

## The Prevalence of Internet Addiction and Its Relationship with Mental Health Among High School Students in Bushehr, Iran (2018)

### Abstract

**Background:** The overuse and abuse of the Internet incur the risk of Internet addiction. Besides, as adolescents spend many hours on the Internet, their general health is at stake. **Methods:** The present study was a descriptive cross sectional study. The study sample included 903 female and male high school students in Bushehr City in 2018. The students took part in this study by completing Kimberly Young's Internet Addiction Test (IAT) and Goldenberg's Mental Health (GHQ) Questionnaire. The Frequency, mean and standard deviation measures were used to describe the data. also data were analyzed through Chi squared tests and logistic regression using SPSS software (version 22). **Results:** According to the results of the prevalence of Internet addiction it was found that 1.1% (10 individuals) were Internet-addicted and 33.1% (299 individuals) were at the risk of Internet addiction. The findings of this study indicated that four different areas of mental health including physical condition, anxiety, depression, and social functioning have a direct relationship with Internet addiction ( $P < 0.05$ ). **Conclusions:** In the present study, a large percentage of the students were prone to Internet addiction. Hence, it is necessary to plan and perform preventive, controlling, and interventional measures for high school students.

**Keywords:** Addictive, behavior, mental health, students

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### Introduction

Internet is a very important means of communication that plays an important role in people's lifestyle in receiving information on research issues, human communication, entertainment, shopping, services, and receiving the news. It can be said that in today's world, technologies of the internet, computer, and mobile are considered the most effective tools in all fields such as science, business, education, culture, and politics.<sup>[1]</sup> However, this useful technology can affect social communication and interpersonal relationships.<sup>[2]</sup> One of the most important side effects of inappropriate use of the Internet is the phenomenon of "Internet addiction." In fact, Internet addiction or dependence is a key term determined by five Internet-related disorders as follows: 1. Sexual addictions; 2. Communicative addictions; 3. Merely compulsive addictions; 4. Addiction to excessive information; and 5. Addiction to computer games.<sup>[3]</sup> Internet addiction is shown to be associated with a variety of psychiatric disorders,<sup>[4]</sup> especially among

adolescents as their age is considered as one of the most important stages of human development.<sup>[5]</sup>

Internet addiction has a prevalence ranging from 5% to 25% among the students of the United States, China, Korea, England, Australia, Taiwan, Japan, and Eastern and Western European countries. Nowadays, the issue of Internet addiction has become a global issue.<sup>[6]</sup> According to the statistics announced by the "World Internet Statistics Site" in 2019, Iran with 56 million and 700 thousand users, which is equivalent to 70% of Iran's 80 million population; it has ranked 13<sup>th</sup> in the number of Internet users worldwide and is among the 20 countries having a large number of users. Also, Iran has the first rank in the Middle East region in terms of the number of Internet users.<sup>[7]</sup> Meanwhile, the adolescents between 10 and 19 years old, which constitute 21.9% (about 15.5 million people) of the total population of Iran, is higher than the global mean, and about 12.38% of it belongs to the age group of 15–19 years-old.<sup>[5]</sup> According to the latest statistics in 2011, about 10% of this age group are Internet users.<sup>[8]</sup> Previous

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studies showed that the symptoms of Internet addiction are associated with a variety of psychiatric statuses, including symptoms of depression and suicide.<sup>[9]</sup> Moreover, adolescents who have problematic Internet use show more depression in 9-month follow-up compared to other adolescents.<sup>[10]</sup>

