



Internet Addiction, Prevalence, and Related Factors: A Study on Newly Arrived Students of Hormozgan University of Medical Sciences

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Abstract

Background: Despite the advantages of the internet for human life, nowadays, as a double-edged sword, this new communication technology has caused problems such as internet addiction, especially for the young people and students. Identifying the factors related to such an addictive behavior is of especial importance, both because of its general consequences and because of the specific nature of the student stratum. The present study was conducted to identify the extent of and factors related to internet addiction in students of Hormozgan University of Medical Sciences.

Materials and Methods: This descriptive-analytical study was conducted in the academic year 2013 on newly arrived students of Hormozgan University of Medical Sciences (N=253). The data collection instrument was a two-part questionnaire including students' demographic characteristics, and questions related to internet addiction assessment (internet addiction test [IAT]), in which a score above 49 was related to pathological internet addiction and a score below or equal to 49 was considered normal. The analyses were performed using SPSS statistical software version 16.0. The significance level of 0.05 was considered for all the above tests.

Results: The data analysis indicated that 196 (96%) respondents were with non-pathological internet addiction and 8 respondents (4%) had pathological internet addiction. There was also a significant relationship between age and internet addiction; however, sex and marital status variables had no significant relationship with this phenomenon.

Conclusion: Based on the results of this study, the participants mostly had mild levels of internet addiction, which can be related to the time of study regarding newly arrived students and concerns about it such as the entrance exam. Students who are about entering the university spend most of their time reviewing the required courses for the entrance exam due to the importance of the exam, and it seems that they often less likely use the internet. Nonetheless, it is important to consider the internet addiction as a problem regarding the overall results of studies in this area.

Keywords: Internet addiction, Student, Medical sciences, Iran, Newly arrived

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Introduction

Social interactions resulting from access to the World Wide Web have expanded significantly with the advent of globalization. The internet is omnipresent: at home, at school, at university, and in fact everywhere, and the number of internet users is surprisingly increasing. The number of internet users was 665 million worldwide up to the December 2002 though the statistics varies slightly in Iran. During 2000-2006, the number of internet users

increased by more than 3100% in Iran, touching about 11 million people (1).

With a population of 76932300 in 2010, and 43.2% penetration coefficient, Iran accounts for the highest Internet penetration (52.5%) in the Middle East (2).

Before its publicity, internet was mostly regarded as a means of secret correspondence to achieve relationships, but in a short period of time, it developed widely and became an essential tool in human life (3). Following

this development, and with the internet globalization in the early 1990s, the psychologists focused on the issue of excessive and pathological use of this technology (4).

The concept of internet addiction was put into consideration since 1995 (5). A psychiatrist at Columbia University, Ivan Goldberg, first coined the term internet addiction and recorded its diagnostic criteria. With this action, attention turned to a non-adaptive behavior, a behavior that is called “dependence” according to psychological literature and “addiction” in legal literature (6).

Addiction refers to a situation where people become physically and psychologically dependent on a particular substance, especially drugs. Many researchers also use the concept of addiction to justify certain types of suspicious behavior, because the findings and symptoms of addiction are also seen in this case. Non-substance types of addiction are classified as behavior-oriented addictions, to which internet addiction belongs as an example.

According to Young, internet addicts have certain symptoms, for example, experiencing consequences that are exactly the same as those of alcoholism, betting, gambling, shopping, and other obsessive-compulsive behaviors. In this addiction, the individual becomes addicted not to the substance but to what he does on the computer, or to the feeling he gets when working with it (1, 7).

Based on the American Psychiatric Association, internet addiction is defined as a pattern of internet use that disrupts the performance and is associated with unpleasant internal conditions over a two-month period, and proposes seven criteria to identify it, and that having at least three criteria over the course of two months is considered a symptom of internet addiction:

1. Tolerance
2. Quitting symptoms
3. Using internet lasts longer than the person initially intended
4. Having continuous desire to control behavior
5. Spending significant time on internet-related issues
6. Reducing social, occupational, and recreational activities for using internet
7. Continuing its use despite being aware of its negative effects (6).

