Components						
	1	2	3	4	5	6	7
How often do you react sharply, yell or get angry if someone bothers you while you are online?	0.878	0.152	0.010	0.105	0.073	0.036	–0.011
How often do you find yourself looking forward to the time when you will be connected to the internet again?	0.775	0.180	0.072	–0.065	0.009	–0.050	0.336
How often do you react defensively or avoidant when someone asks you what you are doing online?	0.772	0.148	0.229	0.192	0.056	0.221	–0.109
How often do you feel that your thoughts are focused on the internet when you are not connected?	0.600	0.508	0.066	0.240	0.127	–0.069	0.052
How often do you try to reduce the amount of time you spend online and fail?	0.585	0.155	0.332	0.015	–0.046	0.168	–0.048
How often do you stop fulfilling your domestic obligations because you stay connected to the internet for longer?	0.454	0.399	0.067	0.256	0.322	–0.441	0.040
How often do you prefer to check your email before fulfilling your school or home obligations?	–0.024	0.723	0.239	0.255	0.210	0.186	0.116
How often do you think that life without the Internet would be boring?	0.261	0.703	–0.077	–0.015	–0.416	0.059	0.080
How often do you choose to spend more time online than hanging out with other people around you (family)?	0.329	0.619	0.213	0.038	0.086	–0.087	–0.052
How often do you feel depressed, irritable, or nervous when you are offline, which goes away when you?	0.507	0.596	–0.178	–0.109	0.106	0.293	–0.196
How often do you establish new relationships with other people connected to the internet?	0.087	–0.027	0.871	0.028	–0.030	–0.167	–0.008
How often do you replace disturbing thoughts about your life with comforting thoughts from the internet?	0.327	0.331	0.669	–0.101	–0.088	0.265	0.003
How often do you try to hide the amount of time you've been online?	0.072	0.050	–0.042	0.919	0.035	0.067	0.005
How often do you find yourself saying "just a few more minutes" when you're online?	0.406	0.381	0.336	0.498	–0.044	0.009	–0.092
How often is your academic performance (grades) affected by the amount of time you spend online?	0.104	0.009	–0.132	–0.047	0.853	0.131	–0.070
How often do you lose hours of sleep because you go online?	0.018	0.193	0.486	0.290	0.538	0.166	0.207
How often is your motivation towards studying affected due to the internet?	0.223	0.137	0.007	0.152	0.269	0.810	0.066
How often would you rather be online than spend time in person with your friends?	0.446	0.132	–0.002	0.194	–0.059	0.222	0.696
How often do people around you (family) complain about the amount of time you spend online?	0.459	0.140	–0.012	0.366	–0.022	0.178	–0.644

IAT, Internet Addiction Test.

In England, Widyanto *et al.* [9] compared two of the most widely used instruments for measuring IA—namely the Internet Addiction Test (IAT) and the Internet-Related Problem Scale (IRPS), as well as a self-diagnostic questionnaire asking users whether they thought they were addicted to the Internet. A total of 225 internet users participated in the study (69 men and 156 women) and were evaluated using both tests (IAT and IRPS). The participants who defined themselves as Internet addicts had higher scores on both the IAT and IRPS. Also, the three different measures of Internet addiction were strongly correlated with each other. For the IAT, factor analysis generated three factors (emotional/psychological conflict, time management issues, and mood modification) that explained 56.3% of the variance. For the IRPS, factor analysis identified four factors (negative effects of Internet use, mood modification, loss of control, and increased Internet use) that explained 60.2% of the variance. This study supports the findings of Alavi *et al.* [10] who analyzed the psychometric properties of Young's Internet Addiction Test (IAT). A descriptive cross-sectional survey was taken by 233 university students in Isfahan and each participant was interviewed based on DSM-IV-TR cri-

Table 3. Total variance of the 19 items of Young's Internet Addiction Test.