In studies conducted on Internet addiction in various cities of Iran, in addition to the prevalence, the consequences associated with it, including social and family factors were also examined. Gholamian *et al.*<sup>[3]</sup> conducted a research to determine the prevalence of Internet addiction and its relationship with anxiety, stress, and depression in Shahrekord high school students. In terms of the prevalence of Internet addiction, 69.5% of students were normal, 27.6% were moderate Internet addicts, and 2.9% were severely addicted to the Internet. In a review study, Keykhani, Roshani, Aj, and Saye Miri examined the relationship between Internet addiction and depression among Iranian users in a sample of 4462 people during 2008-2014. The results of this study showed a significant positive relationship between Internet addiction and depression in Iranian adolescent and adult users.<sup>[11]</sup> Mohammadkhani *et al.* also studied the prevalence of Internet addiction and the relationship between Internet addiction and the symptoms of anxiety disorders in high school students. According to their study results, no significant difference was observed between the prevalence of Internet addiction in high school boys and girls; however, a significant positive relationship was reported between Internet addiction and symptoms of mental disorders, which in particular, independent variables of anxiety and psychosis that are recognized as symptoms of mental disorders had a profound effect on Internet addiction.<sup>[12]</sup> In addition, the results of the research by Alavi *et al.* showed that there is a significant positive correlation between mental disorders such as depression, anxiety, hypochondriasis, obsessive-compulsive disorder, interpersonal sensitivity, paranoia, and Internet addiction psychosis.<sup>[13]</sup>

Several other studies in this field were conducted in other countries studying Internet addiction and various components of mental and physical health. A study conducted in South Korea estimated a correlation between Internet addiction and 67% depression, which showed the highest correlation with Internet addiction among all psychological disorders.<sup>[14]</sup> Nidori *et al.* in a research examined the relationship between the social-mental performance of adolescents and the rate of Internet addiction with 263 participants who were students. Based on the results of this study, about 0.3% of Internet-addicted students reported that they do not have a group of friends that they could trust. In addition, 25% of Internet-addicted students and 31.6% of students at risk of Internet addiction reported that they have problems in finding a friend. Frequent conflicts with friends were reported by 42.9% of Internet-addicted students and 31.6% of people at the

risk. Low self-esteem was reported by approximately 0.3% of the addicted students and 42.1% of the group at risk of addiction. Also, learning problems were reported by about 0.1% of Internet-addicted students. The results of this study showed that, compared to at-risk individuals, more problems including the inability to find a new friend, frequent conflicts with peers, low self-esteem, and learning difficulties occur in the group of Internet-addicted students.<sup>[15]</sup> Serouti *et al.* in a descriptive study on Internet addiction examined physical symptoms and emotional and behavioral performance among school students. In the study, they evaluated 240 students, 24% of whom were females, between the ages of 10 and 15 years old. According to the results of this study, 21.8% of the participants reported excessive use of the Internet. In this study, higher levels of Internet use were associated with physical symptoms, depression, as well as behavioral and emotional problems.<sup>[16]</sup> Martin and Schumacher's research also showed that Internet addicts were relatively lonelier and more depressed compared to people who had no symptoms of Internet addiction.<sup>[17]</sup>

Despite these examinations, few and scattered studies were conducted in Bushehr, none of which have extensively examined the link between Internet addiction and mental health among high school students. In addition, given the importance of this issue and the increasing use of the Internet in life, especially in developing societies like Iran; it is necessary to study the destructive effects of this, in order to prevent, control, and create a therapeutic perspective. Therefore, the objective of this study was to examine the prevalence of Internet addiction and its relationship with mental health level in Bushehr high school students. So, the results of this research may help us in understanding the rate and type of Internet use among adolescents and may be considered as a step towards planning to monitor and teach the appropriate use of this technology to adolescents and other sections of the community.

## Methods

### Population and statistical sample

The present study was a cross-sectional analysis. The statistical population of this study included all male and female students of high schools in Bushehr studying in the academic year of 2018-19. Accordingly, the total number of these students was 5947. Using multi-stage sampling (class, cluster, and random), schools were selected at first in appropriation with the type of school (governmental and nongovernmental), and then in appropriation with gender (male and female). Afterward, a number of schools were selected using the cluster sampling method and then, the samples were randomly selected within each class. In this study, using the formula for estimating the sample size for the proportion in the population, in terms of the study by Gholamian *et al.*<sup>[3]</sup> and taking  $\alpha = 0.05$  and  $d = 0.03$  into account; the number

of 905 people was calculated. However, given the loss probability in the sample, 1000 individuals were selected.

