Internet addiction and its risk factors based on the theory of planned behavior among boy students

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Abstract

Internet use and internet addiction is increasingly considerable among the students and university students. In recent years, a phenomenon known as "Internet addiction" has been proposed. The current study aimed to determine the factors of internet addiction based on the planned behavior theory among boy students of the dormitories of Tehran University of Medical Sciences in 2012.

In the descriptive-analytical study that was carried out by cluster sampling on 150 boy students of the dormitories of Tehran University of Medical Sciences. The data collection instrument were Manuscript questionnaire including background questions and the questions of planned behavior theory structures (intention, attitude, subjective norms and perceived control behavior) which its reliability and validity were obtained and Young's internet addiction scale questionnaire. The data were analyzed by SPSS software (version 16) by Chi-square test, exact fisher test, ANONA and Correlation Coefficient test. The mean and standard deviation of internet addiction were 49.48 ±14.56. 86. 66% of the students had internet addiction behavior (mild, moderate and severe). There were significant relationships between attitudes and internet addiction scores and between perceived behavioral control and internet addiction scores. Finally most of the studied students have moderate and severe addiction to internet and appropriate interventions need to be done. These interventions should also be considered to improve the attitude and individual behavior control.

Keywords: Addiction, Behavior, Disorder, Student, Internet

Introduction

Extensive applications of Internet and its attraction have resulted in developing a phenomenon called "Internet addiction" in recent years [1]. In recent decades, using Internet has significantly increased. The number of Internet users is increasing worldwide, so that Internet has become a vital need [2]. The studies of National Youth Organization show that the number of Internet users in Iran had a growth rate of 90% and it increased from 1.7 million with the penetration rate of 5.2% in 2001 to 2.3 million with the penetration rate of 9.4% by the end of 2002. Due to the increasing influence of Internet in Iran, it is predicted that the number of Internet users in schools and universities increase to 15 million people per day. According to statistics, more than 35% of Internet users are young

people and the mean time spent on Internet is 52 min per week in general and over 57 min per week for people aged 21 to 24 years in Iran [3]. Ivan Goldberg raised Internet addiction disorder (IAD) for the first time in 1995 and recorded its diagnostic criteria [4]. Internet addiction develops a kind of behavioral dependence on Internet that has the following characteristics: the increasing cost of Internet and its related issues, unpleasant feelings (such as anxiety and depression) when not using Internet, tolerant and accustomed to the effects of Internet, denying problematic behaviors. IAD is considered as stress disorder or impulse control disorder such as pathological gambling and those who meet these criteria will find psychological, social and occupational problems [4]. In Zboralski's study titled "The prevalence of computer and Internet addiction among Polish students", it was found that computer and Internet addiction disorders are common among young people and a quarter of those studied suffered from the disorder [5]. According to studies, using Internet more than 3 hours daily is considered IAD. Internet addiction, regardless of whether it is considered a disease, mental disorder or social problem, is a chronic, pervasive and recurrent phenomenon with serious physical, financial, academic, family, social and psychological damages [4,6].Various studies conducted on students show that using Internet as well as the incidence and prevalence of Internet addiction is increasing [7,8]. Internet addiction in students is accompanied with some problems such as reduced interpersonal communications, irritation, aggression, and excitement [9,10]. Internet addiction will also lead to educational failure in this group [11,12]. The number of Internet users was reported 665 million people until December 2002 [13]. Statistics show that the number of Internet users in Iran has had a growth of 25 times [14]. Studies have reported the prevalence of Internet addiction between 0% to 22% in recent years [15,16].The number of Internet users in Iran had a growth of 3100% during 2000-2006 and the figure now amounts to 11.5 million [17]. Recent studies in Iran show that most Internet users are young people who use chat rooms (35%), play Internet games (28%),

