

## Quality of Life in Medical Students With Internet Addiction

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**Abstract-** The widespread use of internet has caused new psychological, social, and educational problems for the students. The aim of this study was to examine the quality of life in medical students who suffer from internet addiction. This cross-sectional survey was carried out in Tehran University of Medical Sciences, and a total of 174 fourth-to seventh-year undergraduate medical students were enrolled. The quality of life was assessed by WHOQOL-BREF questionnaire which covers four domains of physical health, psychological, social relationships, and the environment. For assessing internet addiction, we used Internet Addiction Test (IAT) of Young. The students with IAT score higher than 50 were considered as addicted. For evaluating academic performance, the students were requested to report their grade point average (GPA). The mean IA score ( $\pm$ SD) was  $34.13 \pm 12.76$ . Twenty-eight students (16.90%) had IAT score above 50. The mean quality of life score in internet addicted group was  $54.97 \pm 11.38$  versus  $61.65 \pm 11.21$  in normal group ( $P=0.005$ ). Furthermore, there was a negative correlation between IA score and physical domain ( $r=-0.18$ ,  $P=0.02$ ); psychological domain ( $r=-0.35$ ,  $P=0.000$ ); and social relation domain ( $r=-0.26$ ,  $P=0.001$ ). Mean GPA was significantly lower in the addicted group. It seems that quality of life is lower in the internet addicted medical students; moreover, such students academically perform poorer in comparison with non-addicts. Since internet addiction is increasing at a rapid pace which may provoke considerable academic, psychological and social implications; as a result, it may require screening programs to the immediate finding of such problem to give consultations to prevent unwanted complications.

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### Introduction

From the start of this millennium, internet has been becoming a broadly putative tool for information transfer and exchange; in addition, beyond being a source of information and communication, it has become an "addiction" for some persons, and the rate of this addiction among people particularly for young generation is rapidly growing all over the world (1).

Internet addiction is a rather novel research area, which has around 10 years history (2). Young defined it as, "an individual's inability to control his or her use of the internet, which eventually causes psychological,

social, school, and/or work difficulties in a person's life" (3). Internet addiction seems to be a rather common behavioral addiction, and its prevalence has been approximately estimated just above or below 10% in different studies (4-7); likewise, in studies performed on medical and allied health students, similar percentages have been reported (8,9).

This addiction could unfavorably affect one's quality of life, physical health, family life, and academic performance. Moreover, internet addicts often undergo serious psychological distress, including anxiety, depression, and compulsivity.

It seems that in medical students as well as other

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college and university students, internet addiction could cause adverse effects; however, studying medicine seems to be more complicated and stressful than many other disciplines; on the other hand, the quality of medical students' life influence public health indirectly. The main aim of this study was to examine the quality of life in medical students of Tehran University of Medical Sciences suffering from internet addiction and their relationship.

## Materials and Methods

The cross-sectional survey was carried out in 3 different University hospitals of Tehran University of Medical Sciences, the period of December 2013 to May 2014 and a total of 174 fourth-to seventh-year medical students were enrolled. The period of medicine course in Iran is 7 years, and the medical students enter the clinical field from year 3.

The study was conducted after obtaining the approval from the ethical committee of Tehran University of Medical Sciences.

### Tools

#### Internet addiction test of young (IAT)

Internet use was assessed by the Internet Addiction Test of Young (10). The IAT is a 20-item 5 point Likert scale that measures the severity of self-reported habitual use of the internet. Total internet addiction scores are calculated, with possible scores for the sum of 20 items ranging between 20 and 100. The numbers are summed for each response to attain an ultimate score. The severity of addiction was then classified in line with the suggested 20-49, 50-79, and 80-100 scores as normal, moderate, and severe, respectively (<50 indicating normal subjects and  $\geq 50$  indicating addicted subjects) (11). Furthermore, we used a Persian version of IAT which had a Cronbach's alpha reliability of 0.89 and the *P*.value of test-retest after 2 weeks was 0.68 (12).

#### WHOQOL-BREF

We used the World Health Organization Quality of Life Questionnaire-short version (WHOQOL-BREF) to assess the quality of life. The four domains of the WHOQOL-BREF are physical health, psychological (e.g. self-esteem), social relationships (e.g. social support), and environment (e.g. freedom, physical safety). The average quality of life was calculated as the mean of four domains [i.e. (physical health+psychological+social relationships+environmental)/4]. This questionnaire has 26 items on a

five-point Likert scale, which includes two global items about the quality of life and health, respectively, and 24 items relating to four domains calculated as the sum of seven items for physical, six for psychological, three for social and eight for environmental quality of life. The higher the score, the better is the quality of life. We used the validated Persian version of the questionnaire (13).

