

Internet Addiction and Modeling its Risk Factors in Medical Students, Iran

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ABSTRACT

Background: Today's internet is a usual and common method for identifying and fulfilling unknown practices. Internet network has been prepared rapid and comfortable access to information. Internet addiction is a new and attractive subject that has been regarded as behavior-based addiction recently. **Purpose:** To estimate the prevalence of internet addiction and some of the related factors among medical students, Iran. **Materials and Methods:** An analytical cross-sectional study was conducted on 426 students selected through two-stage sampling method. Yang standard internet addiction questionnaire was used for data collection. After data entry, χ^2 , *t*-test, and Pearson coefficient statistical tests were applied. 0.05 was considered as the significance level. **Results:** The overall prevalence of internet addiction was 10.8%, with moderate and severe internet addiction equal to 8% and 2.8%, respectively. Mean and standard deviation of Yang internet addiction score was calculated as 32.74 ± 14.52 . Internet addiction was associated with sex, marital status, father's job, rate of knowledge about computer and internet, and educational level ($P < 0.05$). But it was not associated with the parents' education, residential area, field of study and level, and school of education ($P > 0.05$). **Conclusion:** Because internet addiction leads to wasting of the students' leisure time and also useful time, it affects the educational situation inversely. Some measures should be taken to plan and improve the use of internet.

Key words: Addiction, educational situation, internet, students, Yang

INTRODUCTION

Internet is growing worldwide for information and is a user-friendly communication medium that is cost-effective and fast useful tool in education.^[1] Today, internet is a global system that is increasingly used by all people as one of the most important devices for access to information in the world, especially young

adults and medical students use it as a source of health-related information.^[2-5] So, it has become an important part of daily life for college people for both academic and recreational purposes.^[5,6] The report of a recent study across the world which highlights the high-speed and inexpensive internet penetrance in South Korean households as being equal to 90%. Also, there has been more than 1300% increase in the number of internet users in developing countries, Africa, and the Middle East from 2000 to 2009.^[3]

Internet addiction is a new and attractive subject considered as a behavior-based addiction in recent years.^[7] Although computer and Internet are the least used source, Internet is a tool for any person in any major city for communication and connection with other coworkers and also for imparting information.^[4] Yang believed that addiction is applicable to internet

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users, because internet addiction symptoms are the same as those in alcohol and drug addiction.^[8]

Severe internet addicts use it for film, music, cartoon, computer games, social sites, and chat rooms, but normal users use it for news, events, trade of goods, and educational and universal sites. Also, internet addicts use internet in a adrift manner and in private places.^[9]

Today's internet is a crucial tool for many of people for acquiring valuable information.^[10] Researches showed that the prevalence of internet addiction varies from 1.5% to 25% in different population^[11-14] and the quality and quantity of internet use in these users are associated with their skills in using computer and internet, and duration and severity of internet use.^[15,16] The internet addiction is related to some factors including sex, mental health, and other psychological symptoms, deficiency in social support, neurotic personality characteristics of users, skill in the use of internet and its use at night.^[14,17-19]

Universities have a common group of internet users. This group consider internet as a reliable source and use it for private and occupational objectives.^[20] So, medical universities pay millions of dollars for buying full-text articles and books.^[21] But internet abuse and the students' curious search in careless manner alienate them from original mission, leading to the waste of their leisure time. This study was conducted to estimate the prevalence of internet addiction and some of the related factors among Arak medical students, Iran.

MATERIALS AND METHODS

An analytical cross-sectional study was conducted on 426 medical students of Arak University in spring, 2009. The inclusion criteria were being in second-term and higher and consent for participating in the study. Sampling was performed using two-stage method; first, the students were selected through stratified proportional sampling method based on level and school. Then in each stratum, the prone students were selected by random sampling method. There were eight strata in our study with approximately equal population in each stratum. Calculation of the sample size was performed based on the results of Dargahi's study adapted from the Yang score.^[6] In calculation of the sample size, α and precision(d) were considered as 0.05. Statistical population consisted of all of the students studying in Arak University of Medical Sciences in the data collection period. Ethics committee of Arak University of Medical Sciences approved the study and informed consent was taken from the students before collecting the data.

A two-section structured questionnaire was applied for data collection. The first section contained background variables such as age, sex, educational field and course, skill rate in using computer and internet, the use of different sites, their purposes of searching, and other related questions. The second section was the reliable and standard Yang questionnaire for measuring internet addiction containing twenty questions of Likert type. Based on some studies, this questionnaire is a valid and reliable instrument for use in further research for detection of Internet addiction.^[22] This questionnaire was validated in Persian language by Dargahi.^[6] The internal consistency of the questionnaire in this study was equal to 0.89.