Components	Eigenvalues		
	Total	% Variance	Cumulative variance
1	6.4	33.6	33.6
2	1.6	8.7	42.3
3	1.6	8.4	50.7
4	1.3	6.6	57.3
5	1.2	6.1	63.4
6	1.1	5.7	69.0
7	1.0	5.4	74.4
8	0.8	4.2	78.6
9	0.8	4.0	82.6
10	0.6	3.3	85.9
11	0.6	3.0	88.9
12	0.4	23	91.2
13	0.4	2.1	93.3
14	0.3	1.8	95.1
15	0.3	1.3	96.5
16	0.2	1.2	97.7
17	0.2	0.9	98.6
18	0.1	0.8	99.4
19	0.1	0.6	100.0

teria. The data were analyzed using factor analysis, internal consistency, Cronbach's alpha, bisection, test-retest, and the receiver operating characteristic (ROC) curve in SPSS 12. The results obtained verified that the IAT has acceptable psychometric properties and is a valid and reliable tool, which can be used in psychological and psychiatric studies to screen normal internet users and Internet addicts. Another study carried out in Greece by Tsimtsiou *et al.* [11] involved the translation, validation and cultural adaption of the IAT, which was taken by medical students at the Aristotle University of Thessaloniki. The internal consistency using Cronbach's alpha was 0.91 and face validity was 83.6%. The IAT scores for those students engaging in activities such as online gambling, visiting pornographic sites were higher and factors such as emotional conflict, time management, and neglecting work explained 55.3% of the variance.

Simultaneously, Canan *et al.* [12] (2014) in Turkey analyzed the patterns of Internet use and IA among adolescents and examined the correlation between IA and eating attitudes and body mass index (BMI). The study was carried out on 1938 students between the ages of 14 and 18. Data was collected using the IAT, the Eating Attitudes Test (EAT), and a form comprised of sociodemographic questions. These authors showed there was a significant positive correlation between BMI and IAT and internet use per week [12].

Another study by Li W *et al.* [13] (2015) aimed to identify in university students the consequences of internet addiction and Problematic Internet Use (PIU). These authors conducted an exploratory qualitative study using a focus group research method and students. In total, 27 students were assessed using two measuring instruments (Young's Diagnostic Questionnaire and the Compulsive Internet Use Scale). In a focus group setting, the students' personal histories about their Internet use, preferred online activities, emotional, interpersonal, and situational triggers for intensive Internet use, and any health and/or psychosocial consequences of excessive Internet use were explored.

However, more recently, another study was conducted on university students in Jordan examining the prevalence of IA and its association with psychological disorders and coping strategies [14]. The research design was descriptive, cross-sectional, and correlational and involved a random sample of 587 students. IA was measured using the Stress Perception Scale, the Behavior Management Inventory, and the IAT. The results of this study indicated that the prevalence of IA was 40% and was associated with high mental distress among students.

With these previous research works in mind, the present study aims to evaluate the reliability, dimensions, and variance of the IAT using a group of adolescents in Costa Rica susceptible to Internet addiction and other risky behaviors.

Methodology

A descriptive cross-sectional study has been developed. Adolescents between 12 and 17 years old who were monitorized at the National Psychiatric Hospital of Costa Rica were taken as a sample, using the Hospital's databases. They were evaluated between February 20, 2019 and May 21, 2019. It was approved through research protocol number: CEC-HNP-002-2018. The research was done under the indications of the Declaration of Helsinki and all the patients involved received and signed an informed consent before their participation in the study.

Inclusion criteria:

- Age range: between 12 and 17 years old.

- Sex: female and male population.

- Inclusion of special classes or vulnerable participants.

Table 4. Analysis of the average and standard deviation score obtained for each item.