#### Academic performance of the students

For assessing academic performance, we requested the students to report their grade point average (GPA). In Tehran University of Medical Sciences, the medical students are able to check their latest GPA through an online system (educational management system). The range of GPA in this University is between 0 and 20.

#### Statistical analysis

For categorical data, we used chi-square test. We used Kolmogorov-Smirnov test of normality to investigate whether the variables were normally distributed. When the data followed normal distributor, the t-student test was used to compare quantitative data (Physical domain, Psychological domain, Social relation domain, Environmental domain, Mean of domains, GPA) among two groups of addicts (IAT score $\geq 50$ ) and non-addicts (IAT score<50). Finally, we measured the correlation between IAT score and QOL domains (Physical domain, Psychological domain, social relation domain, Environmental domain) with Pearson's correlation analysis. All data are presented as Mean $\pm$ standard deviation (SD). A significance level below 0.05 was considered significant.

## Results

In this study, 174 medical students were recruited. The mean age ( $\pm$ SD) of students was 22.57 $\pm$ 1.24 and 77 (44.3%) students were male; 128 (73.56%) students were fifth and sixth-year medical students.

Totally, 146 (83.9%) students had IAT score below 50 (i.e. normal score), 28 (16.1%) had score above 50 (i.e. internet addicted).

The mean quality of life in subdomains of physical domain, psychological domain, social relation domain was lower in the addicted group (Table 1); however, there was no significant difference in environmental domain (Table 1). In addition, mean GPA was lower in the addicted group (Table 1).

On the other hand, there was a small, negative correlation between IAT score and physical domain ( $r = -0.18$ ,  $P = 0.02$ ); a medium, negative correlation IAT score

## Quality of life and internet addiction

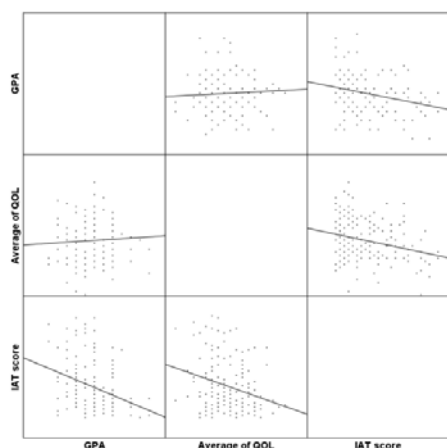
and psychological domain ( $r=-0.35$ ,  $P=0.000$ ); a small, negative correlation between IAT score and social relation domain ( $r=-0.26$ ,  $P=0.001$ ); however, the correlation between IAT score and environmental domain was not significant ( $r=-0.13$ ,  $P=0.08$ ) (Figure 2). Furthermore, there was a negative correlation between IAT score and average of QOL domains ( $r=-0.27$ ,  $P=0.000$ ) (Figure 1). For GPA, there was a medium,

negative correlation between two variables ( $r=-0.29$ ,  $P=0.000$ ), with high levels of IAT score associated with lower levels of GPA.

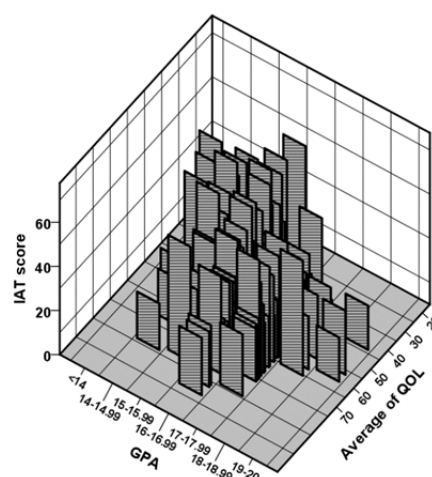
Finally, we depicted a 3D plot to show the relationships between internet addiction score, GPA and average of QOL domains. As demonstrated in figure 1, with increasing internet addiction score, the scores in mean QOL and GPA decreases.

