ORIGINAL ARTICLE

Assessment of internet addiction and loneliness in secondary and high school students

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Abstract

Objective: To determine the frequency of Internet addiction and loneliness in secondary and high school students.

Methods: The cross-sectional study was conducted between May 7 and June 8, 2012, among secondary and high school students in Sivrihisar, which is a district in rural part of Anatolia, Turkey. The study group consisted of 1157 students. Young Internet Addiction Scale was used to assess the internet addiction. University of California, Los Angeles Loneliness Scale was used for the evaluation of the level of loneliness. SPSS 15 was used for statistical analysis.

Results: Of the 1157 students, there were 636 (55.0%) male and 521 (45.0%) female aged 11 to 19 years (mean: 15.13±1.71 years). According to the Internet Addiction Scale, 91(7.9%) of the subjects were addicted to the internet. Obesity (odds ratio: 9.57), "Type A" personality (odds ratio: 1.83), first time usage of internet before age 12 (odds ratio: 2.18), using the internet every day (odds ratio: 2.47) and use the internet more than 2 hours a day (odds ratio: 4.96) were risk factors of internet addiction ($p<0.05$). A positive correlation was found between the internet addiction and loneliness ($r_s=0.121$; $p<0.001$).

Conclusion: Internet addiction was found to be a major health problem in middle and high school students. A positive correlation between loneliness and internet addiction was also found.

Keywords: Internet addiction, Loneliness, Secondary, High school. (JPMA 64: 998; 2014)

Introduction

Internet provides a quick and easy way to get the information needed and to communicate with people. However, in addition to these facilities, loss of the control over the use of internet may adversely affect daily activities, emotional status and communication among family members. Loss of control over the use of internet may also be called excessive internet use, pathological internet use, problematic internet use and internet addiction.[1,2] Internet addiction is characterised by preoccupation with the use of the internet, repetitive thoughts about limiting and controlling the use of the internet, failure to control the desire of access to the internet, continuous use of the internet despite the impairments at various levels of functionality, spending gradually increasing periods of time on the internet, seeking use of the internet in the case of inability to access, and uncontrolled desire to get access to the internet.[2] In addition to recurrent neck and back pain, internet addiction can also lead to long-term serious health problems.[3] It has been reported that sudden death may occur in individuals playing online games for a few consecutive days and that internet addiction can cause a sedentary lifestyle, increasing the risk of obesity and related diseases, deep vein thrombosis (DVT) and pulmonary embolism (PE).[3,4]

As is in other addictions, internet addiction is also a major health problem during puberty which is characterised by continuing mental and motor development. The individuals are emotionally and socially highly fragile in this period.[5] Internet has the potential to cause social isolation and hinder development of social interaction skills required for real life situations.[2,6] Loneliness is not only being alone, but is also defined as an unpleasant psychological state that is experienced by perceiving the difference between the existing and desired social relationship.[7]

This study was planned to determine the prevalence of internet addiction and to assess the level of loneliness among students from secondary and high schools.

Subjects and Methods

The cross-sectional study was conducted between May 7 and June 8, 2012, in the Turkey's province of Eskisehir. It comprised secondary and high school students in Sivrihisar which is a district in rural part of Anatolia where people mostly live on by farming and animal husbandry. There are 8 high schools and 5 elementary schools

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providing education and training in the district centre. The schools that did not grant permission, were excluded from the study.

In the light of literature, a three-part questionnaire was prepared.[2,7-9] The first part of the questionnaire included socio-demographic characteristics of students (school, class, gender, age, family type, family income status, parental education, parental employment status, number of siblings, the rank of birth among the family, residence, smoking status, history of chronic disease, the presence of physical disability, personality type and the presence of obesity) and some variables (age of first use of the internet, access to internet, internet usage frequency and duration of use, and the reason of using the internet) that are considered to be related to internet addiction. The second and third parts of the questionnaire consisted of questions from the Internet Addiction Scale and the University of California, Los Angeles (UCLA) loneliness scale respectively.

Relevant permissions from the schools were obtained and the students were informed about the purpose of the study and questionnaire forms. The questionnaires were completed by the students under supervision. The process took about 20-25 minutes.