Items	Mean	Standard deviation
Do you stop fulfilling your domestic obligations because you stay connected to the internet for longer?	2.38	1.580
Do you prefer to be connected to the internet than spend time in person with your friends?	1.89	1.742
Do you establish new relationships with other people connected to the internet?	1.86	1.874
Do people around you (family) complain about the amount of time you spend online?	3.00	1.751
Is your academic performance (grades) affected due to the amount of time you spend online?	1.35	1.638
Do you prefer to check your email before meeting your school or home obligations?	2.51	1.950
Is your motivation towards studying affected due to the internet?	1.92	1.716
Do you react defensively or avoidantly when someone asks you what you are doing online?	2.16	1.903
Do you replace disturbing thoughts about your life with comforting thoughts from the internet?	2.63	2.002
Do you find yourself looking forward to the time when you will be connected to the internet again?	2.10	1.898
Do you think life without the internet would be boring?	3.35	1.824
How often do you react sharply, yell or get angry if someone bothers you while you are online?	1.95	1.879
Do you lose hours of sleep because you connect to the internet?	2.11	1.944
Do you feel that your thoughts are focused on the internet when it is not connected?	1.79	1.770
Do you find yourself saying "just a few more minutes" when you're online?	3.19	1.777
Are you trying to reduce the amount of time you spend online and failing?	2.84	1.877
How often do you try to hide the amount of time you've been online?	1.71	1.862
Do you choose to spend more time online than hanging out with other people around you (family)?	2.14	1.795
Do you feel depressed, irritable, or nervous when you are offline, which goes away when you come back online?	1.49	1.804

Exclusion criteria:

- People diagnosed with severe mental retardation.

- Cognitive disability that makes the application of the IAT impossible (severe autism, psychosis, decompensation of previous psychiatric pathologies, among others).

- Physical disability that makes it impossible to fill out the IAT.

From a total of 768 patients, participants were chosen at random. The formula to calculate a simple random sample, $z_{\alpha/2}$ = 1.96 (95% confidence interval), p = 0.03 (prevalence), was:

$$n = \frac{z_{\alpha/2}^2 \times p(1-p)}{e^2}$$

This is the correction for samples with finite populations (n = 70, N = 768):

$$n' = \frac{n}{1 + \left(\frac{n-1}{N}\right)}$$

The sample size was defined, using a prevalence of 3%, with a 95% confidence interval and a 4% maximum permissible error. The Young's IAT was applied, in addition to the complete clinical history.

A summative index was made with each of the items that make up the IAT to calculate the total score of each subject that determines the level of dependence shown and 4 groups were defined [12–20]:

- Proper use of the internet: 0 to 25 points

- Mild Dependency: 26 to 44 points

- Moderate Dependency: 45 to74 points

- Severe Dependency: 75 to 95 points

Hypothesis tests were performed to see the differences between IAT scores in each subgroup: male-female, educational level, clinical diagnoses. All participants answered the test completely, so it was not necessary to do analysis to deal with non-response (or missing data). The statistical package used was "Statistical Package for the Social Sciences" (SPSS, Version 12.0, IBM SPSS statistics, Chicago, IL, USA). To make the statistic analysis of the participants several statistics have been used (means, standard deviations, variance and cumulative variances, Cronbach's alpha, Kaiser-Meyer-Olkin measure of sampling adequacy, Bartlett measure, Levene's test, *t*-test for equality of means...).

Results

Reliability

The reliability analysis of the IAT performed found the test to be 89% reliable based on Cronbach's alpha index. The results of factor analysis were appropriate based on the available data.

Factor Analysis and the Percentage of Variance Explained

A factor analysis of the dimensions of the IAT was carried out and resulted in the identification of 7 dimensions, which can be seen in Table 2.

Regarding variance, the results per item obtained are summarized in Table 3.

Concerning the analysis of the mean score obtained for each item, the statistical results of this analysis are shown in Table 4.

Using the Kaiser-Meyer test and the Bartletts Test (Table 5), the analysis of the variability of the data obtained was carried out.

Table 5. Variability of the Young's IAT according to the Kaiser-Meyer and Bartlett tests.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.721
Bartlett's Test of Sphericity	Approx. Chi-Square	530,574
	df	171
	Next.	0.000

KMO, Kaiser-Meyer-Olkin.