### Research implementation method

After the approval of the plan by the research deputy of Isfahan University of Medical Sciences (with the code of ethics IR.MUI.RESEARCH.REC.1397.11238 and the approval code of 197101), during meetings with the police force of Bushehr province, the goals of this plan were discussed, examined, and approved in the ethics committee of that organization. Then, with the cooperation of Bushehr Education Organization Statistics Center, a list and address of all schools in the city were prepared. The questionnaire distribution team, which consisted of one man and one woman, performed the data collection. At the school selection stage, at first, the schools were divided into two theoretical and technical-skill fields, and then the number of male and female schools was divided and governmental and nongovernmental schools were determined on each gender class. Finally, within each class, a number of schools were selected as clusters. In each school, random sampling was performed using a random number table (based on the list of class books). During this process, the researcher supervised and controlled the research process as a supervisor. Also, all the stages of the project were performed in terms of the instructions and initial proposals. All these processes took place from the 19<sup>th</sup> October to 21<sup>st</sup> December.

### Data collection tools

In this study, two standard Goldenberg mental health questionnaires and Kimberly Young's Internet addiction were used. It should be noted that, at the beginning of the questionnaires, the written informed consent form was completed by students. In addition, before the start of the project, school principals were required to receive verbal consent from the parents. Also, all questionnaires were anonymous and all information remained confidential.

**Goldenberg Mental Health Questionnaire (GHQ):** In this study, the 28-item version of this questionnaire was used. The four scales of the mental health questionnaire included the following: 1. Physical symptoms; 2. Anxiety and insomnia symptoms; 3. Social dysfunction; and 4. Depression symptoms. This questionnaire was scored on a Likert scale (0-1-2-3). The Persian validity coefficient of the 28-item questionnaire was estimated at 0.91 using the retesting method with a time interval of 7 to 10 days on the 80-person group ( $P < 0.001$ ). The reliability of this questionnaire was obtained as 80% for the scale of physical symptoms, 92% for anxiety and insomnia, 75% for social dysfunction, 88% for severe depression, and 85% for the total questionnaire.<sup>[18]</sup> The mean total score of the questionnaire more than 22 and the mean score in each field more than 6 means mental health disorder and disorder in the desired field, respectively.

### Kimberly Young's Internet Addiction Questionnaire:

This 20-item questionnaire was developed by Dr. Kimberly Young to measure people's dependence on working with the Internet. Accordingly, its responses were placed at a 5-point continuum (rarely, sometimes, often, most often, and always), which measured the level of addiction as mild (nonaddictive), moderate (at risk of addiction), and severe (addictive). Videanto reported the reliability of Young's Internet addiction measurement scale as 0.89. In 2009, Alavi *et al.* in their study for Persian versions, examined two types of content and differential validity and three types of retest reliability, internal consistency, and split-half, and then mentioned the best clinical cut-off point,<sup>[1,8]</sup> To report the prevalence of Internet addiction, three different degrees of addiction to the Internet were examined. However, owing to the importance of moderate cases in adolescence, in other parts of the analysis, moderate and severe degrees were integrated with each other and were considered as Internet addiction.

### Data analysis

In order to describe the data to determine the frequency of Internet addiction in high school students by age and sex groups and other demographic factors, descriptive statistics (mean, standard deviation, frequency, and frequency percentage) were used. Moreover, the Chi-square test was used to analyze the data, and also to examine the relationship among mental health and Internet addiction and logistic regression. All analyses were performed using SPSS-22 software.

## Results

### Demographic characteristics of the participants in this research

The number of boys and girls participants were 440 (50.3%) and 448 (49.6%), respectively. The mean and standard deviation of participants' age in the present study was  $16.51 \pm 0.90$ . The frequency of Internet addiction among girls and boys had no significant difference ( $\chi^2 = 0.20$ ,  $P = 0.62$ ). There was a significant relationship among Internet addiction and field of study, grade point average (GPA) of the previous year, father's education, duration of Internet usage, type of Internet connection, interest in the field of study, and type of residence ( $P < 0.05$ ) [Table 1].

### The prevalence of Internet addiction

In terms of the prevalence of Internet addiction, 1.1% (10 individuals) were Internet-addicted and 33.1% (299 individuals) were exposed to Internet addiction. The prevalence in boys in contrast with girls was 0.8 versus 1.3. Also, the percentage of students at were exposed of Internet addiction was almost equal for girls(34%) and boys(32%) ( $P=0.65$ ). No significant relationship was observed between students' age and Internet addiction ( $\chi^2 = 5.3$ ,  $P = 0.50$ ).

