



# Investigating the Relationship between Anxiety Physical and Subjective Symptoms amongst Students without and Exposed to Internet Addiction

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## Abstract

**Background:** Self-control on Internet usage would be lost in an individual due to exposure to Internet addiction and the individual would experience negative outputs in life. The purpose of the present study is to investigate the relationship between anxiety, physical, and mental symptoms amongst students exposed to and without Internet addiction.

**Methods:** A cross-sectional descriptive study, utilizing self-report questionnaires, was conducted 2016. The statistical community consisted of 17,000 students. The sample consists of 304 students who were selected by applying the cluster sampling method. In this research, two standard instruments Young's Internet addiction test and Beck's anxiety questionnaire were used, where the reliability of them were accepted by 10 specialists and the validity of them were calculated by Cronbach Alpha as 0.71 and 0.92. At first, the addiction test was done in order to identify the students exposed to and without Internet addiction. After getting the scores and identifying 2 groups, an anxiety questionnaire was completed by samples. Data analysis was done by use of an independent t-test and ANOVA by SPSSv.22.

**Results:** The results showed that high total grades of anxiety and its subscales (panic, autonomic, neurophysiological, and mental) amongst students who exposed Internet addiction in comparison to other groups ( $P = 0.001$ ). Furthermore, master students showed high scores in Internet addiction compared to bachelor students ( $P = 0.003$ ). While there is no significant association between general anxiety, gender, and Internet addition ( $P > 0.001$ ), age also does not show a meaningful relationship with Internet addiction and anxiety ( $P > 0.001$ ).

**Conclusions:** The findings showed that there is a significant difference between students exposed to Internet addiction with students without Internet addiction. In reality, the students who exposed Internet addiction reported high grades of anxiety and its subscales (panic, autonomic, neurophysiological and mental). In general, Internet addiction students experienced high level of anxiety and its symptoms.

**Keywords:** Internet Addiction, Anxiety, Physical and Mental Symptoms, Students

## 1. Background

Internet is expected as one of the most important global networks that is used for information sharing and facilitates communication with others. This media satisfied social individual's requirement by sharing information, scientific research, entertainment, and commercial in the modern world (1). Using the Internet has a lot of advantages (2). These advantages involved education and learning, growth and knowledge development, improved ability to apply power, homogenizations of tastes, near the requirements and expectations of individuals, increased social association, passing leisure time and the en-

try of new concepts in daily life, easily connection, inform from news and global events, cultural exchange, receiving new scientific finding, low connection cost, freedom in information sharing, as well as increasing general knowledge. Moreover, most of individuals spatially students apply computer and Internet while excessive consumption leads to mentality and psychological disorders (3, 4). Furthermore, using the Internet can be destructive and also has a negative impact on individuals' behavior (1, 4). In this regard, Davis defined that using the Internet in determined time for a special goal without any inconvenient feeling and behavior is acceptable (5). On the other hand,

using the Internet in an incorrect way appears a psychiatry status that leads to abnormal attitudes and behavior (5). In this situation, an individual passes the majority of his time by using the Internet and confronts with various negative impacts on his mental health, physical, educational, social, professional, marital relations, and other areas of life (6). Internet addiction is defined as a passivity of an individual in using the Internet that endangers one's life (7). Based on Shaw and Black, Internet addiction is severe and uncontrollable obsession that an individual feels compulsion and shows compulsive behaviors (8). In this regard, Khatib Zanjani and Agahheris explained that 23.8% of students in Payame Noor University (Semnan branch) are at risk of Internet addiction (9). According to Block Internet, addiction is assumed as a new psychopathology (10). Some symptoms such as depression, attention deficit and hyperactivity, antisocial, seeker feeling, and in some cases high level of aggression are effects of Internet addiction (11-14). Likewise, Kendall explained that some of the emotional factors such as depression and anxiety is related to students' Internet addiction (15). In some cases, Internet addiction increased the amount of anxiety and stress (16, 17). Internet addiction related with confusion psychomotor, anxiety, depression, hostilities, consumer experience, pre-occupation, loss of control, dysfunction, decreased ability to make decisions, and online browsing constantly have negative impacts on social well-being and mentality (4, 18-21). In some situations, individuals choose dependence to maladaptive behavioral mechanisms such as Internet addiction instead of dealing with life's problems (7). Internet addiction included emotional disorders, anxiety, stress, intolerance, antisocial, and some difficulties in social interaction (22). Anxiety is one of the main factors in internet addiction that leads to fear and lack of comfort (23). This disorder appears to have physical and mental symptoms (24). Internet provides a virtual world; in this regard, students forget performance training, temporarily, which is extremely enjoyable for them. Using the Internet for long periods of time leads to various difficulties in performance training and social interaction (25, 26). The relation between Internet addiction with physical, educational, and social variables is extremely brilliant, however it shows that their powerful relation with emotional variables such as depression, anxiety, and stress is not adequate. Furthermore, the present study focused on anxiety symptoms amongst adolescence that are addicted to the Internet as well as are not addicted to the Internet. In regards to this, an acceptable solution for controlling and decreasing this disorder among student should be found (27-29). Hence, general objective is to investigate the differences between students without Internet addiction and students who are addicted to the Internet in anxiety levels

