

Internet Addiction, Prevalence and Epidemiological Features in Mazandaran Province, Northern Iran

F Kheirkhah¹, A Ghabeli Juibary^{1*}, A Gouran²

¹Department of Psychiatry, Shahid Yahyanejad Hospital, ²Medical Student, Babol Medical University, Babol, Iran

Abstract

Background: The concept of internet addiction, also called internet addictive disorder or pathological internet use, entered the medical lexicon in 1995. This study was performed to investigate the prevalence of internet addiction among north Iranian internet users and to explore the epidemiological features associated with internet addiction.

Methods: 1856 internet user volunteers' from Mazandaran Province cities were surveyed, using Farsi version of Young's Internet Addiction Questionnaire during 2005-2006.

Results: 424 dependent users were enrolled. The incidence rate of internet addiction was 22.8%. Dependent users spent a mean of 14.4 hours per week (SD=13.7) compared to non-dependent users who spent a mean of 9.0 hours per week (SD=10.4). The dependent users were 256 males and 165 females. Dependent users predominantly used the two-way communication functions available on the internet like chat rooms.

Conclusion: The present study suggests that internet addiction is common among northern Iranian internet users. In addition, chat rooms are most addictive web environment among this population.

Keywords: Internet addiction; Young's internet addiction questionnaire; Prevalence; Iran

Introduction

As internet has increasingly become part of our lives, internet addiction disorder has received much attention. Internet addicts may withdraw from social and interpersonal interactions. Their family relationships and academic or occupational functioning may deteriorate. Several withdrawal symptoms including nervousness, agitation, and aggression have been identified, as well as an addiction syndrome that includes the presence of withdrawal symptoms, increasing tolerance, and loss of control. A high rate of comorbid mental disorders has also been reported, especially depressive symptoms and social impairment.¹

The concept of internet addiction, also called internet addictive disorder or pathological internet

use, entered the medical dictionary in 1995. More and more authors have recently been preoccupied with it, and the majority conclude that this condition, on which some people cast doubt a few years ago, well and truly exists.²

Recent reports indicated that some on-line users were becoming addicted to the internet in much the same way as becoming addicted to drugs, alcohol, or gambling, which resulted in academic failure, reduced work performance, and even marital discord and separation.^{3,4} Clinical research on behavioral addictions has focused on compulsive gambling, overeating, and compulsive sexual behavior. Similar addiction models have been applied to technological overuse, computer dependency, excessive television viewing, and obsessive video game playing.^{3,5} Therefore, the purpose of this survey was to identify the extent of the problem and its related features in the north of Iran. By using Pathological Gambling as a model, internet addiction can be defined as an impulse-control disorder which does not involve an intoxi-

*Correspondence: Ali Ghabeli Juibary, MD, Department of Psychiatry, Shahid Yahyanejad Hospital, Babol Medical University, Babol, Iran. Tel: +98-151-3243059, Fax: +98-151-3243059, e-mail: alighabeli@yahoo.com
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cant.^{3,6-8} With the popularity and wide-spread promotion of the internet in Iran, this study first sought to determine internet addiction prevalence, behavior of internet users and related epidemiological features.

Materials and Methods

A cross-sectional survey design was followed, using a self-selected group of internet users. The sampling frame was from the total population of internet users living in all cities of Mazandaran Province. Six cities were randomly selected from all cities of Mazandaran Province with access to internet connection and the samples were taken during 2005 and 2006. The participants were volunteers from coffee nets, internet service provider subscribers, college students, internet service members who filled in a printed questionnaire in Mazandaran Province cities in the north of Iran.

An exploratory survey consisting of both open-ended and closed-ended questions was constructed for this study and was administered by a self-completed questionnaire. The survey administered a Diagnostic Questionnaire (DQ) containing the eight-item classification list in Farsi language that modified the criteria for pathological gambling to provide a screening instrument for addictive internet use known as Young's Internet Addiction Questionnaire.

The subjects were asked questions about how long they have used the internet, how many hours per week they estimated to spend on-line, and what types of applications they most utilized. Lastly, demographic information about each subject such as age, gender, highest educational level achieved, duration of internet usage per week, amount of money spent for on-line service fees, marital status, place of birth, and vocational background were also gathered.