**Table 1: Frequency of Internet addiction in terms of demographic characteristic and other risk factors**

| Variable                                | Internet addiction          |                         |            | P      |
|---|-----------------------------|-------------------------|------------|--------|
|   | Non-Internet addict (n=594) | Internet addict (n=309) | All n=903  |        |
| Gender (n,%)                            |                             |                         |            |        |
| Boy                                     | 287 (65.2)                  | 153 (34.8)              | 440        | 0.620  |
| Girl                                    | 300 (67.0)                  | 148 (33.0)              | 448        |        |
| Age group (n,%)                         |                             |                         |            |        |
| 15-16                                   | 294 (67.5)                  | 133 (32.5)              | 427        | 0.064  |
| 17-18                                   | 279 (48.5)                  | 165 (51.5)              | 444        |        |
| Field of study (n,%)                    |                             |                         |            |        |
| Theoretical                             | 395 (70.8)                  | 163 (29.2)              | 558        | <0.001 |
| Vocational                              | 191 (58.1)                  | 138 (41.9)              | 329        |        |
| Grade of high school (n,%)              |                             |                         |            |        |
| 10                                      | 217 (67.8)                  | 103 (32.2)              | 320        | 0.490  |
| 11                                      | 203 (65.3)                  | 108 (34.7)              | 311        |        |
| 12                                      | 166 (63.1)                  | 97 (36.9)               | 263        |        |
| Previous year GPA (n,%)                 |                             |                         |            |        |
| 14>                                     | 10 (1.6)                    | 12 (3.8)                | 22 (2.4)   | 0.023  |
| 14-16                                   | 116 (19.5)                  | 73 (23.6)               | 189 (20.9) |        |
| 17-20                                   | 400 (67.3)                  | 181 (58.5)              | 581 (64.3) |        |
| Number of siblings (n,%)                |                             |                         |            |        |
| 1≥                                      | 272 (67.8)                  | 129 (32.2)              | 401        | 0.311  |
| 1<                                      | 290 (64.4)                  | 160 (35.6)              | 450        |        |
| Father ' education (n,%)                |                             |                         |            |        |
| Nonacademic                             | 332 (69.7)                  | 144 (30.3)              | 476        | 0.026  |
| Academic                                | 220 (62.1)                  | 134 (37.9)              | 354        |        |
| Mother ' education (n,%)                |                             |                         |            |        |
| Nonacademic                             | 388 (67.6)                  | 185 (32.4)              | 574        | 0.229  |
| Academic                                | 157 (63.1)                  | 92 (36.9)               | 249        |        |
| Living with parent (s) (n,%)            |                             |                         |            |        |
| Father only                             | 8 (61.5)                    | 5 (38.5)                | 13         | 0.944  |
| Mother only                             | 24 (64.9)                   | 13 (35.1)               | 37         |        |
| Both                                    | 554 (65.8)                  | 288 (34.2)              | 842        |        |
| Internet usage duration (n,%)           |                             |                         |            |        |
| <1 year                                 | 100 (81.3)                  | 23 (18.7)               | 123        | <0.001 |
| ≥1 year                                 | 478 (62.8)                  | 283 (37.2)              | 761        |        |
| Device to connect to the Internet (n,%) |                             |                         |            |        |
| Computer and laptop                     | 253 (70.8)                  | 104 (29.1)              | 357        | 0.030  |
| Cell phone                              | 332 (62.7)                  | 197 (59.8)              | 529        |        |
| Tablet                                  | 8 (47.0)                    | 9 (52.9)                | 17         |        |
| Status of residence (n,%)               |                             |                         |            |        |
| Local                                   | 421 (62.5)                  | 253 (37.5)              | 674        | 0.001  |
| Nonlocal                                | 161 (75.9)                  | 51 (24.1)               | 212        |        |
| Interested in the field of study (n,%)  |                             |                         |            |        |
| Yes                                     | 527 (67.5)                  | 254 (32.5)              | 781        | 0.001  |
| No                                      | 48 (48.5)                   | 51 (51.5)               | 99         |        |

### Mental health status

The mean and standard deviation of the total score of mental health in girls was  $21.50 \pm 13.28$  and in boys  $24.98 \pm 15.09$  ( $P < 0.05$ ). The mean overall score of psychological disorders was higher in Internet addicts compared to nonaddicted people (in other words: Internet addicts suffered from psychological disorders more than healthy people), and this difference was statistically significant ( $P < 0.05$ ).