and its components (i.e. neurophysiological symptoms, mental symptoms, panic symptoms, and autonomic symptoms).

## 2. Methods

This study is a survey method with a parallel sample. The present study was used as a causal comparative method. In this method, the researcher shows the difference between variables that have been changed before. This survey applied the causal comparative method due to the fact that none of variables are manipulated.

The statistical community consisted of 17,000 students. The sample consists of 304 students (bachelor: 160 participants and master: 144 participants) students (199 female-105 male) from Garmsar, Ivanaki, Damghan, and Semnan universities that studied in the second semester 1393-1394. They were selected by applying cluster sampling method. There were some main factors for individuals that participated in the current study; these factors included access to Internet, having enough knowledge toward using Internet and various sites, as well as being student with a bachelor or master degree in their second semester 2014 - 2015. In this research, 2 standard instruments, Young's Internet addiction test and Beck's anxiety questionnaire, were used.

1) Young's Internet addiction test: the Internet addiction test proposed by Kimberly (30) included 20 items. Moreover, the scale is measured by the Likert scale. The findings of this test are divided into 3 groups: 1) normal Internet user, 2) the user with some problems (based on using Internet in long time), and 3) the addicted user that need therapy. This questionnaire examines various aspects of Internet addiction and also determined if the dose of using the Internet has negative impacts on individuals' life or no (31). The reliability of this test in research was accepted by 10 specialists. In the study by Young et al. the internal validity of the questionnaire was 0.92, furthermore, the result of retest reported significant (32). In addition, the questionnaire was examined amongst 233 Iranian students in Isfahan (33). The validity was 0.72 and the amount of Cronbach Alpha was reported 0.71 (34). The researcher added 2 items (overall 22 items) to the questionnaire based on Iranian culture.

2) The Beck anxiety questionnaire: this test examined individual anxiety and involved 21 items. Each of these items examined 1 of the anxiety symptoms that anxious people experienced. The features of this test were examined by Kaviani and Mousavi (35) amongst the Iranian population (1,531 female and male in different ages in Tehran). The findings show that the test has acceptable reliability

and validity ( $r = 0.72, P < 0.001$ ) ( $r = 0.83, P < 0.0001$ ). Additionally, the Cronbach Alpha was reported as 0.92.

At first, all samples completed Yung's addiction test (based on cut-off point, be related to point 20 - 49 shows normal internet user, point 50 - 79 shows user who is at risk and point 80 - 100 shows internet addict user (36) in order to identify the students exposed to and without internet addiction. After getting the scores of the test, participants were divided in 2 groups (without internet addiction: 151 participants and exposed to internet addiction: 153 participants), demographic variables (age, gender and level of education) of the study were similar based on the group and some of them who are not similar were omitted. Then, anxiety questionnaire was completed by two groups in one session.

For moral considerations, the researchers explained the objective of the study to the participants and made them sure the results will be safe. In the study, data were analyzed based on descriptive and inferential statistic. The results of descriptive statistic reported Mean and Standard Deviation, and also the findings of inferential statistic were reported by independent t-test and ANOVA method with SPSSv.22.