The Persian language version of the questionnaire was distributed among eligible participants. Each participating acquired one score from one (never) to five (always) based on the response to questions and total score gained from summing of all the questions. The minimum and maximum scores were 20 and 100, respectively. The participants were divided into three levels based on their score, i.e., less than 50 as normal, 50 to 79 as light, and higher than 79 as severe addicts. In this study, data were analyzed based on two groups of normal and addict.

After collecting data and coding and entering to SPSS software, analysis was done by *t*-test, χ^2 , and spearman correlation coefficient tests. Significant level considered at 0.05.

RESULTS

The overall prevalence of internet addiction was calculated equal to 10.8% moderate and severe internet addiction being 8.1% and 2.8%, respectively. In average, the students had worked 4.63 ± 3.87 hours and 3.36 ± 3.46 hours by computer and internet, respectively. Also, the mean of Yang questionnaire score was 32.74 ± 14.52 .

Of all the participants, 64.9% were females and 76.6% lived in dormitory. The most important objectives of the students in using internet were research and scientific surveys (48.4%), computer games and hobbies (20.5%), checking email (9.8%), political and social news (6.5%), and chat rooms (5.6%).

The results in Table 1 showed that the mean age in the beginning of the use of internet and internet addiction score obtained from Yang questionnaire was significantly different between normal and addict students ($P < 0.05$), but it did not show any difference by the age of the students ($P > 0.05$). Also, internet

addiction had a significant association with educational term ($P<0.05$), but it did not show any significant association with educational field, school, and level of the students ($P>0.05$).

As shown in Table 2, the students' sex, marital status, father's occupation, and use of chat rooms had a significant association with internet addiction ($P<0.05$), but no significant relationship was found among residency place, living in the dormitory, research practices, and parents' education with internet addiction ($P>0.05$). Also, the students' knowledge

Table 1: Age, first use age of internet, and Yang score of the study participants

	Normal students	Addicted students	P value
Student age	20.91±1.33	21.3±1.94	0.174
First using age of internet	16.8±2.38	15.51±2.74	<0.001
Internet addiction Yang score	28.38±6.55	68.52±14.47	<0.001

Table 2: Association of demographic variables with internet addiction in the participants of the study

Variates	Normal students N (%)	Addicted students N (%)	P value
Gender			
Female	279 (93)	21 (7)	<0.001
Male	133 (82.1)	29 (17.9)	
Marital status			
Single	372 (90.3)	40 (9.7)	0.032
Married	40 (80)	10 (20)	
Birth place			
City	371 (90)	41 (10)	0.074
Village	41 (82)	9 (18)	
Residency place			
Private home	92 (85.2)	16 (14.8)	0.091
Dormitory	320 (90.4)	34 (9.6)	
Having research work			
Yes	108 (26.6)	16 (32)	0.257
No	298 (73.4)	34 (68)	
Father job			
Worker	30 (75)	10 (25)	0.032
Staff	130 (90.3)	14 (9.7)	
Free	165 (90.7)	17 (9.3)	
Other	79 (89.8)	9 (10.2)	
Father education			
Illiterate	44 (88)	6 (12)	0.212
Mid-school	150 (89.3)	18 (10.7)	
Diploma	131 (92.3)	11 (7.7)	
University graduated	75 (83.3)	15 (16.7)	
Mother education			
Illiterate	91 (91)	9 (9)	0.137
Mid-school	151 (91)	15 (9)	
Diploma	115 (59.8)	13 (10.2)	
University graduated	45 (80.4)	11 (19.6)	
Using from chat room			
Yes	90 (80.3)	22 (19.7)	<0.001
No	314 (91.8)	28 (8.2)	

about computer and internet, use of internet in privacy, and repetition in internet use showed a significant difference between normal and abnormal students ($P<0.05$), though addicted students intended to use internet in private places and repeatedly [Table 3].

Logistic regression analysis showed that age less than 20 years, male gender, and use of chat rooms were the most important predictors of internet addiction among the students [Table 4].

DISCUSSION

The overall prevalence of internet addiction was equal to 10.8% and moderate and severe internet addictions were 8.1% and 2.8%, respectively. In Lam *et al.*'s study,^[17] moderate internet addiction prevalence was 10.2% and severe internet addiction was 0.6%, which is similar to our results.