The Young Internet Addiction Scale, which was used to assess internet addiction, was developed in 1998[10] and the reliability and validity study of the Turkish version of the scale was conducted in 2001.[11] The scale consists of 20 questions rated on a six-point Likert scale. The scores range between 0 and 100, and the level of addiction increases with the increasing scores. As per the developer's recommendation, a score of 50-79 points is considered "occasional or frequent problems because of the internet", and 80-100 points is considered "internet usage is causing significant problems". The scores of 50 and over were considered to be the "presence of internet addiction" for this study, due to the fact that "occasional or frequent problems because of the Internet" is also a problematic internet usage.[12,13]

The UCLA Loneliness Scale was used in the evaluation of the level of loneliness. The scale was developed in 1978[14] and the reliability and validity study of Turkish version of the scale was conducted in 1989.[15] The scale consists of 20 questions rated on a four-point Likert scale. The scores range between 20 and 80, and the level of loneliness increases with increasing scores.

Family income level was rated by students' self-report as high, moderate or low. Parents having a paying business at that time were considered "employed". Those who regularly smoked at least 1 cigarette every day were defined as "smoker".[16] Students who defined themselves as bustling, enthusiastic, impetuous and impatient were classified as having "Type A personality" and those who defined themselves as quiet, calm, patient and planned/programmed were classified as having "Type B personality".[17]

Data was collected in accordance with the Helsinki Declaration and had the approval by the Local Committee of Eskisehir Osmangazi University Medical Faculty, Turkey. Data were analysed using SPSS 15. Chi-square test and logistic regression analyses were used to assess relationship between socio-demographic factors and internet addiction. Spearmann correlation test was used for assessment of relationship between loneliness and internet addiction. The statistical significance level was set at $p<0.05$.

Results

There were 1792 students in the schools that were included in the study. Of them, 1358(75.78%) belonged to high schools, and 434(24.21%) to secondary schools. A total of 1157 (64.6%) students who were present at their

Table-1: Prevalence of internet addiction according to socio-demographic characteristics.

Socio-demographic characteristics	Internet Addiction			X^2; p
	No n (%)[a]	Yes n (%)[a]	Total n (%)[b]	
Gender				
Male	590 (92.8)	46 (7.2)	636 (55.0)	0.780; 0.377
Female	476 (91.4)	45 (8.6)	521 (45.0)	
Age (in years)				
≤13	228 (95.4)	11 (4.6)	239 (20.7)	5.512; 0.064
14-16	606 (56.8)	6 (9.3)	668 (57.7)	
17≤	232 (92.8)	18 (7.2)	250 (21.6)	
Grade				
Secondary school	349 (93.8)	23 (6.2)	372 (32.2)	2.142; 0.143
High school	717 (91.3)	68 (8.7)	785 (67.8)	
Educational level of mother				
Primary school or less	818 (93.2)	60 (6.8)	878 (75.9)	8.514; 0.014
Secondary school	132 (91.7)	12 (8.3)	144 (12.4)	
High school or more	116 (85.9)	19 (14.1)	135 (11.7)	
Educational level of father				
Primary school or less	520 (93.4)	37 (6.6)	557 (48.1)	4.364; 0.113
Secondary school	214 (93.0)	16 (7.0)	230 (19.9)	
High school or more	332 (89.7)	38 (10.3)	370 (32.0)	
Obesity				
Yes	6 (66.7)	3 (33.3)	9 (0.8)	8.119; 0.004
No	1060 (92.3)	88 (7.7)	1148 (99.2)	
Personality type				
A	569 (90.0)	63 (10.0)	632 (54.6)	8.502; 0.004
B	497 (94.7)	28 (5.3)	525 (45.4)	
Total	1066 (92.1)	91 (7.9)	1157 (100.0)	

Table-2: Distribution of students with and without internet addiction.

