

Research Article

Problematic internet usage among high school students and the relevant factors

Rukuye Aylaz^a, Gülsen Güneş^b, Yurdagül Günaydın^c, Mustafa Kocaer^d, Erkan Pehlivan^e

^a Assoc. Prof. PhD, İnönü University, School of Health Sciences, Public Health Nursing, Malatya, Turkey.

^b Prof. MD., İnönü University, School of Medicine, Department of Public Health, Malatya, Turkey.

^c Nurse, İnönü University, School of Health Sciences, Department of Public Health, Malatya, Turkey.

^d Nurse, İnönü u University, School of Health Sciences, Department of Public Health, Malatya, Turkey.

^e Prof. PhD., İnönü University, School of Medicine, Department of Public Health, Malatya, Turkey.

Received date: 25.09.2014, Accepted date: 03.07.2015

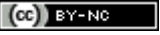
Abstract

Objective: In this study we studied the problematic internet usage among high school students and the relevant factors. **Methods:** This cross sectional study was done in March 2010. A questionnaire was filled by 435 students from 6 different classes. A personal information form and a problematic internet usage scale were developed by the authors were used. Number, percentage, average and t-test for the independent groups were used for the statistical analyses. **Results:** 53.8% of the students is male and 46.2% of them is female. 74.4% reported that they had a computer at home, 63.9% reported that they had used the internet for more than 2 years. 42.6% complained about redness in their eyes and 28.3% complained about aches in the neck muscles. According to the problematic internet usage scale total point for boys is 131.16±25.0 and for girls it is 137.74±21.6 (p=0.012). **Conclusion:** According to this study a statistically important relationship between gender and problematic internet use has been shown. Female students, students who are smoking and students who have sleeping problems, reported problematic internet use more than the others.

Keywords: Problematic internet use, adolescent, health.

Corresponding Author: Rukuye Aylaz, İnönü University, School of Health Sciences, Public Health Nursing, Malatya, Turkey, Phone: +90 422 3410219; E-mail: rukuye.aylaz@inonu.edu.tr

Copyright holder Turkish Journal of Public Health

This work is licensed under a Creative Commons Attribution-NonCommercial 4.0 International License.  This is an open access article which can be used if cited properly

Lise öğrencileri arasında problemleri internet kullanım alışkanlığı ve ilişkili faktörler

Özet

Amaç: Bu çalışmada öğrencilerin problemleri internet kullanımı ve etkileyen faktörlerin belirlenmesi amaçlanmıştır. **Yöntem:** Kesitsel nitelikte olan bu çalışma Mart 2010 tarihinde yapılmıştır. Altı farklı sınıftan 435 öğrenciye anket uygulanmıştır. Araştırmacılar tarafından geliştirilen kişisel bilgi formu ve problemleri internet kullanım ölçeği kullanılmıştır. Elde edilen veriler bilgisayar ortamında analiz edilmiştir. İstatistiksel analiz için sayı, yüzde, ortalama ve bağımsız gruplarda t-testi kullanılmıştır. **Bulgular:** Öğrencilerin %53.8'i erkek, %46.2'si kadındır. %74.4'ü evlerinde bilgisayar olduğunu, %63.9'u 2 yıldan daha fazla süredir internet kullandığını ifade etmişlerdir. %42.6'sı gözlerde yanma, %28.3'ü boyun kaslarında ağrı yakınması olduğunu belirtmişlerdir. Problemleri İnternet Kullanım Ölçeğine göre toplam kullanım puanı erkeklerde 131.16±25.0, kadınlarda 137.74±21.6 (p=0.012)'dir. **Sonuç:** Bu çalışma sonucuna göre cinsiyet ile problemleri internet kullanımı arasında istatistiksel olarak önemli bir ilişki saptanmıştır. Kız öğrencilerde, sigara içenlerde ve uyku problemi olanlarda problemleri internet kullanıcılığının daha fazladır.

Anahtar kelimeler: Problemleri internet kullanımı, adölesan, sağlık

Introduction

Internet addiction, problematic internet use (PIU), excessive internet use or inappropriate internet use is generally defined as a condition of not being able to resist the use the internet excessively; the time spent off-line becomes less important, excessive nervousness and aggression occur when internet usage is not available, and there is an impairment of the individual's work, social and family life.¹ Although it is an undeniable fact that the internet has made significant positive contributions to human life and that internet use has become a necessity in our time, it is also true that internet addiction or problematic internet use has become a major threat for adolescents, and also for many adults in all societies.²