check e-mails (30%), and use Internet for searching (25%) [18].Universities, especially medical universities have a major contribution to using Internet [19,20].This group of students uses Internet as a trusted resource for scientific purposes [21,22]. Medical Universities pay millions of dollars for Internet articles each year [23]. The prevalence of Internet addiction in students of Isfahan Payam-e-Nour University, Kohandej Branch in 2009 showed that 3.8% of students had a mild addiction to Internet, and 8.4% of these students reported that they experienced academic failure because of using Internet [24]. The study of Robert Kraut titled "Internet: A social technology that reduces social involvement and psychological well-being" indicates that increased Internet use is associated with reduced family communication and can lead to increased loneliness in people [25]. Human behavior plays an important role in prevention, control, treatment and rehabilitation of many health-related problems. Human behavior is a reflection of various factors and understanding this causal network to influence the effective factors on behavior is among very important issues that have been followed by behavioral scientists and psychologists over years. Health education as a center of all health activities to make the programs effective needs to understand the behavior and its risk factors to modify existing behaviors and also replacing them with new behaviors. Behavior can be studied through various theories and models. Using these theories in health education can help needs assessment, curriculum development and appropriate content. One of the theories of behavior change is the theory of planned behavior that has the constructs of intention, attitude, subjective norms, and perceived behavioral control. According to this theory, the most important predictor of behavior is individual's decision to act or behavioral intention. Intention is determined by three constructs: attitude, norms or subjective norms and perceived behavioral control. Attitude is people's overall assessment of a behavior's advantages and disadvantages. Subjective norms are people's perception

of social pressures from significant others to perform a behavior. Perceived behavioral control is highly equal to concept of self-efficacy and usually measures people's perception of ease or difficulty of performing the intended behavior. The theory of planned behavior was previously used to understand and predict certain health behaviors including exercise [26], nutrition [27], smoking [28], alcohol consumption [29], safe sexual activity [30] and health screening [31]. Internet is a harmless tool by itself, but its overuse and abuse can lead to Internet addiction [32]. Physical consequences, family problems, educational problems, occupational problems are among IAD complications. Young people comprise most Internet users [33].Considering the importance of students' mental and physical health as a productive class in society and lack of theory-based studies on reviewing factors influencing Internet addiction in this population, this study aimed to determine IAD risk factors based on the theory of planned behavior in male students in dormitories of Tehran University of Medical Sciences in 2012. The results of this study can be used in educational interventions program based on appropriate theories of learning to prevent IAD in these students.

Method

The current descriptive-analytical study was conducted on male students in dormitories of Tehran University of Medical Sciences. A total of 150 students in dormitories of Tehran University of Medical Sciences were selected by Cochran sample size formula with the known size of study population and using IAD percentage in a similar study of Pirzadeh et al. [24] at the rate of 3.8% and confidence coefficient 95%, and an accuracy of 0.6.The sample size was calculated 126 students, and increased to 150 for each group to take into account the probable dropouts. The cluster sampling method was used as a random selection of dormitories. Data collection tools included two researcher-made questionnaires containing 12 demographic items (age, educational degree, father's education, mother's education, father's job, mother's job, educational course, marital status, occupation, the number of units in the current semester, having PC or laptop) and 15 items were designed based on the theory of planned behavior (3 items on behavioral intention, 5 items on individual attitude, 4 items on subjective norms and 3 items on behavioral control) with a five-point Likert scale (strongly agree, agree, no opinion, disagree, and strongly disagree). The theory of planned behavior construction scores (intention, individual attitude, subjective norm, perceived behavioral control) were classified into three categories: good, fair and poor based on Mean ± Standard Deviation. The minimum and maximum scores were from 1 to 15 for the behavioral intention construct, from 1 to 25 for individual attitude construct, from 1 to 20 for subjective norm construct and from 1 to 15 for perceived behavioral control structure. The 20-item Young's questionnaire was used to examine IAD. IAD scores based on this questionnaire are classified into three categories: severe (80-100), moderate (50-79) and mild (20-49) (16, 18, 24). The validity of the researcher-made questionnaire was confirmed by content validity, so that a questionnaire was prepared by studying new resources in this regard and reviewed by a panel of ten experts and their corrective opinions were considered. Test-retest method and Cronbach's Alpha test were used to determine questionnaire reliability, so that the questionnaire was completed by 10 students out of the sample with similar conditions twice within ten days and Pearson correlation coefficient was calculated between scores of different parts of the questionnaire (Cut of rate=0.85).That questionnaire was completed by student volunteers in dormitories that were selected by random cluster method. Inclusion criteria for study included studying at the second semester onwards, residing at the dormitory, using Internet three hours in the past week and exclusion criteria included studying at the first semester, residing off-campus, using Internet fewer than three hours in the past week and unwillingness to participate in training classes. Data analysis was conducted by SPSS software (version 16), and chi-square test and correlation coefficient test. A written consent was taken from all participants and they were asked not to write their names on the questionnaire, and it

had just a code number. Subjects were assured that questionnaire data would be kept confidential and the results of the study will have only scientific applications.

