Analysis of Internet addiction and its relation to metacognitive beliefs among university students

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Abstract

Objectives: The Internet was originally designed to facilitate communication and scientific activities. However the use of the Internet in recent years has led to pathological use (Internet addiction). The purpose of this research is the evaluation of internet addiction and relationship with metacognitive belief as an anxiety condition.

Methods: This is cross sectional study on 245 students of Jahrom University of Medical Sciences from random cluster sampling. Data gathering was from 2 questionnaires in 3 parts. The first part contained demographic variables, the second part was Internet Addiction Test (IAT) and the 3rd part was a metacognitive questionnaire MCQ 30 with five factors including (self confidence, positive beliefs about worry, self-consciousness, negative beliefs about uncontrollability of thoughts and dangers, and the need to control thoughts). Data was analyzed by descriptive and analytic statistics in SPSS (software Inc 15).

Results: Results showed prevalence of internet addiction in this population was 18/6 %. 72% of participants had weak addiction, 24/3% moderate and 3/7% of them had severe addiction. All metacognition elements in addicted students were higher than the normal range, but there wasn’t any significance between them. There was a positive relationship between some metacognitive factors with internet addiction elements.

Conclusion: In attention to results and due to the relationship between internet addiction and anxiety factors (metacognition beliefs) and other negative consequences of them on student academic achievement, it is necessary to consider sufficient educational programs as a preventive program in universities to optimal using of this technology correctly.

Key words: Metacognition belief, Internet Addiction, students, Anxiety
Introduction
The number of Internet users has increased dramatically. In March of 2011 the number of internet users reached 2 billion and 100 thousand and that 33 million and 200 thousand of these users live in Iran.[1]. Today, the internet is a vital tool to get great information in so many countries. However, despite the advantages and capabilities, the internet has created many serious problems, such as mass and explosion data, image and information with abnormal content. Interestingly Internet addiction has close similarities with other addictions [2] and Internet dependence is a new topic which attracts researchers to affiliation behavior in recent years [3]. Although computers and the Internet are used less than other information resources, it could be argued that the Internet is a tool for every individual in every field of expertise that enables him/her to communicate with their colleagues around the world [4]. For many people, the concept and definition of Internet addiction and its dependence is exaggerated so that people consider it as drugs and alcohol [5]. Young believed that the word addicted is used also for Internet users, because the symptoms of Internet addiction has the same characteristics seen in alcoholism and smoking. He could design and identify internet addiction with a questionnaire of 20 questions on top of 5 Likert scales [6]. Internet addicts use film, music, cartoons, computer games, social networking and chat via internet connection, while normal users connect to take advantage of news, events, shopping, reserve and educational and academic sites. Whereas the addicted, use the Internet unpurposefully and in private indoors [7]. Recent studies done on Internet addiction mainly emphasize on three important categories which includes individual factors such as a low degree of self-reliance [8] introspection features, instinctual behaviors and tendencies [9] and communication skill violence [10] social factors such as poor support from family members and social psychological factors originated in poor communication with family [11]. In this paper we examine the relationship between Internet addiction and metacognitive beliefs.

The term metacognitive refers to knowledge about cognitive processes and their effective utilization to achieve learning objectives [12].

Metacognitive processes have two independent but related aspects; one is metacognitive knowledge and the other metacognitive experience (13). Cartwright - Hatton & Wells have designed the following five aspects Psychometric Assessment Scale in order to analyze cognitive thinking and metacognitive beliefs:

- Positive beliefs about worry (like concerns that could help me to cope).
- Concern that focus on negative beliefs which concentrate on uncontrollability and dangers of worrying.
- Low cognitive assurance (as if I have a poor memory).
- Negative beliefs about thoughts, including corporal punishment, superstition etc.
- Cognitive knowledge (e.g. how to do what I'm seriously considering to my mind).

Each of these factors has a significant relationship with emotional vulnerability and are conceptually related to each other such as consciousness and cognitive failures which emphasize on true character and its real dimensions.