The internet is considered as a technological miracle helping children to gain information, to research for their self-improvement, improving, for example, their problem solving abilities, their creativity and critical thinking. However, it is also thought to adversely affect the development of personal skills when its use is excessive, uncontrolled and not-to-the-purpose.³ The unpredicted proliferation of the internet has

also started to cause some health problems. These include: declining performance in the workplace or at school, sleeping disorders, thinking that a life without the internet is very boring and empty, and even include musculoskeletal system problems associated with excessive use of the internet.⁴

The negative aspects of the internet for youngsters include dependence, exposure to sexual material, and on-line aggravations such as harassment, internet bullying and sexual provocation.⁵ As the time spent in using the internet has increased, youngsters have been found to have more emotional and behavioural problems such as loneliness, social isolation and aggression, and their general health condition may have declined. In addition the prevalence of depressive symptoms may increase, school performances may decrease and academic may suffer.⁶ One of the important factors that has been suggested as associated with problematic internet use is the desire to satisfy the need for socialisation, which cannot be obtained in real life, in a virtual environment. The individual tries to socialise by means of electronic mails, chat rooms, discussion

forums and on-line games.⁷ Adolescents constitute a major risk group in terms of proliferation of problematic internet use as they are also influenced by the characteristics of the developmental period they go through. Not being able to solve the developmental complications that may be encountered at any stage can prevent the succeeding stages from developing in a healthy manner. Adolescence is a psychosocial growth period in which adolescents develop their personality and in which they become most vulnerable to the external influences been stated in the above that problematic internet use adversely affects adolescents and problematic internet use proliferates day by day. Students, teachers and parents do not have adequate knowledge about the adverse effects of problematic internet use on the development of an individual's personality and health. Especially when the developmental stage of adolescent students is considered, problematic internet use becomes critically important. This study aims at evaluating problematic internet use habits of the students in a high school selected from Malatya in Turkey.

Methods

This study is a, cross-sectional study conducted in March 2010 by administering a supervised survey to a total of 435 students from each of the branches which a ½ systematic sampling was made in a high school in Malatya in Turkey. According to the sampling formula, where the population is known, the minimal sampling size was determined as 435 and whole of the sample group was reached. The data collection materials included a personal information form developed by the investigators and the Problematic Internet Usage Scale (PIUS) was used. The Problematic Internet Usage Scale was developed by Ceyhan et al.² This scale makes its assessment on the basis of three factors. Factor 1 is the adverse results of the internet (score interval: 85-17), Factor 2 is social benefit / social comfort (score interval: 50-10) and Factor 3 is

excessive use (score interval: 30-6). Total scores obtained from the scale ranged between 33 and 165, higher scores indicated investigators that the internet is adversely affecting the student's life and that internet use is getting unhealthy. Within the scope of the reliability studies by the Problematic Internet Usage Scale, the Cronbach's alpha coefficient (α) of the scale was found to be 94. In this study, Cronbach's alpha coefficient for internal consistency of the whole test was found to be 92. 12th class students participated less than other classes. Because these students were absent in the schools for university exam preparation at the time of the study. School success and smoking status were evaluated according to students' statements. A pilot study was conducted with 10 students before conducting the study; however, these students were not included within the study.

Written permission was obtained from the Scientific Ethics Committee of Malatya Inonu University Turgut Ozal Medical Center. The data collection forms were given to those students who had agreed to participate in the study in a classroom environment after necessary permission had been obtained from the relevant institutions.

Data analysis

The data were analysed using variance analysis, Kruskal-Wallis and independent t-test depending on the type of variables. The level of significance was accepted to be $p < 0.05$.

Results

Table 1 shows that 53.8% of the study group consisted of male students and 46.2% female students; 28.7% of these were in the ninth class, 32.2% in the tenth and 29.7% in the eleventh and twelfth. 74.4% had a computer at home. They connected to the internet mostly at home and in internet cafes. It was determined that, while majority of the female students connected to the

Table 1. Mean scores of students from problematic internet usage scale by demographic characteristics

Demographic characteristics	n	%	Mean±SD	p-value
Gender*				
Boys	233	(53.8)	131.16±25.0	p=0.012
Girls	200	(46.2)	137.74±21.6	
Age groups (years)				
14-16	241	(55.4)	134.26±23.5	p=0.286
17 and above	194	(44.6)	131.76±25.1	
Class				
9 th class	125	(28.7)	134.57±20.5	p=0.057
10 th class	140	(32.2)	135.12±24.9	
11 th class	129	(29.7)	128.23±26.9	
12 th class	41	(9.4)	136.75±22.3	
Home computer presence*				
Present	322	(74.4)	131.51±24.3	p=0.046
Absent	111	(25.6)	136.83±23.7	
Places used to connect to the internet**				
Home	268	(62.8)	132.63±23.8	p=0.558
Internet cafe	109	(25.5)	131.61±29.0	
School	27	(6.3)	132.24±24.8	
Other	23	(5.4)	138.91±20.6	

*Two students did not answer ** A student has answered multiple choices

internet from their homes, the male students connected to the internet from an internet cafe. When we examined the mean scores of students from problematic internet usage scale by demographic characteristics, this study showed a statistically important relationship between gender and existence of a PC in the home of the problematic internet user ($p < 0.05$).