Respondents who answered "yes" to five or more of the criteria were classified as addicted internet users (Dependents) and the remainders were classified as normal internet users (Non-Dependents). The cut off score of "five" was consistent with the number of criteria used for Pathological Gambling. Additionally, there are presently ten criteria for Pathological Gambling, although two were not used for this adaptation as they were viewed non-applicable to internet usage.^{9,10} Therefore, meeting five of eight rather than ten criteria was hypothesized to be a slightly more rigorous cut off score to differentiate normal from addictive internet use. It should also be noted that the term internet is used to denote all types of on-line activity.³

The internal consistency of the factors was calculated with Cronbach's alpha (α), a value between 0 and 1. If different items were supposed to measure the same concept, the internal consistency (reliability) would be greater than or equal to 0.6.

The construct validity was measured by calculating the scale scores for every factor (after any necessary reverse coding) and subsequently calculating Pearson correlation coefficients between the scale scores. The construct validity of each factor was reflected in the scale scores that were moderately related.

All data were analyzed by statistical package for social sciences software for windows version 13.0 (Chicago, IL, USA). We used t-test, comparison of means between groups, and Chi-Square test in frequency analysis.

Results

The respondents were 944 males and 909 females. Their age was 20.25 ± 4.19 years with a range of 8 to 56 years. The age of the dependent group was 19.42 ± 5.27 years and for the non-dependent group was 20.48 ± 3.80 years. There was a significant difference between age and internet addiction ($p < 0.001$). Educational and occupational backgrounds included 25.9% school students, 54.7% university students, 6.1% employees, 5% self-employed cases, 7.2% unemployed ones and 1.1% others. 424 dependent users comprised 22.8% of the sample population. The sample of dependent users included 256 males and 165 females. There was a significant difference between gender and internet addiction ($p < 0.001$). As to the place of birth of the volunteers, 87.9% lived in towns and 12.1% in villages. The difference between the two groups was not significant. Marital status of the volunteers showed that 13.2% of them were married, 84.8% single and 2% divorced. The sample of dependent users included 10.5% married, 85.5% single and 4% divorced. There was a significant correlation between marital status and internet addiction ($p < 0.003$).

In order to ascertain how much time respondents spent on-line, they were asked to provide a best estimate of the number of hours per week they currently used the internet. It is important to note that the estimates were based upon the number of hours spent "surfing the internet" for pleasure or personal interest (e.g. personal e-mail, scanning news groups, playing interactive games), academic or employment related

purposes. The mean internet use was 10.31 hours per week. Dependent users spent a mean of 14.42 hours per week (SD=13.74) compared to non-dependent ones who spent a mean of 9 hours per week (SD=10.37). These estimates showed that dependent users spent nearly 5 hours per week more than the non-dependent ones on the internet and also there was a significant difference between the means of the two groups ($p<0.001$).

The amount of money spent for on-line service fees was 30.11 ± 25.27 percent of internet fees in the dependent group and 18.90 ± 20.79 percent in the non-dependent group. There was a significant difference between the mean of the two groups ($p<0.001$).

The internet itself is a term which represents different types of functions that are accessible on-line. Table 1 displays the applications rated as "most utilized" by dependent and non-dependent users. The results suggested that there were some differences between the two groups regarding the specific internet applications utilized as non-dependent users predominantly used those aspects of the internet which allowed them to gather information (i.e. Information Protocols and the World Wide Web) and e-mail. Comparatively, dependent subjects predominantly used the two-way communication functions available on the internet (i.e. chat rooms, news groups, or e-mail). The difference between the two groups was significant ($p<0.001$). But the communication application of chat rooms and instant messaging were tremendously popular among both groups.

Table1: Internet Applications Most Utilized by Dependent and Non-Dependent Users

Application	Type of Computer User	
	% Dependents	% Non-Dependents
Chat Rooms	60.5	39.0
News groups	11.0	10.5
E-mail	13.0	18.0
WWW	4.5	12.5
Information Protocols	3.5	14.5
Internet Games	7.5	5.5

Discussion

There are several limitations involved in this study which must be addressed. Initially, although a relatively suitable sample size of 1856 was studied, it was confined to a limited region. Therefore, generalization

of the results must be interpreted with caution and continued research should include larger sample sizes to draw more accurate conclusions.