### 3. Results

Results showed that based on Pearson correlation coefficients, demographic variables such as age, gender, education, and residence of participants have been examined with anxiety and Internet addiction. Table 1 demonstrated that there is no significant association between age of participants with anxiety and Internet addiction ( $P > 0.05$ ).

Additionally, Table 2 displayed that master students have high scores in Internet addiction as compared with bachelor students based on the t-test. These participants also showed higher anxiety symptoms compared with bachelors.

Table 3 shows the results of differences between anxiety and Internet addiction in both sex regarding t-test. The finding illustrated that there are no meaningful differences between male and female.

The results of the descriptive statistic were reported mean and standard deviation, and also the findings of inferential statistic were reported by ANOVA method.

Table 4 shows the descriptive features of anxiety in 2 groups without and exposed to Internet addiction based on overall anxiety and its symptoms in panic, autonomic, neurophysiological, and mental. Furthermore, the illustrates illustrates the grades of overall anxiety and its subscales in exposed to Internet addiction group, which are significant as compared to without Internet addiction group.

### 4. Discussion and Conclusions

The purpose of the present study is to compare anxiety physical and mental symptoms amongst students who exposed Internet addiction with students without Internet addiction. The findings show that there is a significant difference between 2 groups (exposed to Internet addiction and without).

The results shown that Internet addiction amongst master students is more than bachelors; on the other hand, it can be said that this difference is because of the study and research of masters. In addition, these groups of participants are faced with high anxiety symptoms (neurophysiologic) that appear by using the Internet. In actual, applying the Internet is very stressful for users. Overall, demographic factors such as age and gender do not have a relationship with anxiety and Internet addiction.

The results likewise show that the amount of anxiety and its factors (panic, autonomic, neurophysiological, and mental) determined in high level amongst Internet addiction students. The findings of the present study are in parallel with Young and Rogers (37) who explained that Internet addiction has a direct relation with psychological symptoms. In this regard, Kendal (15) reported emotional factors such as depression, anxiety, and stress have direct relations with students' Internet addiction. In other studies, Yu (16), Egger, and Rauterberg (17) explained that Internet addiction increases the amount of anxiety and stress. Based on Gundogar et al. (12), Erwin et al. (38), Akin and Iskender (39), Internet addiction has a direct association with mood disorders, social adjustment, low level of emotional abilities, and anxiety. These findings are in concordance with Feraro et al. (19), Akin et al. (40) who focused on anxiety, depression, and stress that are related with Internet addiction. The researchers explained that Internet addiction predicts these abnormal moods. Internet addiction students also have difficulties toward their daily activities, educational performance, family relation, and mood. Furthermore, finding acceptable solution methods for controlling and preventing Internet addiction is very imperative for mental health practitioners (41). Regarding to Young et al. (42), Internet addiction has a direct relation with high levels of loneliness, social adjustment, and low level of emotional abilities. In addition, individuals who pass most of their time online also reported high levels of social anxiety (4). Internet addiction associated with anxiety, confusion psychomotor, hostility, preoccupation, and loss of control, dysfunction, decreased the ability to make decisions. Furthermore, it has negative impacts on social and psychological well-being (18-21). In this way, Block (10) assumed Internet addiction as new psychopathology. The recent studies show that Internet addiction has a signifi-

**Table 1.** Descriptive Statistic and Pearson correlation coefficients between age, Internet Addiction, and Anxiety and Its Subscales