Numerous studies have shown that 5%-10% of the world's online population were addicted during their study. In terms of age, young people account for the highest number of internet addiction (1, 7). Students are not exempt from this rule, because internet is an important resource for students to access scientific literature at universities of medical sciences, and students use it in the best way to meet their professional and personal goals.

Based on the studies conducted, internet addiction in students ranges from 9.5% to over 30% (1, 3, 8, 9).

Internet addiction is referred to as the leading addiction to all behavioral addictions because of its increasing

growth and adverse effects (10).

It can be said the term “pathological internet use” is more appropriate than other terms. He believes that using the internet is not an addictive behavior by itself, but there are a set of cognitive and behavioral factors in the internet use that negatively affect a person's life (6).

Despite the advantages of the internet for human life nowadays, as a double-edged sword, this new communication technology can cause problems such as internet addiction, especially for the young adults and students (10). Excessive and addictive use of the internet can be associated with reduced mental health and disability (1, 11, 12).

Thus, identifying its dimensions can help university planners to create the possibility of effective intervention, ultimately leading to the health and development of society, and obviously, if the subject of such identification is newly arrived students, becoming important in terms of possibility and opportunity of intervention. Therefore, the present study aimed at determining the extent of internet addiction and the correlations in newly arrived students of Hormozgan University of Medical Sciences.

Materials and Methods

This descriptive-analytical cross-sectional study was conducted in the academic year 2012-2013 on newly arrived students entering Hormozgan University of Medical Sciences. Based on the statistics reported by the Director General for Education at the university, totally 735 students enrolled to the university for this academic year.

The sample size in this study based on the Cochran formula was 253 students, taking into account the maximum possible value ($p=0.5$ and $q=0.5$). The students were selected through convenience sampling.

The data collection tool was a two-part questionnaire containing students' demographic characteristics, as well as questions for internet addiction measurement.

The Kimberly Young's internet addiction test (IAT), developed in 1998, was used to measure internet addiction. This questionnaire consisted 20 items, with a 5-point Likert scale. This test was designed based on the criteria of internet gambling and alcohol dependence. The scores obtained for a person could place them in one of the three categories: a normal internet user, a user who suffers problems through overusing internet, and an addicted user who has become dependent and needs treatment.

Several studies have verified the validity and reliability of this questionnaire. Vidiando and McMurrin, (as cited in Alavi 2009) for example, mentioned a strong face validity for this questionnaire. Moreover, they obtained the effect on performance by analyzing the six factors of prominence, excessive use, neglecting job duties, lack of control, social problems and effect on performance, all of which indicate its validity. In their study based

on the Persian version of the questionnaire, Alavi et al obtained three types of reliability (retest $r=0.79$, internal consistency $\alpha=0.88$ and bisection $r=0.82$, and validity 0.5) (1, 13).

In this study, a score below or equal to 49 was considered non-pathological internet addiction and a score above 49 was considered internet addiction. For data collection, after explaining the research purpose and its benefits for the units under study, the researchers obtained the verbal consent from the respondents as part of the study. The research units were assured that the respondents' personal information and the contents of the questionnaires would be kept confidential. After removing the distorted questionnaires, 300 questionnaires were finally analyzed. Descriptive statistical methods including frequency, percentage, mean, and standard deviation were used to analyze the data. Analytical statistical methods including chi-square, Mann-Whitney U test, Kruskal-Wallis, and Spearman's correlation coefficient were also used.

The analyses were performed using SPSS statistical software version 16.0. The significance level of 0.05 was considered for all the above tests.

Results

After excluding the incomplete or distorted questionnaires, 204 completed questionnaires were analyzed.

Among the respondents to the sex option, the girls accounted for 62.1% (118) of respondents and the rest (72 students) were boys. Additionally, among the respondents to the marital status option 172 of respondents (93.%) were single and the rest ($n=13$) were married. The youngest respondent was 17 and the oldest was 40. The mean and standard deviation of age was 19.75 ± 2.909 . The academic field of the most newly arrived students was medicine ($n=63$, 28.4%) and the least number of students ($n=8$, 4%) were accepted in the field of health.