### The relationship between Internet addiction and mental health

Analysis of logistic regression (crud) showed that four different areas of mental health including physical condition, anxiety, depression, and social functioning have a direct relationship with Internet addiction ( $P < 0.05$ ). For example, by increasing 1 unit in the anxiety score, the chance of Internet addiction increases by 2.14 (CI; 1.79–2.57). After adjustment with demographic



characteristics such as field of study, grade point average of the previous year, and residence status (adjusted); still all 4 areas of mental health were associated with Internet addiction ( $P < 0.05$ ) [Table 2].

According to table 2, students with depressive symptoms had odds 2.09 percent of Internet addiction than those students nondepressive symptoms (OR crud = 2.09, 95% CI: 1.76-2.48). Also, students who did not have good social functioning had a 2.19-fold odds of Internet addiction than students who had better social functioning (OR crud = 2.19, 95% CI: 1.77-2.71).

Finally, it was shown that there is no significant interaction or distortion in the relationship between areas of mental health when predicting Internet addiction and mental health disorders as they always are significant predictors for Internet addiction. Because the odds ratio of areas of mental health in the model adjusted indicated no change. Also, all areas of mental health had a significant relationship with Internet addiction ( $P < 0.001$ ) [Table 2].

### Discussion

Adolescence is the time of rapid psychological maturity and prone to the Internet.<sup>[19]</sup> One of the most important problems that the Internet has brought, is the addiction to its usage, especially among adolescents.<sup>[20]</sup> The results of this study showed that 33.1% of these students were at the risk of Internet addiction and 1.1% were Internet-addicted. These findings were similar to the results of studies by Dargahi & Razavi (2017) and Gholamian *et al.* (2007) who reported the prevalence of mild Internet addiction (or at risk of Internet addiction) as 26% and 27.6%, and reported the prevalence of Internet addiction as 4% and 2.9%, respectively.<sup>[3,21]</sup> Also, the prevalence of Internet addiction in a study conducted by Palanti *et al.* (2006) on Italian high school students was 5.4%.<sup>[22]</sup> However, recent studies, have shown that the prevalence rate of Internet addiction in adolescents, in different societies and cultures, has a wide variety from 1.6 to 30%, which is increasing.<sup>[23,24]</sup>

In this study, no significant difference was observed in terms of Internet addiction between the two genders, which is consistent with the results of studies by Lashgar Ara *et al.* (2013), Ozturk *et al.* (2013), Mohammadi *et al.* (2013), and Tamannai Far *et al.* (2015).<sup>[25-28]</sup> However, it is not consistent with the results of the study by Shayegh

*et al.* (2009) who reported that the higher prevalence of Internet addiction is in boys.<sup>[29]</sup> Explaining this issue, it can be said that, nowadays, each person with any identity and gender needs to use the Internet and enters cyberspace under relatively equal conditions, which makes the probability of harmful effects of this issue to a certain degree equal for both genders. In addition, the findings showed that the age of students has no significant correlation with the severity of Internet addiction, which is consistent with the results of a study by Bahri *et al.*,<sup>[10]</sup> but it is not consistent with the results of the study by Dargahi & Razavi (2008)<sup>[21]</sup> where it seems that restricting participants' age range adolescence was effective on achieving this results. Also, based on the results, no significant relationship was observed among the participants' educational level, the number of siblings, parent education level, condition of living with parents, and the device of using the Internet with the severity of Internet addiction, which can be due to the widespread Internet usage in the current situation of our society and the widespread use of this tool in most of the life aspects that lead various demographic factors to not have a significant effect on this.