|                                     | Mean ± SD     | 1                  | 2                  | 3                  | 4                  | 5                  | 6                  | 7 |
|-------------------------------------|---------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---|
| <b>1. Age</b>                       | 24.3 ± 2.7    | 1                  |                    |                    |                    |                    |                    |   |
| <b>2. Anxiety</b>                   | 19.56 ± 12.51 | 0.098              | 1                  |                    |                    |                    |                    |   |
| <b>3. Neurophysiologic symptoms</b> | 5.70 ± 4.66   | 0.074              | 0.912 <sup>a</sup> | 1                  |                    |                    |                    |   |
| <b>4. Subjective symptoms</b>       | 6.64 ± 4.18   | 0.047              | 0.877 <sup>a</sup> | 0.701 <sup>a</sup> | 1                  |                    |                    |   |
| <b>5. Panic symptoms</b>            | 3.64 ± 2.9    | 0.146 <sup>b</sup> | 0.845 <sup>a</sup> | 0.703 <sup>a</sup> | 0.662 <sup>a</sup> | 1                  |                    |   |
| <b>6. Autonomic symptoms</b>        | 3.58 ± 2.66   | 0.100              | 0.799 <sup>a</sup> | 0.661 <sup>a</sup> | 0.595 <sup>a</sup> | 0.606 <sup>a</sup> | 1                  |   |
| <b>7. Internet addiction</b>        | 44.38 ± 20.26 | 0.069              | 0.367 <sup>a</sup> | 0.398 <sup>a</sup> | 0.239 <sup>a</sup> | 0.328 <sup>a</sup> | 0.295 <sup>a</sup> | 1 |

<sup>a</sup>Correlation is significant at the 0.01 level (2-tailed).

<sup>b</sup>Correlation is significant at the 0.05 level (2-tailed).

**Table 2.** Descriptive Statistic and inferential Statistic of Internet addiction, and Anxiety and Its Subscales in Each Group

|                                  | Tahsilat | N   | Mean ± SD     | t     | df     | P Value |
|----------------------------------|----------|-----|---------------|-------|--------|---------|
| <b>Internet addiction</b>        | Bachelor | 160 | 41.16 ± 19.65 | -2.96 | 302    | 0.003   |
|                                  | Master   | 144 | 47.96 ± 20.39 |       |        |         |
| <b>Anxiety</b>                   | Bachelor | 160 | 19.04 ± 11.67 | -0.76 | 285.32 | 0.44    |
|                                  | Master   | 144 | 20.15 ± 13.4  |       |        |         |
| <b>Neurophysiologic symptoms</b> | Bachelor | 160 | 5.14 ± 4.25   | -2.17 | 281.58 | 0.03    |
|                                  | Master   | 144 | 6.31 ± 5.02   |       |        |         |
| <b>Subjective symptoms</b>       | Bachelor | 160 | 6.82 ± 4.19   | 0.77  | 302    | 0.43    |
|                                  | Master   | 144 | 6.44 ± 4.18   |       |        |         |
| <b>Panic symptoms</b>            | Bachelor | 160 | 3.51 ± 2.86   | -0.85 | 302    | 0.39    |
|                                  | Master   | 144 | 3.79 ± 2.96   |       |        |         |
| <b>Autonomic symptoms</b>        | Bachelor | 160 | 3.57 ± 2.49   | -0.09 | 302    | 0.92    |
|                                  | Master   | 144 | 3.6 ± 2.85    |       |        |         |

cant relationship with social interaction, depression, loneliness, low level of self-esteem, and life satisfaction (20). Al-hajjar (26) explained that psychological illness has a positive relation with Internet addiction. Kuss et al. (43) also referred to internet addiction that related with difficulties that occurred in real life. In other words, anxious people prefer to use the Internet instead of dealing with inappropriate thoughts (7, 44). Generally, the individuals who used internet in average way experienced low level of anxiety and do not suffer negative effects of using this social media (44).

One of the principle findings of the current study are the students who are exposed to Internet addiction show high level of neurophysiological, panic, and autonomic symptoms as compared to individuals without Internet addiction. This result is in concordance with Lin et al. (45) who explained that the white areas cortex of Internet ad-

diction's individuals has abnormal performance. Furthermore, this issue is caused of anxiety and difficulties in physical and neurological symptoms.

The findings show that Internet addiction students have more mental anxiety as compared to other students. In this regard, Pratarelli and Browne (46) explained that the density white matter in the brain of Internet addicted individuals will be decreased; furthermore, this issue is caused of various problems in decision-making and high levels of irritability. Based on Young (44), Kubey and Csikszentmihalyi (47) individuals used the Internet for dealing with negative mood and real-life difficulties. Bessiere et al. (48) emphasized that individuals who have negative and inappropriate feelings used online entertainment as therapist. Caplan and High (49) believed that individuals share online massages for compensating lack of real life. In this regard, Young and De Abreu (7) emphasized that individu-