Table 3: Association between computer and internet awareness and internet usage in the participants of the

Variates	Normal students	Internet related students	P value
Rate of knowing about ICDLs skills			
Very little	152 (92.7)	12 (7.3)	<0.001
Low	85 (94.4)	5 (5.6)	
Average	115 (91.5)	11 (8.5)	
High	20 (69.7)	6 (23.1)	
Very high	13 (46.4)	15 (53.6)	
Rate of knowing about internet			
Very little and low	134 (95.7)	6 (4.3)	<0.001
Average	187 (90.8)	19 (9.2)	
High	64 (88.9)	8 (11.1)	
Very high	15 (64.9)	17 (53.1)	
Using internet on privacy			
Very little	108 (90)	12 (10)	<0.001
Low	102 (96.2)	4 (3.8)	
Average	105 (90.5)	11 (9.5)	
High	52 (89.7)	6 (10.3)	
Very high	33 (66)	17 (34)	
Frequency of internet using			
Once a day	64 (84.2)	12 (15.8)	<0.001
Several times a day	35 (64.8)	19 (35.2)	
Several times a week	137 (91.3)	13 (8.7)	
A few times a month	49 (98)	50 (2)	
Occasionally	116 (95.1)	6 (4.9)	

Table 4: Results of logistic regression for factors affecting internet addiction

Statistic variable	OR	P value	Confidence interval	
			Lower	Upper
Age less than 20 years	3.92	0.002	1.63	9.42
Male gender	3.51	<0.001	1.79	6.89
Using from chat room	2.73	0.004	1.38	5.40

Johansson *et al.*, based on Yang questionnaire, reported 10.66% internet addiction prevalence among Norwegian 12- to 18-year-old young people.^[12] But in a study on Korean students, this prevalence was calculated to be 20%,^[13] that is two-fold our results, because their study population contained younger age groups. Our results and those of other studies^[14,23,24] showed that the younger age is a related factor for internet addiction. It is noticeable that in Deng *et al.*'s study,^[11] the internet addiction disorder prevalence was 5.52%, which was less than that of our study.

The most important objectives of the students in the use of internet were research and scientific surveys, computerized games and hobbies, checking of email, political and social news, and use of chat rooms, respectively. In Simos *et al.*'s^[25] study on Greek adults, computerized games had the most use and news services were in the second rank of internet use.

Our results showed that male gender was one of the main predictors of internet addiction; so, there is an increase of 3.5-fold probability of internet addiction as compared with females. In other studies such as those of Deng *et al.*,^[11] Tsai *et al.*,^[14] and Ceyhan in Turkey,^[18] a significant difference was observed between the two sexes.

Age less than 20 years was one of the other risk factors for internet addiction; so, younger students were 4-fold at risk as compared with those over 20 years of age for internet addiction. In Dargahi's study,^[6] younger people used internet 3-fold more than other people. In other studies in Tiwan^[14] and China,^[24] this disorder has shown a significant association with age and study in lower courses.

Use of chat rooms was another main predictor of internet addiction which increased the probability of the problem to 2.7 fold. This finding is similar to other studies showing that addicted people to internet use chat rooms more than any other activities. Dargahi showed that chat room conversation in severe addict users is more than three-fold that of other users and in these people, using film, music, games, and internet conversation is higher.^[6]

In the univariate analysis, it was observed that internet addiction rate is correlated with internet and computer knowledge rate of students directly. In other studies, the level of internet addiction increases by the level of the students' awareness about computer and internet. Dargahi's study also obtained similar results.^[6] He showed that the number of students using Internet was associated with their skill in the use of Internet, educational level, field of study, and number of related

scientific works. But this study did not show any association between Internet addiction, field and level of education, and research activities; some of these differences can be attributed to different study population in the two studies.

Internet use in the privacy and frequency of Internet use showed a significant difference between two groups of students, normal and internet addict. Therefore, addicted students are more interested to use from it in privacy. Other studies have shown a significant relationship between loneliness, lack of confidence, lack of social skills, and Internet use.^[26,27]

However, the overall prevalence of internet addiction among Arak medical students is not much different from other regions, but because of the widespread and fast use of internet and computer, there is the threat that its prevalence increases. Since Internet addiction was related to male gender, skill and knowledge in the use of internet and computer, universities should try to educate the students to use internet meaningfully and appropriately. Also, the students should be encouraged to use internet for review of academic papers and cultural sites and use internet during their leisure time.

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