However, other findings of this study indicate a significant relationship between the field of study and the severity of Internet usage among high school students, which shows the higher prevalence of Internet addiction in students in vocational and technical fields compared to theoretical disciplines, which is not consistent with the results of a study by Ozturk *et al.* (2013).<sup>[26]</sup> This may be due to the greater emphasis of these disciplines on the applied aspects of science, including the use of computers and the Internet instead of theoretical disciplines such as experimental, mathematical, or humanities. The grade point average of the previous year of these students had a significant negative relationship with Internet addiction, which confirms the devastating effects of Internet addiction on people's lives. Also, based on the results, the duration of Internet usage had a significant relationship with the severity of Internet addiction, which is consistent with the results of research performed by Quionso *et al.* (2014).<sup>[30]</sup> According to Quionso *et al.*, among other things, significant time spent on the Internet is associated with loneliness and more social problems. In terms of this finding, it can be said that the more time a person spends using the Internet during the day, the more likely he/she is becoming Internet-dependent,

**Table 2: Odds ratio of Internet addiction for each area of mental health (crud and adjusted)**

|                     | OR crude (95% CI) | P      | OR adjust (95% CI) | P      |
|---------------------|-------------------|--------|--------------------|--------|
| Mental health       |                   |        |                    |        |
| Physical symptoms   | 2.77 (2.25-3.41)  | <0.001 | 2.89 ( 2.26-3.69)  | <0.001 |
| Anxiety symptoms    | 2.14 (1.79-2.57)  | <0.001 | 2.23 (1.79-2.78)   | <0.001 |
| Depressive symptoms | 2.09 (1.76-2.48)  | <0.001 | 2.16 (1.76-2.67)   | <0.001 |
| Social functioning  | 2.19 (1.77-2.71)  | <0.001 | 2.62 (1.74-2.92)   | <0.001 |

OR adjusted by variables; Field of study, Father's education, Device to connect to the Internet, Internet usage duration, Interested in the field of study, Age group, Previous year GPA, Status of residence

where these results indicate the necessity of controlling the duration of the time spent on the Internet in adolescents, which can be used as a preventative factor. According to the results of the study, the prevalence of Internet addiction in non-native students (1.9%) was higher than in native students (0.9%). With respect to this finding, it can be said that living in a non-native environment can be considered as a risk factor for Internet addiction, which is probably because of the increase in the effective interpersonal relationships in the non-native environment. Also, disinterest in the field of study can be considered as an effective factor in the willingness of adolescents to excessively use the Internet as a way to reduce tension and pressure caused by studying in fields in which they are not interested.

Other findings from this study indicate a significant difference in mental health scores at different levels of Internet addiction. Accordingly, these results are consistent with the findings of the studies by Kim (2012), Do *et al.* (2013), Sorouti *et al.* (2017), and Nidori *et al.* (2017),<sup>[15,16,31,32]</sup> Based on the findings of a study by Sorouti *et al.* (2017), high levels of internalization (such as anxiety and depression symptoms) and externalization problems (such as law-breaking behaviors and aggression) are associated with Internet addiction. Internet-addicted people and those who are at risk of Internet addiction are more likely to have a disturbed mental state compared to those people without this problem at all levels of mental health.<sup>[17]</sup> Also, there is a significant correlation between physical condition and the severity of Internet addiction, which is consistent with the findings of a study by Crooty *et al.* (2017).<sup>[33]</sup> Recurrent physical symptoms may be known as important evidence of mental health problems in adolescents' lives that can affect their growth, school orientation, success, as well as their social adjustment.<sup>[16]</sup> According to the present study, most people who are Internet addicted (50%), reported severe anxiety, which is consistent with the findings of the studies by Mohammadkhani *et al.* (2017), Alavi *et al.* (2008), and Sorouti *et al.* (2017),<sup>[12,13,16]</sup> Internet-addicted users have more anxiety and stress, and they may also use the Internet as an escape route, which indicates that when a person does not have access to the Internet, becomes anxious, so uses the Internet to reduce this anxiety.<sup>[34]</sup> In addition, people who are anxious are more likely to stay away from others and also are more likely to be isolated, which attracts them to mass media, including television and computers, to spend a large portion of their leisure time, which as a result, they suffer from Internet dependence. In addition, they also suffer from feelings of insecurity, loneliness, lack of control over the environment, and the lack of a social protection network, which makes them willing to use the Internet, as they reduce the loneliness and lack of control over the environment and the shortcomings of the social network through the Internet.<sup>[12]</sup> Other findings