**Table 3.** Descriptive Statistic and Independent T-Test Statistic of Internet Addiction, and Anxiety and Its Subscales in Each Group

|                           | Gender | N   | Mean ± SD     | t     | df  | P Value |
|---------------------------|--------|-----|---------------|-------|-----|---------|
| Internet addiction        | Female | 199 | 43.39 ± 20.38 | -1.17 | 302 | 0.24    |
|                           | Male   | 105 | 46.26 ± 19.99 |       |     |         |
| Anxiety                   | Female | 199 | 19.57 ± 12.6  | 0.01  | 302 | 0.98    |
|                           | Male   | 105 | 19.55 ± 12.41 |       |     |         |
| Neurophysiologic symptoms | Female | 199 | 5.75 ± 4.79   | 0.29  | 302 | 0.77    |
|                           | Male   | 105 | 5.59 ± 4.43   |       |     |         |
| Subjective symptoms       | Female | 199 | 6.64 ± 4.2    | -0.01 | 302 | 0.98    |
|                           | Male   | 105 | 6.65 ± 4.17   |       |     |         |
| Panic symptoms            | Female | 199 | 3.61 ± 2.82   | -0.23 | 302 | 0.81    |
|                           | Male   | 105 | 3.70 ± 3.06   |       |     |         |
| Autonomic symptoms        | Female | 199 | 3.57 ± 2.68   | -0.14 | 302 | 0.88    |
|                           | Male   | 105 | 3.61 ± 2.65   |       |     |         |

**Table 4.** Descriptive and Inferential Statistic of Anxiety and Its Subscales in Each Group

|                             | Internet Addiction | Mean ± SD     | F     | df1 | df2 | MS       | P     | η <sup>2</sup> |
|-----------------------------|--------------------|---------------|-------|-----|-----|----------|-------|----------------|
| Neurophysiological symptoms | No                 | 3.75 ± 3.63   | 63.01 | 1   | 302 | 1139.708 | 0.001 | 0.17           |
|                             | Exposed            | 7.62 ± 4.78   |       |     |     |          |       |                |
|                             | Total              | 5.70 ± 4.66   |       |     |     |          |       |                |
| Mental Symptoms             | No                 | 5.55 ± 4.05   | 21.79 | 1   | 302 | 357.62   | 0.001 | 0.06           |
|                             | Exposed            | 7.72 ± 4.04   |       |     |     |          |       |                |
|                             | Total              | 6.64 ± 4.18   |       |     |     |          |       |                |
| Panic Symptoms              | No                 | 2.71 ± 2.45   | 34.26 | 1   | 302 | 261.079  | 0.001 | 0.102          |
|                             | Exposed            | 4.56 ± 3.028  |       |     |     |          |       |                |
|                             | Total              | 3.64 ± 2.9    |       |     |     |          |       |                |
| Autonomic Symptoms          | No                 | 2.87 ± 2.46   | 23.13 | 1   | 302 | 153.22   | 0.001 | 0.07           |
|                             | Exposed            | 4.29 ± 2.68   |       |     |     |          |       |                |
|                             | Total              | 3.58 ± 2.66   |       |     |     |          |       |                |
| Overall Anxiety             | No                 | 14.88 ± 10.82 | 46.25 | 1   | 302 | 57.86    | 0.001 | 0.13           |
|                             | Exposed            | 24.19 ± 12.37 |       |     |     |          |       |                |
|                             | Total              | 19.56 ± 12.51 |       |     |     |          |       |                |

als apply social networks for satisfy their social needs and prosperity. Regarding to the findings of the present study, Kubey and Csikszentmihalyi (47), Carmona (50), and previous research can be concluded, Internet addicts have been experienced high level of anxiety and its symptoms (panic, autonomic, neurophysiological, and mental) as compared to others. These individuals likewise apply Internet for relief of anxiety.

The main limitation of the present research is lack of

control toward some moderator variables such as participants' personality. According to the population of this study that just focused on students who studied in social science and engineering faculties, the researcher suggested, in additional studies a different population (personality, society, culture etc.) should be considered. Also, it is suggested that the researchers also conducted research into the effectiveness method in the follow-up procedures, group meetings, and report the results.

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## Footnotes

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