Some variables considered to be associated with the internet addiction	Internet Addiction No n (%)[a]	Yes n (%)[a]	Total n (%)[b]	X^2; p
Access to the internet in residence				
Yes	662 (89.9)	74 (10.1)	736 (63.6)	13.377;<0.0001
No	404 (96.0)	17 (4.0)	421 (36.4)	
Age in years of first internet use				
12 or less	827 (91.2)	80 (8.8)	907 (78.4)	4.692;0.030
13 or more	239 (95.6)	11 (4.4)	250 (21.6)	
Frequency of use of the internet				
Less than once a week	409 (97.1)	12 (2.9)	421 (36.4)	39.823;<0.0001
One or a few times per week	266 (94.3)	16 (5.7)	282 (24.4)	
Everyday	391 (86.1)	63 (13.9)	454 (39.2)	
Duration of daily internet usage				
Less than 2 hours	729 (97.1)	22 (2.9)	751 (64.9)	71.948;<0.0001
2 hours and more	337 (83.0)	69 (17.0)	406 (35.1)	
Primary reason for using the internet				
Relieving loneliness-socialization	306 (87.4)	44 (12.6)	350 (30.3)	27.211;<0.0001
Entertainment	228 (90.1)	25 (9.9)	253 (21.9)	
Homework-research	460 (96.6)	16 (3.4)	476 (41.1)	
Others	72 (92.3)	6 (7.7)	78 (6.7)	
Total	1066 (92.1)	91 (7.9)	1157 (100.0)	

Table-3: Logistic regression analysis.

Variables	B	SE[a]	p	OR[b]	%95 CI[c]
Obesity (reference: no)					
Yes	2.258	0.798	0.005	9.567	2.003-45.702
Personality type (reference: B)					
A	0.606	0.283	0.032	1.834	1.054-3.191
Age of first internet use (reference: 13 or more)					
12 years or less	0.777	0.378	0.040	2.175	1.037-4.564
Access to the internet in residence (reference: no)					
Yes	0.554	0.330	0.094	1.740	0.910-3.326
Frequency of use of the internet (reference: Less than once a week)					
One or a few times per week	0.728	0.447	0.104	2.071	0.861-4.977
Everyday	0.906	0.401	0.024	2.473	1.127-5.427
duration of daily internet usage (reference: Less than 2 hours)					
2 hours and more	1.602	0.306	< 0.0001	4.962	2.726-9.033
Constant	5.545	0.578	< 0.0001		

schools during data collection and who agreed to participate constituted the study group. The number of respondents who refused to participate was 208(11%) and those who were not at their schools numbered 427(23%).

Of the 1157 students, the study group had 521(45.0%) female and 636 (55.0%) male students. The age of the students ranged from 11 to 19 years, with a mean of 15.3±1.71 years. The prevalence of internet addiction was found in 91(7.9%) subjects. Overall, 910(78.9%) had a nuclear family type and 601(51.9%) had a moderate family income level. The number of students with a maternal educational level of high school or above was 135(11.7%), while fathers of 370(32.0%) students had graduated from high school or above (Table-1).

Overall, 736 (63.6%) students reported that they had access to internet at their residence (home/dorm), 907 (78.4%) had started using the internet before the age of 12 years, 454(39.2%) used internet every day, 406 (35.1%) reported that the duration of internet usage was over 2 hours per day, and 476 (41.1%) were using the internet for their homework and research (Table-2).

Logistic regression analysis worked out the association of certain variables associated with internet addiction (Table-3).

The scores of students on the Internet Addiction Scale ranged between 0 and 94, with a mean of 20.97±15.6. Their scores on the Loneliness Scale ranged between 20 and 71, with a mean of 39.11±9.17. A positive correlation was found between the scores obtained from both scales (r=0.121; p<0.001).

Discussion

The benefits of the use of internet cannot be ignored or denied, but it is also a great concern that unlimited use of internet may be very harmful. Controlling this technology, which came into our lives rapidly, is critical, especially for children and adolescents. It will be difficult to keep this problem under control if internet addiction is ignored or not considered as a clinical disease.[2] School-based media literacy courses in Turkey may be a protective factor against internet addiction by increasing the awareness of this issue.

In our study, the prevalence of internet addiction was found to be 7.9%. Previous studies from several countries have reported the prevalence of internet addiction as ranging between 3.5% and 36.7%.[1,6,12] It has been reported in studies from Turkey as 9.7%and 1.2%.[18] The differences in these results might have resulted from the different methods used for the diagnosis of internet addiction, differences in the cut-off values for the scales used, different research methods used in different studies, and/or the different cultures of the populations studied.