Percentage Distribution of Young's IAT Items by Response Category

In Table 6, according to the responses to the items of the applied Test, the result of the percentage according to the option of the responses to each of the questions.

Factor Analysis and the Percentage of Variance Explained

The purpose of factor analysis is to group variables according to the variability that is shared among variables. This means that through this analysis information is aggregated into a smaller number of unobserved or underlying variables to find factors that cannot be directly measured but which encompass what these variables have in common. Factor analysis, using the principal components technique, studies the total variability of the set of items comprising Young's IAT to determine underlying dimensions. In this particular case, the questions making up the test explain the factors found. Therefore, each of them reveals a percentage of the total variability of the items. It was found that the first factor explains 34% of the total variability of the test and is considered to be the most important.

Table 7 summarizes and proposes the grouping of the factors into seven dimensions, which were determined by the areas affected by the item ratings.

Discussions

The reliability analysis of Young's IAT (applied in this study) showed that it was 89% reliable. This value indicates that the items comprising the test used for this research are suitable for measuring the construct of IA.

When we compare the reliability and validity of the data obtained in this study in relation to the instrument used with the results of similar studies, such as that by Gómez and Anais [15], it is possible to state there is evidence supporting the validity and reliability of the IAT.

Regarding its dimensions, Young did not report the dimensions of her test. However, some studies refer to IA as a unidimensional variable [16–18].

In contrast, other studies have reported that it is composed of three dimensions [19,20], four dimensions [21,22], five dimensions [23] and up to six dimensions [24].

In the present study, the IAT was found to have 7 dimensions. However, there is no consensus among authors and the findings of studies regarding a more precise definition of the number of dimensions of this test.

Therefore, Young's IAT has a shortcoming that may be explained by the influence of several factors such as how the test was applied, the place where it was applied, the population to which it was applied, which could be linked to the sociocultural aspect of the adaptations made to it. These situations are ultimately variables that modify the dimensions found in the present study.

Young's IAT can be a valid tool to detect and asses several behavioural problems and the correlation between different risk factors. Based on the above mentioned works, we have shown that Young's Internet Addiction Test (IAT) is a widely used tool for studying problematic use of Inter-

Table 6. Percentage distribution of Young's IAT items by response category.

Affirmations	Never	Seldom	Occasionally	Frequently	Very often	Always
	%	%	%	%	%	%
Do you stop fulfilling your domestic obligations because you stay connected to the internet for longer?	12.7	20.6	20.6	22.2	9.5	14.3
Do you prefer to be connected to the internet than spend time in person with your friends?	27.0	25.4	15.9	7.9	11.1	12.7
Do you establish new relationships with other people connected to the internet?	30.2	30.2	6.3	7.9	7.9	17.5
Do people around you (family) complain about the amount of time you spend online?	12.7	12.7	11.1	14.3	23.8	25.4
Is your academic performance (grades) affected due to the amount of time you spend online?	44.4	23.8	7.9	4.8	14.3	4.8
Do you prefer to check your email before meeting your school or home obligations?	25.4	12.7	7.9	19.0	9.5	25.4
Is your motivation towards studying affected due to the internet?	27.0	22.2	15.9	14.3	7.9	12.7
Do you react defensively or avoidant when someone asks you what you are doing online?	28.6	17.5	12.7	11.1	11.1	19.0
Do you replace disturbing thoughts about your life with comforting thoughts from the internet?	23.8	11.1	14.3	11.1	7.9	31.7
Do you find yourself looking forward to the time when you will be connected to the internet again?	27.0	22.2	14.3	7.9	7.9	20.6
Do you think life without the internet would be boring?	7.9	15.9	12.7	4.8	14.3	44.4
How often do you react sharply, yell or get angry if someone bothers you while you are online?	31.7	20.6	12.7	6.3	12.7	15.9
Do you lose hours of sleep because you connect to the internet?	30.2	19.0	11.1	9.5	9.5	20.6
Do you feel that your thoughts are focused on the internet when it is not connected?	30.2	25.4	15.9	6.3	7.9	14.3
Do you find yourself saying "just a few more minutes" when you're online?	12.7	6.3	15.9	15.9	12.7	36.5
Are you trying to reduce the amount of time you spend online and failing in your goal?	12.7	23.8	4.8	14.3	14.3	30.2
How often do you try to hide the amount of time you've been online?	36.5	25.4	7.9	4.8	11.1	14.3
Do you choose to spend more time online than hanging out with other people around you (family)?	23.8	20.6	15.9	14.3	7.9	17.5
Do you feel depressed, irritable, or nervous when you are offline, which goes away when you come back online?	41.3	27.0	6.3	6.3	4.8	14.3