Results

The mean and standard deviation of students' age were 24.80 ± 2.34 and 38% of them were BSc students, 46.2% were MSc students and 15.4% were PhD students. 16.2% of students were studying occupational health, 0.8% epidemiology, 7.7% environmental health, 3.8% occupational therapy, 0.8% Technical orthopedics and 69.9% were from other disciplines. On average, they had 12.5 course units. Other characteristics of students can be seen in Table 1.

Table 1 *The relative frequency distribution of demographic characteristics in the students surveyed*

Variable	Category				
Father's education	Illiterate	Primary school	Middle School	High school	University
	12.3%	19.2%	7.7%	29.2%	30.8%
Mother's education	Illiterate	Primary school	Middle School	High school	University
	22.3%	20%	6.9%	33.8%	16.2%
Father's job	Unemployed	Self-employed	Worker	Employee	Retired
	22.3%	40%	15.4%	20%	16.9%
Mother's job	Housewife	Self-employed	Employee	Retired	
	86.2%	8%	8.5%	2.3%	
Marital status	Single	Married			
	84.6%	13.1%			
Occupation	Employed	Just student			
	39.2%	60.1%			
Having computer	PC	Laptop	PC and Laptop	Neither	
	8.5%	57.7%	30.8%	3.1%	
History of dropping out	Yes	No			
	21.5%	70.8%			

Based on the findings, 86.66% of students had mild, moderate and severe addiction to Internet (Table 2).

Table 2 *The absolute and relative frequency distribution of IAD in the sample surveyed*

Category of internet addiction	Number	Percentage
not being dependent on Internet	20	13.34%
Mild dependence (20-49)	62	41.33%
Moderate dependence (50-79)	53	35.33%
Severe dependence (80-100)	15	10%
Total	150	100

The mean score for all constructs of the theory of planned behavior (intention, attitude, subjective norm, perceived behavioral control) in the students surveyed was moderate. The mean and standard deviation of construct scores are given in Table 3.

Table 3 *The mean and standard deviation of the theory of planned behavior constructs about IAD in the students surveyed*

Structures	Standard deviation	Mean	Category
Intention	7.70 (2.99)	Middle	(5.1 to 9)
Attitude	13.39 (2.28)	Middle	(8.1 to 16)
Subjective norm	7.67 (2.89)	Middle	(7.1 to 13)
Perceived behavioral control	8.38 (2.38)	Middle	(5.1 to 9)

ANOVA and chi-square tests showed that there is a significant relationship between IAD and mother's job and students' marital status (p=0.009 and p=0.04).

Based on Fisher's exact test, a significant relationship was observed between students' behavioral intention and their occupational status and the history of dropout (p=0.02 and p=0.026). According to ANOVA test, a significant relationship was observed between students' attitude and parents' educational level and occupation (p=0.02, p=0.01 and p=0.01). Based on this test, a significant difference was also seen between behavioral control and parents' educational level and father's job (p=0.02, p=0.001 and p=0.04).

As seen in Table 4, based on Pearson correlation coefficient test, a significant negative correlation was obtained between IAD score and the scores of individual attitude and the theory of planned behavior and between IAD and the construct of perceived behavioral control and the theory of planned behavior (p<0.008 and p<0.004). Based on this test, a significant positive correlation was obtained between the components of the theory of planned behavior, behavioral intention and perceived behavioral control (p<0.04), but no significant difference was observed between IAD score and students' age.