Furthermore, this study had inherent biases present in its methodology by utilizing an expedient and convenient self-selected group of internet users. Therefore, motivational factors among participants responding to this study should be discussed. It is possible that those individuals classified as dependent experienced an exaggerated set of negative consequences related to their internet use compelling them to respond to advertisements for this study. This result shows the same stereotypic profile of an "Internet addict" as a young, computer-savvy male and is identical to previous research that has suggested that males predominantly utilize and feel comfortable with information technologies.¹¹⁻¹⁴ While these limitations are significant, this survey provides a workable framework for further exploration of addictive internet use. Individuals were able to meet a set of diagnostic criteria that show signs of impulse-control difficulty similar to the symptoms of pathological gambling. In the majority of cases, dependent users reported that their internet use directly caused moderate to severe problems in their real lives due to their inability to use internet moderately.¹⁵⁻¹⁷ Their unsuccessful attempts to gain control may be paralleled to alcoholics who are unable to regulate or stop their excessive drinking despite relationship or occupational problems caused by drinking; or compared to compulsive gamblers who are unable to stop betting despite their excessive financial debts.¹⁸⁻²⁰

The reasons underlying such an impulse control disability should be further examined. One interesting issue raised in this study is that, in general, the internet itself is not addictive. Specific applications appeared to play a significant role in the development of pathological internet use as dependent users were less likely to control their use of highly interactive features than other on-line applications. This paper suggests that there exists an increased risk in the development of addictive use of the more interactive applications utilized by the on-line user. It is possible that a unique reinforcement of virtual contact with on-line relationships may fulfill unmet real life social needs.^{3,21} Individuals who feel misunderstood and lonely may use virtual relationships to seek out feelings of comfort and community.²²⁻²⁴ However, greater research is needed to investigate how such interactive applications are capable of fulfilling such

unmet needs and how this leads to addictive patterns of behavior.

Individuals who constantly utilize the internet might not recognize "addictive" use as a problem and therefore saw no need to participate in this survey. This may explain their low representation in this sample. Therefore, additional research should examine personality traits that may mediate addictive internet use, particularly among new users, and how denial is fostered by its encouraged practice. An Italian study showed that 5.4% of the students were internet addicts as in the other countries but the rate in our population was much higher.²⁵ Another study showed that the incidence rate of internet addiction was 2.4% among Chinese high school students, and adolescents with internet addiction possessed different psychological features when compared with those who use the internet less frequently.²⁶ The results of a study in Italy revealed that young users are more at-risk subjects for internet addiction than adults, perceiving a compromised social and individual quality of their life that led them to make a compensatory usage of the Internet.⁹ The findings of our study also confirmed the results.

A recent on-line survey and two campus-wide surveys conducted at the University of Texas at Austin and Bryant College have further documented that pathological internet use is problematic for academic performance and relationship functioning.²⁷ With the rapid expansion of the internet into previously remote markets, the internet may pose a potential clinical threat as little is understood about treatment implications for this emergent disorder.^{28,29} Based upon these findings, future research should develop treatment protocols and conduct outcome studies for effective management of these symptoms. It may be beneficial to monitor such cases of addictive internet use in clinical settings by utilizing the adapted criteria presented in this study. Online teen chat rooms provide adolescents with an anonymous social context to dis-

cuss issues related to their identity and their developing sexuality.⁴ The evidence suggests that some adolescents may use the internet to form casual relationships as well as for dating, partner selection, and online romances.^{15,16}

It seems that the most addictive software in Iran is Yahoo messenger software but we think that after blockage of private rooms of yahoo messenger, the rate of internet addiction will decrease dramatically. Even though yahoo messenger and chat rooms are one of the most loved web environments in Iran because of cultural limitation of male-female relationship, the search for partners is as salient in adolescents' online haunts as it is in their offline ones.^{10,11} Activities on the internet may lead to dopamine release in the nucleus accumbens, which is thought to be an important neurochemical event in the development of addiction.³⁰⁻³² People who lack self-esteem are more likely to become internet addicts, just as they are more likely to use drugs or alcohol.³³⁻³⁶ It is essential to gain a better understanding of the underlying factors in internet addiction disorder, including how personality traits, family dynamics, psychosocial factors, and communication skills influence the way people use the internet. Finally, future research should focus on the prevalence, incidence, and the role of this type of behavior in other established addictions (e.g. other substance dependencies or pathological gambling) or psychiatric disorders (e.g. depression, bipolar disorder, obsessive-compulsive disorder, attention deficit disorder).

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