net and other risk behaviours. With the results of the study it's not possible to determinate if it exists something called "Internet Addiction"; what we can clearly express it's the existence of a tool useful and valid for adolescents under treatment in Hospital Nacional Psiquiátrico in Costa Rica. For practitioners, we think that this is more than enough.

Biases and Limitations of the Study

• The quantitative descriptive design allowed different variables to be identified and correlated, but they were not determined with the same precision as when using a clinical trial-type health study with random sampling. The inclusion of a control group was considered but there were several reasons for discarding this option. The main reason was the absence of previous assessments/clinical judgments about problems with the technologies. Therefore, we could not guarantee that the people participating in the control group did not have any undetected problems (we already indicated that it is a pioneering study conducted in Costa Rica). Reliability (measured using Cronbach's alpha) was extremely high in this study, so the absence of a control group did not affect the reliability and validity of the data.

Table 7. Analysis of the dimensions of the Young's IAT.

Dimension	Number of items	Variance	Dimension name
1	6	3.4%	Loss of self-control
2	4	9%	Emotional consequences
3	2	8%	Substitution of real social & psychological needs through the virtual world
4	2	7%	Ethos and attitudes
5	2	6%	Consequences on activities of daily living
6	1	5.7%	Motivation
7	2	5.4%	Consequences in microsocial contexts

• The use of Young's IAT has been a decision based on the replicability of the use of this test in different trials carried out in different countries. However, new ways of evaluating ISMA seem necessary, which could be achieved through alternative evaluations such as the "Social Media Addiction Test"/TARS (Basteiro *et al*., 2013) [6], the Social Network Addiction Questionnaire (ARS) by Escurra and Salas (2014) [25] and the "Social Media Addiction Scale-Student Form"/SMAS-SF (Sahin, 2018) [26].

• The sample size of the present study (n = 63) has allowed a complete and exhaustive analysis to be carried out, thus, demonstrating internal validity (Cronbach's alpha coefficient of 0.878). Nevertheless, it is more difficult to generalize the results and conclusions to the general population.

Conclusions

• The exact number of dimensions in Young's IAT is not defined and is highly variable according to different studies. In this work, 7 dimensions were found, which could be due to several sociocultural factors.

• The first dimension of the test that was found (loss of self-control) is important because it explains 34% of the data variability.

• Application of the 7 dimensions found in this study explains 74% of the variance of the data.

• The reliability of the IAT was 89%, which indicates that the items comprising the test used in this research are suitable for measuring the construct of Internet addiction.

Availability of Data and Materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Author Contributions

Conceptualization, AMF and KFM; methodology, KFM and JAMH; validation, JAMH; formal analysis, AMF; investigation, KFM; writing—original draft preparation, AMF and KFM; writing—review and editing, AMF, JAMH and KFM; visualization, KFM; supervision, JAMH. All authors have read and agreed to the published version of the manuscript. All authors have participated sufficiently in the work and have agreed to be accountable for all aspects of the work to ensure that questions regarding the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Ethics Approval and Consent to Participate

All the participants expressed their consent about their participation in the study, with a guarantee of confidentiality and anonymity. This study received approval from the National Psychiatric Hospital in Costa Riva, ethical approved project identification through research protocol number: CEC-HNP-002-2018.

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Conflict of Interest

The authors declare no conflict of interest.

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