Spada et al. also argue that metacognition plays a mediator role between perceived stress and negative emotions and the activation of uncontrollable metacognitive beliefs and danger makes people experience emotional stress. In fact, these processes cause people to overestimate the environmental threats and neglect their coping ability, resulting in mental disorders (15).

Therefore, regarding negative dimensions, this project aims to analyze the relationship between Internet addiction and metacognitive beliefs to take effective steps in understanding psychological consequences of complications and improve the students’ mental health.

Materials and Methods
This cross sectional study aimed to investigate the prevalence of Internet addiction in students with metacognitive beliefs. Due to the unequal balance of students in different disciplines, random - classified sampling procedure was used in different groups and 244 people were selected according to the frequency of previous studies. Data were gathered using Young’s Internet Addiction questionnaire and a short metacognitive beliefs questionnaire (MCQ-30): a 30-item self-report scale that measures individuals thinking about their beliefs. This scale is based on Wells and Matthews’ self-regulatory executive function (S-REF) that measures emotional disorders and metacognitive anxiety disorder. The scale has five subscales (1) positive beliefs about worrying, (2) beliefs about uncontrollability and danger of thoughts, (3) beliefs about the cognition assurance, (4) beliefs about the need to control thoughts, and (5) cognitive awareness. The validity of the questionnaire, based on Cronbach’s alpha coefficients for the subscales, are reported from 0.72 to 0.93; also considered 0.75 for its reliability and 0.59 to 0.87 for small scales. Shirin Zade Dastgiri in Iran reported 0.91 for the internal consistency coefficient of the total scale and range of 0.71 to 0.87 for the subscales. For 4-weeks test-retest, reliability is reported 0.73 for the total scale and subscale which ranged from 0.59 to 0.83.

Internet addiction Test is designed and developed by Young. According to this Self-assessment scale Internet addiction is measured. Classification is as follows: always (score 5), usually (score 4), often (score 3), sometimes (score 2), rarely (score 1) or never (score 0).

The test scores range is from 0 to 100. The higher a person’s score means higher Internet addiction. The rate of Internet addiction scores were divided into four categories:
1. Scores 0 to 19 - normal
2. Scores 20 -to49 - mild
3. Scores 50 - 79 - medium
4. Scores 80 - 100 - severe

This test has good validity and reliability and complies with Iran’s community norm. [16, 17, 18]

Descriptive statistics such as frequency, percentage and mean of the distribution and the correlation coefficient were used to assess the correlation between variables. Moreover, chi-square test was done to examine the association between the variables and T-student to differentiate between metacognitive component in patient and non-patient groups.

Results
Results of Table 1 show that the overall average of Internet addiction has lower levels among samples. Also based on the cut-off point, only 6/18% of the students were patients and severity of the disorder is seen as mild in 72% and only 7/3% is seen as serious. Highest Internet addiction was associated with impaired social activity with average of 11/25 (Table 1).

Table 2 shows that the mean score of most components of cognitive beliefs was moderate (0-24). Table 3 shows that the average values of metacognitive components were higher among females, although there were no significant differences between boys and girls.

Although the difference in average internet addiction was not significant; boys had higher values. Table 4 shows although the addicted group had a higher average, the difference was not significant. The relationship between the components of Internet addiction and metacognitive beliefs also shows cognitive self-consciousness correlated with all components of Internet addiction and was seen among other components malfunctions with positive beliefs about worrying and uncontrollability and danger, shown in Table 5.

Discussion
The results showed that the level of Internet addiction was lower among university students’ group. In other words university students showed a very weak internet addiction. From Young’s point of view an internet addict is one who spends at least 38 hours per week or 8 hours per day in cyberspace (18).

Findings of Mohseni Tabrizi and colleagues also support the findings of this study; they confirm that the average hours of using Internet for users was 17:14 hour per week. 29% of users experienced mild internet addiction, and all of them had varying degrees of weakness, inability to perform activities, social behavior, loneliness and social isolation, lack of interest in interpersonal relationships.
and interactions (19). Some studies have also confirmed supporting results of Internet addiction in students mainly in males. In a study held in Isfahan male students (30%) use internet over 8 hours, and female students (29 percent) between 2 to 4 hours per week on average. Isfahan University of Medical Sciences (respectively 22% and 27%) used internet between 2 to 4 hours per week (16).