The occupation of fathers of most respondents ($n=112$, 53.8%) was employee and that of mothers ($n=180$, 84.9%) was homemaker. In terms of parental education, the highest frequency was related to high school education and lower [70 fathers (36.5%), and 86 mothers (50.3%)] (Table 1).

The lowest score obtained for internet addiction was 20 and the highest was 56. The mean score of the participants in this study was 26.53 ± 6.9 , which seems to be a low score.

Based on the results of this study, 196 (96%) respondents were with non-pathological internet addiction and 8 respondents (4%) had pathological internet addiction.

Using the Fisher exact test, the relationship between sex and the level of internet addiction was examined in this study, which did not indicate a significant relationship ($P=0.055$) (Table 2). Moreover, in this study, the mean scores of internet addiction in females and males were 26.15 ± 6.68 and 27.24 ± 7.99 , respectively, which was not significant based on Mann-Whitney test (test statistics

Table 1. Description of Demographic Variables of Participants

Variable		Frequency	Valid Percentage
Sex	Female	118	62.1
	Male	72	37.9
Marital status	Single	172	93
	Married	13	7
Major	Nursing	34	15.3
	Radiology	10	4.5
	Radiology	9	4.1
	Laboratory sciences	20	9.0
	Midwifery	17	7.7
	Anesthesia	18	8.1
	Dentistry	13	5.9
	Medicine	63	28.4
	Surgery room	18	8.1
	Health information technology	11	5.0
Father's education	Hygiene	8	4
	High school and lower	70	36.5
	Diploma	66	34.4
	Associate	17	8.9
	Bachelor	27	14.1
	Master	9	4.7
	Doctorate	3	1.6
	High school and lower	86	50.3
	Diploma	56	32.7
	Associate	6	3.5
Mother's education	Bachelor	18	10.5
	Master	3	1.8
	Doctorate	2	1.2
Father's occupation	Self-employed	96	46.2
	Employee	112	53.8
Mother's occupation	Homemaker	180	84.9
	Employee	32	15.1

3.8, $P=0.022$).

The comparison of the median scores of students in different fields based on the Kruskal-Wallis test ($P=0.89$) and the comparison of the level of internet addiction in students of different fields did not show any significant difference based on the chi-square test ($P=0.131$).

Investigating the relationship between marital status and the level of internet addiction using the chi-square test did not demonstrate a significant relationship ($P=0.0552$) (Table 3), Furthermore, in this study, in order to compare the scores of internet addiction between single and married groups, the mean scores of the two groups were examined using Mann-Whitney test; no statistically significant difference was obtained in this regard ($P=0.668$).

The median level of internet addiction between students whose parents (fathers and mothers) were employee and those having self-employed parents was also examined using the Mann-Whitney test, and found that there was no significant difference between two groups in this

Table 2. Relationship Between Sex and the Level of Internet Addiction

Sex * Level of Internet Addiction Crosstabulation				Chi-square Tests				
Level of Internet addiction				Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	
	Non-pathological	Pathological	Total					
				Pearson's correlation, Chi-square	4,886	1	0.027	
Sex	Female	116	2	118	Continuity correction	3,378	1	0.066
	Male	66	6	72	Likelihood ratio	4,759	1	0.029
	Total	182	8	190	Fisher's exact test			0.055

Table 3. Relationship Between Sex and the Level of Internet Addiction

Marital status *Level of Internet addiction Crosstabulation				Chi-square Tests				
Level of Internet Addiction				Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	
	Non-pathological	Pathological	Total					
				Pearson's correlation, chi-square	0.632	1	0.427	
Marital status	Single	164	8	172	Continuity correction	0.008	1	0.930
	Married	13	0	13	Likelihood ratio	1.193	1	0.275
	Total	177	8	185	Fisher's exact test			1.000

respect ($P=0.172$).

Parental educational level did not show any relationship with the level of internet addiction of individuals ($P=0.778$ for fathers and $P=0.328$ for mothers).

Additionally, there was a rather weak negative and non-significant relationship between the participants' age and their internet addiction score based on Spearman's correlation coefficient ($r=0.031$ and $P=0.694$).