Although it is generally believed that internet addiction is more prevalent in men,[1,9,19] but there are also several studies reporting no gender-related difference in internet addiction.[5,12] Accordingly, no difference was observed in this study between men and women in terms of internet

addiction (p> 0.05).

For this study group, the prevalence of internet addiction increased with increasing maternal education level (p<0.05). However, maternal education level was not found to be a risk factor for internet addiction in logistic regression analysis. There are also several other studies reporting no association between internet addiction and educational status of the mother.[20]

Contradictory results have been reported in previous studies about the relationship between internet addiction and personality types. Although internet addicts are generally considered to be shy and introverted individuals, but the addicts defined themselves as brave, outgoing, open-minded and self-confident in a study.[21] On the other hand, the prevalence of internet addiction was found to be higher among the students describing themselves as having Type A personality (p<0.05).

Because of the easy access to internet, it is not surprising to find a higher prevalence of internet addiction among individuals residing at home, dormitories etc.[22] Accordingly, the prevalence of internet addiction was significantly higher among students who had internet access at their residence in this study (p<0.05). However, logistic regression analysis showed that access to internet was not a risk factor for internet addiction.

Internet addiction is expected to be more prevalent among children who had begun to use the internet at an early age, because these children had grown up in an environment with the internet, and internet was always available throughout their lives and it has a key position in their lives.[2] In accordance with literature, the prevalence of internet addiction was higher in students who started using internet at an early age (p<0.05). On the other hand, a study has reported that the time elapsed after the first usage of internet is not associated with internet addiction.[5]

In this study, internet addiction was more prevalent in students using the internet everyday or who were using at least 14 hours per week (p<0.05for each). Several previous studies have also reported a positive relationship between the duration of internet usage and internet addiction.[1,9,19] This may be explained by the fact that the duration of internet usage is one of the signs of internet addiction.

Individuals with internet addiction spend a large part of their time by sitting at the computer in an immobile position. Therefore, it is likely that impaired control of body weight and obesity develop in these individuals over time.[3] The prevalence of internet addiction was significantly higher in obese students compared to non-obese students (p<0.05). The logistic regression analysis also found that obesity was a significant risk factor for internet addiction (odds ratio [OR]: 9.567; p<0.05).

The factors directly affecting the development of internet addiction include intention to use the internet for gaming, chat and gambling.[23] Several previous studies have shown that the prevalence of internet addiction is higher among those who are using the internet to resolve their loneliness and for online chat.[1,19,22,23] In this study, internet addiction was less prevalent in students who were using the internet for their homework and research than those who were using it for entertainment and social relationships (p<0.05). The contradictory results of the previous studies might be caused by differences between the cultures of study populations.

The need of the individual for socialisation is one of the factors suggested to be associated with internet addiction.[24] Using the internet in order to find social cohesion or social support increases the risk of internet addiction and leads them to stay away from the real society.[25] Several investigators have reported that there is a strong relationship between loneliness and internet addiction.[6-8,25] Accordingly, loneliness was positively correlated with internet addiction in our study (p<0.05). Internet addiction may take the time that should be spent with family and friends in real life. It may prevent the close relationships between individuals, which eventually leads to loneliness. On the other hand, lonely people can use the internet to create social relationships in a virtual environment. They may prefer the virtual environment over the real life in order to avoid the negative feelings of loneliness and anxiety, which can explain the high prevalence of internet addiction among lonely people.[26]

Major limitations of the current study are its cross-sectional nature and the fact that it was done in a single district and comprised only high and secondary school students. Besides, the scales used in the study do not make a definitive diagnosis.

Conclusion

Internet addiction was a major health problem in middle and high school students from Sivrihisar. A positive correlation between loneliness and internet addiction was found. For accurate diagnosis and treatment of students with internet addiction, they should be referred to specialist clinicians and should be informed about the controlled use of the internet, and should be screened occasionally for early diagnosis. More comprehensive studies are warranted to better explain the causality of internet addiction and loneliness.