Table 2 shows that 63.9% had been using the internet for more than two years. The time spent on internet use was less than an hour for 57.5% of the students and one or two hours for 29.8%. The purpose of using the internet was e-mail in 49.4%, listening to music in 45.3% and chatting in 41.6%. Table 3 shows the most frequently seen health problems of the students, which were: burning of the eyes for 42.6%, neck-muscle pain for 28.3% and sleeplessness for 11.4%. When we examine the mean scores of problematic internet use by gender, the mean difference of Factor 1 (adverse results

Table 2. Internet use characteristics of students

Demographic characteristics	n	%
Time students had use of the internet		
Less than one year	55	14.4
One-two-years	83	21.7
More than two years	244	63.9
Internet time used per day		
Less than an hour	218	57.5
1-2 hours	113	29.8
2.1-3 hours	37	9.8
More than 3 hours	11	2.9
Purpose of using the internet		
Read e-mail	216	49.4
Listening to music	198	45.3
Chat	182	41.6
Newspaper and magazine reading	154	35.3
Online gaming	142	32.5
E-commerce and shopping	26	5.9

Table 3. Health problems associated with long-lasting internet use in students*

Health problems	n	%
Burning eyes	186	42.6
Neck muscle pain	123	28.3
Insomnia	50	11.4
Reduction in hours of sleep	40	9.2
Unbalanced diet	32	7.3
Increase in fast-food diet	24	5.5
Deterioration in hand dexterity	23	5.3
Deterioration in hygiene habits	8	1.8

*A student has answered multiple choices

of the internet), Factor 2 (social benefit/social comfort) and total scale scores were found statistically significant ($p < 0.05$), but the difference between the mean scores of Factor 3 (excessive use) and gender was not found statistically significant (Table 4).

We have examined the total PIUS scores of the students and made a comparison of some of their characteristics in Table 5. The mean difference between the smoking status and sleeping problem, the total PIUS score was found to be statistically significant ($p < 0.05$), but the success status, neck-muscle pain and burning eyes, and the total PIUS score was not found statistically significant. 6.8% of the students are smokers and 43.3% reported their success status as being good.

Discussion

This study evaluated problematic internet use habits of students in a high school selected from Malatya in Turkey. Regarding the internet usage habits of the students, 74.4% of the students had a computer at home and 63.9% had been connected to the internet for more than two years. It was previously found that the internet was used mostly by the age group of 16 - 24 years (70.6%) and as the educational status increased, the internet usage increased. According to the data for 2014, the homes with internet access were of 60.2%

throughout Turkey and this rate was 49.1% in the same month for 2013.¹⁰ The average

Table 4. Mean scores of students from PIUS scale by gender

PIUS mean score	Gender	Mean±SD	p
* Factor 1 (the negative consequences of the Internet)	Boys	69.69±15.1	0.001
	Girls	74.35±13.2	
** Factor 2 (social benefit /social comfort)	Boys	39.26±8.6	0.001
	Girls	42.47±7.7	
*** Factor 3 (excessive use)	Boys	19.67±4.9	0.248
	Girls	20.37±6.0	
PIUS Total Score	Boys	131.16±25.0	0.012
	Girls	137.74±21.6	

Note: Score range; * Factor 1. (85-17), Factor 2. ** (50-10), Factor 3. *** (30-6)

Table 5. Total PIUS mean scores based on certain characteristics of students

Features	n	%	Mean ±SD	p
State of school success				
Successful	184	43.3	134.41±23.8	0.918
Unsuccessful	241	56.7	134.14±23.4	
Smoking status				
Smoking	29	6.8	134.95±22.7	0.009
Non-smoker	397	93.2	127.16±32.2	
Neck muscle pain				
Present	123	28.3	130.38±24.4	0.062
Absent	312	71.7	135.83±23.2	
Burning eyes				
Present	186	42.6	133.28±22.9	0.460
Absent	251	57.4	135.22±24.1	
Sleep problems				
Present	50	11.4	136.39±21.7	0.001
Absent	387	88.6	117.77±31.1	

time spent per day by the students on the internet, was between 1 and 2 hours for 29.8% of the students. In a study made by Kelleci and associates, 70.2% of the female students and 60.2% of the male students reported that they use the internet for between 1 to 2 hours.¹¹ In their study Cao et al. identified as problematic Internet users (PIUs) approximately 8.1% of the students and males were 63.7%.¹²