Table 4 *The relationship between IAD and the theory of planned behavior constructs in the students surveyed based on Pearson correlation coefficient test*

Elements		Intention	Attitude	Subjective norm	Perceived behavioral control	Internet addiction disorder
Intention	p.value	-				
	r					
Attitude	p.value	.106	-			
	r	.245				
Subjective norm	p.value	0612	.197	-		
	r	.046	.116			
Behavioral control	p.value	.04*	.178	.75	-	
	r	.185	.121	-.029		
IAD	p.value	.113	.008**	.833	.04*	-
	r	.15	-.246	.02	-.271	

Discussion

This study was conducted to determine determinants of IAD based on the theory of planned behavior in male students in dormitories of Tehran University of Medical Sciences in 2012. In this study, 86.66% of students had Internet addiction (with mild, moderate and severe degrees), while the study of Pirzadeh titled "Internet addiction in students of Payam-e-Nour University, Kohandej Branch, Isfahan" in 2009 showed that 3.8% of students had a mild addiction to Internet [24].According to Wang's study on Internet users in Korea in 2003, 3.5% of Internet users suffered from IAD, and 18.4% were probably suffering from IAD [33]. This finding can be a warning for the increase of this disorder among students and it is better to provide proper planning in this regard in collaboration with university authorities. In the study of Pirzadeh, the mean time of using Internet was reported 1

hour and 50 minutes by a normal user and 3 hours by users with mild addiction and in the current study the mean time of using Internet was 1 hour and 46 minutes by students who were not dependent on Internet and 3 hours by students who were dependent on Internet.

The mean score for all constructs of the theory of planned behavior (intention, attitude, subjective norm, perceived behavioral control) in the students was moderate. Therefore, promotion interventions in this regard are needed for these students.

The results of this study indicate that there is a significant relationship between IAD and mother's Job and students' marital status, such that this disorder was higher in students whose mother was a housewife and in single students, which is consistent with the study of Shaw and Bayraktar [34,35]. Accordingly, it is better that students whose mothers are housewife

and single students be prioritized in promotion interventions. In this study, a significant relationship was observed between students' behavioral intention and their occupational status and history of dropout, and between students' attitude and parents' educational level and job and perceived behavioral control and parents' educational level and father's job. Thus, students who were not employed or had a history of dropout had better intention score and students in higher degrees, and students whose parents were self-employed had better attitude score and students whose parents were illiterate or had middle school education or students whose fathers were self-employed had higher perceived behavioral control score. These findings can be used for the design of educational interventions to prevent IAD. In this study, a significant relationship was observed between IAD score and construct score of individual attitude and the theory of planned behavior so that students with higher IAD scores had lower individual attitude score. This finding is consistent with the study of Tsaiee on the analysis of attitude toward computer networks and Internet addiction of Taiwanese adolescents in 2001 [36].Although correlation values less than 0.5 are considered with caution, it seems that in planning to reduce IAD in students, more attention should be paid to their individual attitude construct. In this study, a significant relationship was observed between IAD score and perceived behavioral control construct, which is consistent with Parrott et al. study in 2008 and Regar et al. study in 2002 [37,38].Although correlation values less than 0.5 are considered with caution, this finding suggests that in planning to reduce IAD in students, more focus should be placed on perceived behavior control. In this study, a significant relationship was also observed between constructs of behavioral intention and perceived behavioral control.In meta-analysis studies conducted by Armitage and Sheeran on the theory of planned behavior, this result has also been proposed [39,40]. Correlation valuesless than 0.5 are considered with more caution. In this study, no significant correlation was observed between IAD score and age

variable, but in Vezshefer study titled "Internet addiction in cybercafé users in the city of Lar"a significant relationship was obtained between this variable and IAD score [12].In this study, no relationship was found between variable quality of IAD and father's job. In Ahmadi et al. study titled "Influences of family on the use of Internet" a significant relationship was observed between IAD and father's job [41]. The limitations of this study included self-reported data and the lack of participation of female students in the study (as the male researcher was not allowed to enter the female dormitories). Also, in the current study only the students of dormitories were examined and the results can only be generalized to male students in dormitories of Tehran University of Medical Sciences. Conducting a similar study in female dormitories and using interview to collect data are recommended in future studies.

Conclusion
Based on the results, 86.6% of students had moderate to severe IAD and appropriate interventions should be performed to resolve the issue. There is a negative correlation between IAD and individual attitude and controlled behavior and to reduce IAD in these students, individual attitude and controlled behavior should be promoted and in programs of reducing IAD in such students the promotion of these two constructs should be considered. Ultimately, the theory of planned behavior is an appropriate model for studying IAD in these students and designing intervention based on this theory is suggested to prevent IAD in these students.

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Contributions
Study design: BA, MS, DSH
Data collection and analysis: BA, MS, HH

Manuscript preparation: BA, MS

Conflict of interest
"The authors declare that they have no competing interests."

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