from this study showed a significant difference between the severity of Internet addiction and depression. Accordingly, these results are consistent with the findings of studies by Morgan (2003), Dalbodak (2014), Ha *et al.* (2006), Keikhani *et al.* (2017), and Sorouti *et al.* (2017),<sup>[11,16,35-37]</sup> Internet addicts are willing to communicate in the real world, and extreme dependence on the virtual world reduces their happiness and social interactions by being isolated from the real world and being physically passive. As depression and loneliness increase, the Internet addict will be connected to the Internet for longer periods. A situation similar to this can be seen in alcoholics who drink alcohol to escape from their problems, then they feel worse, and eventually drink more to get rid of this unpleasant feeling.<sup>[12]</sup> Consistent with the previous studies,<sup>[37,38]</sup> the present study data showed a positive correlation between Internet addiction and behavioral and emotional problems that present evidence of poor performance among addicted and problematic Internet users in comparison to regular Internet users. Consistent with research by Tsitsika *et al.* (2014), adolescents who have excessive amounts of Internet usage are engaged in more behavioral activities (such as aggressive behavior).<sup>[37]</sup> Accordingly, people who use the Internet excessively distance themselves from society and real social interactions and suffer from loneliness and depression by eliminating real social interactions and exercising control over their lives. Because users perform most of the work online, and this, decreases relationships and objectives of life interactions; real-life relationships become less important, which can be related to depression.<sup>[12]</sup>

In addition, recent research findings show that younger age (during adolescence) is also a risk factor for Internet addiction. This finding can be justified by the fluctuation of emotions at the beginning of puberty; moreover, the last years of school are an important time for determining one's future career, which in our country, this age range is along with university entrance exam that can lead to less time spent using the Internet. Accordingly, as mentioned in the findings of the recent research, allocating less time in using the Internet has a significant negative relationship with Internet addiction. Consistent with this finding, the results of the present study showed that the prevalence of Internet addiction is lower in people whose parents have a higher educational level. In justifying this finding, it can be stated that higher education of parents is related to a healthy educational style, which in turn leads to a better quality of mental health in children, and higher mental health is related to less Internet addiction.<sup>[39]</sup>

In addition to the various psychological and physical consequences of Internet addiction, the high prevalence of people at risk of Internet addiction makes it necessary to pay attention not only to Internet addicts but also to adolescents who are at the risk of Internet addiction. Therefore, intervening<sup>[12]</sup> in Internet addiction and preventing

the rise of Internet addiction can help treat psychiatric problems associated with Internet addiction. Thus, cognitive and behavioral interventions can be effective in improving the problems leading to excessive Internet usage, as well as planning for the optimal use of adolescents' leisure time along with Internet-related activities and teaching the culture of the proper use of the Internet and its facilities.

### Suggestions and Restrictions

Given the results of the present study and the importance of Internet addiction, it is suggested that comprehensive methods of medical and preventive interventions should be examined in future research priorities, and if they were effective, must be held periodically. In addition, a serious effort should be implemented to expand the quality and quantity of medical and educational services. The results of the present study contain implicit indications for school teachers, parents, and therapists. The results of this study, while confirming the negative effects of Internet addiction on mental health, emphasize the importance of the family environment in intensifying Internet usage. Therefore, in designing treatment programs, the family environment of individuals should also be considered.

However, conducting the present research had some limitations, some of which are mentioned here. Because of using descriptive research design, the results do not present causal relationships between variables. In addition, because of using self-reporting tools, people's responses may be exaggerated by their interest in self-reporting or self-disclosure (response error). As a result, some of the data and results observed in this research may have been affected by people's opinions. On the other hand, the present research sample was limited to a specific geographical area, which entailed a caution in the generalization of the results.

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### Conflicts of interest

There are no conflicts of interest.

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