**Table 1. Quality of life and GPA comparison between two groups of internet addict and non-addicted**

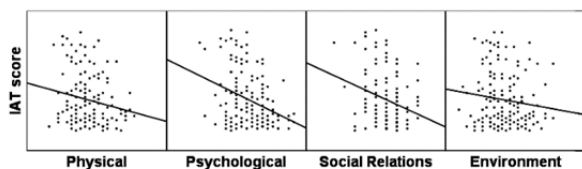
	Internet addict (n=28)	Normal (n=146)	P
Physical domain	57.40±12.52	64.09±13.75	0.007
Psychological domain	51.04±12.14	61.87±14.68	0.000
Social relation domain	52.98±12.67	59.65±11.27	0.006
Environmental domain	58.48±15.89	61.25±15.20	0.382
Average of quality of life domains	54.97±11.38	61.65±11.21	0.005
GPA	15.89±0.93	16.45±1.01	0.007



**Figure 1.** The associations between IA score, Average of quality of life domains (QOL) and GPA. IA score= $-3.58 \times \text{GPA} + 92.66$  ( $P=0.00$ ); IA score= $-0.30 \times \text{mean QOL} + 52.52$  ( $P=0.00$ ); GPA= $0.005 \times \text{Total QOL} + 16.05$  ( $P=0.45$ )



**Figure 3.** Internet addiction versus an average of the quality of life and GPA, the higher the internet addiction (the height of each column), the average of QOL and GPA decreases.



**Figure 2.** The relationship between IAT score and quality of life domains:  $r^2$  (physical domain)=-0.18,  $P=0.02$ ;  $r^2$  (psychological domain)=-0.35,  $P=0.00$ ;  $r^2$  (social relations domain)=-0.26,  $P=0.00$ ;  $r^2$  (environmental domain)=-0.13,  $P=0.08$ ;  $r^2$  (mean quality of life)=-0.27,  $P=0.00$ .

## Discussion

The main goal of this study was to investigate the quality of life in medical students with internet addiction. According to our results, quality of life was lower in the internet addicted medical students in the domains of physical, psychological, and social relation domains along with negative correlations between the scores. What is more, mean GPA was lower in the addicted group.

According to physical health domain, some factors may explain such negative association. The lack of exercise, as a result of the extreme use of the computer by keeping a sitting posture for a long time, along with prolonged staring at a computer screen may lead to some health problems such as low back pain, neck and shoulder pain, carpal tunnel syndrome, and eyestrain. It is significant that binge eating, weight concern and weight change have been described with a higher prevalence in internet addicted subjects (14). Moreover, problematic internet use is suggested to be associated with sleep problems including subjective insomnia and poor sleep quality (15), that may detriment the immune system, increasing one's susceptibility to various maladies (16).

Concerning social relation problems, internet addiction may considerably interrupt social and family connections since it acts as a substitute for social relationships; on the other hand, the person spends not enough time with friends and family, and he or she is unwilling to accomplish assigned tasks resulting in increased struggles with family members.

Regarding psychological problems, it is revealed that alexithymia, depression, anxiety, and novelty seeking scores are higher internet-addict persons; whereas self-directedness and cooperativeness scores are lower in this group (17); furthermore, internet addiction has been significantly associated with depressive symptoms, obsessive-compulsive symptoms, social phobia, hostility, and suicide ideation (18-20). In one study, the addictive internet user group had an approximately twice significant impairment of sleep, excessive daytime sleepiness, the presence of environmental stressors when compared to the non-addictive internet user group (21). Sleep impairment in medical students could be detrimental since it may increase the probability of medical errors.

In our study, academic performance, measured by self-reported GPA, was significantly lower in internet-addicted students. Problematic academic performance in such students may originate from a decline in study habits, since the internet may act as a substitute for study habits, and may cause a significant drop in grades, missing classes, and poor incorporation in subsidiary accomplishments.

The limitation of our study was that this was a cross-sectional study that could not approve the causal nature of associations: internet addiction has caused reduced quality of life in medical students or poorer quality of life in a group of medical students has forced them to use the internet much more than usual as a substitute for

some shortcomings of life; on the other hand, we used self-report methods in which people may not respond truthfully.

In conclusion, lower quality of life was seen in internet addicted medical students particularly in the domains of physical, psychological and social. Moreover, such students academically performed poorer in comparison with non-addicts. Since internet addiction is increasing at a rapid pace which may provoke considerable academic, psychological and social implications; as a result, it may require screening programs to the immediate finding of such problem to give consultations to prevent unwanted complications.

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