Other research conducted on internet users in Shahinshahr showed that 4 patients (3/2 percent) had scores above 80 who were considered as the first group of severe addiction; 46 (27/05%) had moderate addiction; 120 person (70/58 percent) scored lower than 50 who were among ordinary users with mild addiction. Due to the high percentage of mild addiction in most studies; this present study also confirmed the results (20).

Another study conducted in Tehran aimed to investigate the prevalence of Internet addiction and reported that the average is 3.2% (21). But higher levels of Internet addiction rate, were reported to be 18%. Another study conducted by Ayzanlo and Gudarzi on Internet addiction and its relationship with social problems revealed that 77.2% of users suffered mild addiction and only 3.6% of people suffering severe addiction. The results of this study are consistent with the results of other Internet addiction studies. Also research on Internet addiction scores showed a higher percentage of addiction in boys than girls (70.1 % in boys rather than 29.9% in girls) but there was no significant difference between the two groups (22).

Numerous studies have been conducted in different countries

<table>
<thead>
<tr>
<th>Metacognition Subscale</th>
<th>Mean (SD)</th>
</tr>
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<tbody>
<tr>
<td>Positive beliefs about worry</td>
<td>12.95 (3.62)</td>
</tr>
<tr>
<td>Cognitive confidence</td>
<td>14.98 (3.1)</td>
</tr>
<tr>
<td>Cognitive self-consciousness</td>
<td>12.30 (3.32)</td>
</tr>
<tr>
<td>Negative beliefs about uncontrollability of thoughts &amp; danger</td>
<td>12.64 (2.3)</td>
</tr>
<tr>
<td>Beliefs about need to control thoughts</td>
<td>14.30 (3.32)</td>
</tr>
</tbody>
</table>

Table 3: Distribution of metacognition belief in students

<table>
<thead>
<tr>
<th>Group Variable</th>
<th>Internet addiction</th>
<th>Normal</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive beliefs about worry</td>
<td>13.07 (3.7)</td>
<td>12.50 (3.2)</td>
<td>0.31</td>
</tr>
<tr>
<td>Cognitive confidence</td>
<td>12.64 (3.47)</td>
<td>12.32 (2.63)</td>
<td>0.43</td>
</tr>
<tr>
<td>Cognitive self-consciousness</td>
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<td>14.95 (3.1)</td>
<td>0.94</td>
</tr>
<tr>
<td>Negative beliefs about uncontrollability of thought &amp; danger</td>
<td>14.39 (3.46)</td>
<td>14.23 (3.59)</td>
<td>0.86</td>
</tr>
<tr>
<td>Beliefs about need to control thoughts</td>
<td>12.70 (3.78)</td>
<td>12.55 (3.20)</td>
<td>0.35</td>
</tr>
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</table>

Table 4: Differences between met cognitive factors in two groups of normal & internet addiction
and have different rates of Internet addiction. In the United States and Europe, the incidence was 1.5% to 8.2%. In a telephone study of general population of users in the United States it was reported as 0.3% to 0.7% (23). The prevalence of Internet addiction in two groups of 12 and 13 years involved with technology and its related problems were studied in Hong Kong. The comparison reported addiction 26/4% in the first group and 26/7% in the second group (25).

Research on 371 English students indicated that the rate is 3/18%, and it is associated with mental health problems (26). Research conducted on 3,616 Taiwanese students, confirmed that the prevalence of Internet addiction was different from 14/1 to 5/16 (27).

Internet usage in China was 88% and internet addiction was reported as 4/2% (28).