Discussion

Based on the results of the study, most respondents were with non-pathological internet addiction and a small percentage (4%) had pathological internet addiction. The mean internet addiction score was 26.53 ± 6.9 . In the study of Vahabi et al, on the student of Kurdistan University of Medical Sciences, 4.4% of students were highly dependent on the internet (14). The study of Mohammadbeigi and Mohammadsalehi on the students of Arak University of Medical Sciences obtained a score of 32 ± 14.52 too (7). The present study is almost in line with the results of these studies. This result can be justified by the approximate similarity of the type of universities.

Pirzadeh found mean scores of 54.27 in boys and 58.43 in girls in terms of internet addiction (11). This result highly disagreed with the results of the present study. This difference in results may be attributed to the difference between the geographical environment and the type of universities studied.

The findings of a study by Khajeh Mougahi and Alas showed a rate of 86% for internet addition (9). Regarding this significant difference, the difference in scoring criteria and the point of intersection of internet addiction level is important. In this study, the score 0 - 20 indicates a lack of internet addiction, 21 - 49 a mild addiction, 50 - 79 a pathological addiction, and 80 - 100 a severe addiction, based on which 56% had a mild addiction, 28% had a pathological addiction, and 2% had a severe addiction.

The sampling method of the study as well as the study population referring to the internet cafe were another reasons for this difference. Obviously, these students showed a higher rate of internet addiction than normal students.

Dargahi and Razavi (3), and Vizesfar reported 30% and 19.7% of internet addiction, respectively (5). Differences in the results of these studies and those of the present study were related to the differences in the study sample (people referring to internet cafes).

In the study of Ghassemzadeh and Shahraray (4), a rate of 3.8 was reported, which is justified by the age of the high school students being studied, and the similarity of this community to the present study in terms of age.

According to the results of this study, the rate of internet addiction had no significant relationship with the students' academic program and the field. This finding corroborates the results of a study by Mohammadbeigi and Mohammadsalehi (7). Apparently, the emergence of the phenomenon of globalization and the growing trend of internet use by students have become so widespread that they have little to do with their field of study.

The results of this study showed that 5.4% of males and 3.6% of females had second-degree internet addiction though this difference was not significant. The results of a study by Hasanzadeh et al also showed that the rate of internet addiction in boys was significantly higher than that of girls (16). Based on a study by Fayyazi and Razavie, no significant correlation was found between sex and internet usage (17). The results of the present study are also significantly consistent with the findings of Khosrowjerdi and Mirzaei (15). The difference between the results of these two studies can be attributed to the difference in the studied communities.

In this study, the participant age showed a significant relationship with the level of internet addiction. This result lends support to the results of Hassanzadeh et al

(16). However, it disproves the study of Mohammadbeigi and Mohammadsalehi (7). Such discrepancy could be justified by the low distribution of participant age in this study in terms of the homogeneity of their age.

Comparing the scores of internet addiction in both single and married groups did not show a significant difference in this study. These results significantly differ from the findings of Mohammadbeigi and Mohammadsalehi (7), which can be related to the difference in sampling and the study population.

On one hand, in the studied students, since the participants were selected from newly arrived students who had previously been involved in the issue of entering and preparing for university, it seems that regardless of sex, compared to other young people, not most of the students did spend much time on the internet, and on the other hand, they did not report internet addiction. Therefore, it is reasonable to expect that parents' occupation and education level have nothing to do with the level of addiction.

Conclusion

The results of this study did not show any unusual or high rate of internet addiction in newly arrived students. However, considering the general results of studies in this field, the phenomenon of internet addiction should be considered as an issue that affects a significant number of young people.

Conflict of Interest Disclosure

Not applicable.

Ethical Statement

The Ethics Committee of Hormozgan University of Medical Sciences approved the study (Ethical code: HUMS.REC.1394.196).

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Authors' Contribution

PR and NK conceived of the presented idea. PR developed the theory. MM and FM collected the data and verified the analytical methods. PR supervised the findings of this work. All authors discussed the results and contributed to the final manuscript.

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Informed Consent

Informed consent was verbally obtained from all the participants.

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