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References

1. Yen JY, Ko CH, Yen CF, Wu HY, Yang MJ. The comorbid psychiatric symptoms of Internet addiction: attention deficit and hyperactivity disorder (ADHD), depression, social phobia, and hostility. J Adolesc Health 2007; 41: 93-8.
2. Ko CH, Yen JY, Yen CF, Chen CS, Chen CC. The association between Internet addiction and psychiatric disorder: a review of the literature. Eur Psychiatry 2012; 27: 1-8.
3. Flisher C. Getting plugged in: an overview of internet addiction. J Paediatr Child Health 2010 ; 46: 557-9.
4. Healy B, Levin E, Perrin K, Weatherall M, Beasley R. Prolonged work- and computer-related seated immobility and risk of venous thromboembolism. J Royal Soc Med 2010; 103: 447-54.
5. Hur MH. Demographic, habitual, and socioeconomic determinants of Internet addiction disorder: an empirical study of Korean teenagers. Cyberpsychol Behav 2006; 9: 514-25.
6. Whang LSM, Lee S, Chang G. Internet over-users' psychological profiles: a behavior sampling analysis on internet addiction. Cyberpsychol Behav 2003; 6: 143-50.
7. Durak Batigun A, Hasta D. Internet bagimliligi: Yalnizlik ve kisilerarasi iliski tarzlari açisindan bir degerlendirme. Anadolu Psikiyatri Dergisi 2010;11:213-9.
8. Nalwa K, Anand AP. Internet addiction in students: a cause of concern. Cyberpsychol Behav 2003; 6: 653-6.
9. Canan F, Ataoglu A, Ozcetin A, Icmeli C. The association between Internet addiction and dissociation among Turkish college students. Comprehensive Psychiatry 2012; 53: 422-6.
10. Young KS. Internet addiction: The emergence of a new clinical disorder. Cyberpsychol Behav 1998; 1: 237-44.
11. Bayraktar F. Internet kullaniminin ergen gelisimindeki rolu. Izmir: Ege University; 2001.
12. Milani L, Osualdella D, Di Blasio P. Quality of interpersonal relationships and problematic Internet use in adolescence. Cyberpsychol Behav 2009; 12: 681-4.
13. Young KS. Internet addiction test 2005. (Online) (Cited 2012 April 2). Available from URL: http://netaddiction.com/internet-addiction-tes/.
14. Russell D, Peplau LA, Cutrona CE. The revised UCLA Loneliness Scale: concurrent and discriminant validity evidence. J Pers Soc Psychol 1980; 39: 472-80.
15. Demir A. UCLA Yalnizlik olceginin gecerlilik ve guvenilirligi. Psikoloji Dergisi 1989; 7: 14-8.
16. Tolonen H, Wolf H, Jakovljevic D, Kuulasmaa K. Review of surveys for risk factors of major chronic diseases and comparability of the results: European Health Risk Monitoring (EHRM) Project; 2002. (Online) (Cited 2012 May 12). Available from URL: http://www.ktl.fi/publications/ehrm/product1/title.htm.
17. Yetiskinlere yönelik testler ve anketler. (Online) (Cited 2012 May 12). Available from URL: http://www.hiperaktivite.net/hah5_3.htm.
18. Canbaz S, Sunter AT, Peksen Y, Canbaz M. Prevalence of the pathological Internet use in a sample of Turkish school adolescents. Iranian J Publ Health 2009; 38: 64-71.
19. Cao H, Sun Y, Wan Y, Hao J, Tao F. Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. BMC Public Health 2011; 11: 802.
20. Uneri OS, Tanidir C. Evaluation of internet addiction in a group of high school students: a cross-sectional study. Düsünen Adam 2011; 24: 265-72.
21. Young KS. Caught in the net: How to recognize the signs of internet addiction — and a winning strategy for recovery. Canada: John Wiley & Sons; 1998.
22. Kormas G, Critselis E, Janikian M, Kafetzis D, Tsitsika A. Risk factors and psychosocial characteristics of potential problematic and problematic internet use among adolescents: a cross-sectional study. BMC Public Health 2011; 11: 595.
23. Jang KS, Hwang SY, Choi JY. Internet addiction and psychiatric symptoms among Korean adolescents. J School Health 2008;78: 165-71.
24. Grohol JM. Internet addiction guide. Recuperado el. 1999; 6.
25. Thatcher A, Goolam S. Development and psychometric properties of the Problematic Internet Use Questionnaire. South African J Psychol 2005; 35: 793.
26. Morahan-Martin J, Schumacher P. Loneliness and social uses of the Internet. Computers in Human Behav 2003; 19: 659-71.