In other Asian countries and in Lebanon, the amount of addiction was 2/4 percent and the higher rate of use was allocated to entertainment and advertising rather than scientific and academic usage (29). Internet addiction rates in Japan were reported as 33.7% mild and 1/6% severe addiction. It was 24.6% in men and 1.8% in women (30). The result of the present research on the prevalence of Internet addiction was similar to the other mentioned studies and in a lot of other research.

Additional results showed that there are significant differences in the rate of Internet addiction and its components by sex and field of study. However, research conducted in Hong Kong showed that there is no significant difference between Internet addiction, age, gender, economic status, and immigration (31). This result is consistent with the results of the present study.

But some of the problems associated with Internet addiction happened in 19.4% in men and 1.5% in female (32).

Finally, some evidence suggests that a rate of psychiatric disorders associated with Internet addiction in men is higher in men than women (33). The results of this study showed that the mean average of metacognitive components in students is medium and although the mean component of metacognitive disorder in people with Internet addiction was higher but no significant difference was observed in the two groups of patients and normal. Evidence suggests that negative emotions can impact metacognitive beliefs and Internet addiction. Some studies stressed the importance of metacognition as a mediator between the negative effects of Internet addiction (34).

In another study it was shown that there is a relationship between aspects of cognition and Internet addiction. Also there was a significant association between Internet addiction and public health. The present study emphasized on the mediator role of metacognition in public health and reduction of Internet Addiction. It was also found that the various aspects of cognition mainly thought control should be controlled more than other aspects. In this study these factors were associated with impaired occupational activities. But consciousness and higher cognitive ability correlated with all components of Internet addiction.

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<td>Cognitive self-awareness</td>
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*P<0.5

Table 5: Relation between metacognition beliefs sub scale and internet addiction factors
The need to control thoughts and self-awareness are cognitive manifestations of intrusive thoughts and as Spada states cognitive factors such as concerns about lack of control made individuals increase their access to negative information and more likely to use the Internet as a regulator of emotional state (15).

The present study approves the relationship between negative emotions and components of Internet addiction. In another study it was shown that there is a metacognition mediated relationship between low mental health and addiction to internet and affects the rate of this relationship. Among the cognitive variables, thought control had the highest correlation. (R = 0.80) (36).

Mathews and Wells mentioned the role of self-regulatory performance on metacognitive beliefs and its impact on continued disturbances and psychiatric disorders as well. They consider these disorders maladaptive coping strategies, a feeling of depression (anxiety / mental rumination), monitoring of threatened or suppressed thought to regulate the dysfunctional beliefs or increased access to negative information about self (37).

Some argue that Internet addiction disorder has been associated with depression and over activity and poor concentration. Depression disorders in men are highly associated with depression (38, 39), that accompany physical disorders of Internet addiction; anxiety, aggression, non-paranoid psychosis (40), symptomatic distress (41) are appropriate measures to early identification of individuals and help prevent other psychiatric disorders.

According to the results, and the relationship between Internet addiction and anxiety factors (Metacognitive beliefs) and its negative consequences on psychological and educational aspects; proper training seems to be essential to train students to use technology in a correct and efficient way. In conclusion the researchers hope to take important steps in improving students' health by appropriate cultural training.

Acknowledgement
The authors acknowledge the authorities of Jahrom University of Medical Sciences for financial support.

References
8- Song W. Effects on self-efficacy and self-control on the addictive use of internet. Masters thesis: Yonsei University, 1999
12- Biehler R, Snowman J. Psychology applied to teaching.
16- Shirinzadeh S. The comparison of Metacognitive beliefs and responsibility among OCD, GAD and normal group. Thesis submitted to MS degree 2006; Shiraz University. [In Persian].
21- Ghasemzadeh L. Shahrarai, Moradi A. The prevalence rate of Internet addiction among high school girls in Tehran Competing addicted girls and non addicted to the Internet in loneliness, self-esteem, Esteem and social skills. Journal of Women's defensive cultural studies 2008;3(1). [In Persian]
24- Shaw M, Black D W. Internet Addiction: Definition,
28- Cao F, Su L. Internet addiction among Chinese adolescents: prevalence and psychological features 2006. Article first published online.