The reasons for the students using the internet, for 49.4% were stated to be to read their e-mails, 45.2% to listen to music and 41.6% to chat. In the study made by Korkmaz, high-school students used the internet mostly for the purpose of reading e-mails, playing games, chatting and obtaining information.¹³

When students use a computer at a table for a long time to read their e-mails, to listen to music, to chat, to find boyfriends or girlfriends and to do searches and obtain information, this brings about important health problems in growing children. Depending on their sitting positions, these may cause students to have waist and back pain, pain in the joints of the shoulder, hands and arms, eye fatigue, sleeping disorders, mental fatigue, electromagnetic radiation exposure, creative and mental developmental risks, deterioration of linguistic skills and even epileptic attacks and developmental brain problems in some children.¹⁴ Among the health problems associated with long-lasting internet use in students, the most frequent disorders were neck-muscle pain (28.3%), burning eyes (42.6%) and sleeping problems (11.4%). In another study made by Özmutaf and associates of 254 students studying at Ege University in Turkey, 6.7% of the students reported that computer use had adverse effects on their physical health, 7.9% felt pains and sluggishness in their bodies, and 18.1% stated that computer use strained their brains and eyes.¹⁵ As in the studies made previously, this study also revealed that long-lasting internet use affected health in a negative way.

The mean scores obtained by the students from the problematic internet use

scale on the basis of gender, the mean difference between Factor 1 (adverse results of the internet), Factor 2 (social benefit/social comfort) and the total scale scores was found to be statistically significant ($p < 0.05$), but the difference between Factor 3 (excessive use) mean scores and gender was not found to be statistically significant. Girls seem to be affected more by the negative results of the internet than boys. This finding is not supported by the results of previous studies. In the study made by Kelleci and associates at Sivas in Turkey, it was found that 4.5% of the female students and 16.8% of the male students were internet addicts and there was a significant relationship between gender and the level of internet dependence.¹¹ Kayri's study also revealed a significant relationship between gender and the level of internet dependence. The mean scores of addiction in boys were higher as compared to girls.¹⁶ According to the results of the study conducted by Üneri and Tanıdır, the addiction level of the male students was found to be significantly higher than that of the female students.¹⁷ The problematic internet usage mean scores of the male high school students were significantly higher compared to the female students in the study conducted by Zorbaz and Dost.¹⁸ A statistically significant difference was found between the scores of male and female students in the "adverse results and social comfort" dimension of problematic internet use. When this difference is examined, it is seen that the mean scores of female students were higher than those of male students. However, this finding is not supported by previous studies.¹⁹ The study of Doğan et al. also reported that the mean scores of female students were higher than those of male students at the "adverse results and social comfort" dimension of problematic internet use.²⁰ In Turkish society, girls are raised under strict controls and are warned by their families to conceal their emotions and thoughts and not to reveal them to others, whereas boys communicate with anyone they wish and are raised in a more relaxed way, enabling them to freely express themselves. Boys are

not generally controlled in any way in their communication with the opposite sex in society; they are even encouraged to communicate with the opposite sex after they enter adolescence as a demonstration of their manhood, growth and increased self-confidence.²¹ Considering also the culture of the East Anatolian region where this study was conducted, one can surmise that female students see the internet as the only medium opening to the outer world where they can feel more comfortable, establish communication with individuals and express themselves.

When the problematic internet usage behaviours of the students were compared with respect to all the dimensions (excessive use, adverse results, social benefit), it was revealed that girls demonstrated significantly more problematic internet usage behaviour than boys. Looking at these results, we can say that girls constitute a more at-risk group than boys in terms of problematic internet usage behaviour.

No statistically significant relationship was found when we compared the total PIUS scores of the students in relation to their success status at school. Nor was a statistically significant relationship found between success at school and internet addiction in the study made by Cömert on 10th grade students.²² In the study of Esen and Siyez, it was indicated that the academic success and internet addiction level is associated differentiated and internet addiction levels of students with lower academic success were significantly higher.²³ This conclusion is inconsistent with the findings of this study. In this study successful students may have used internet looking for help with their studies.

A statistically significant relationship was found in a study relating smoking status to total PIUS scores. 6.8% of the students stated that they were smokers. In a study made by Aras et al. 24.3% of the students were found to be smokers.²⁴ The relationship between students who smoke and problematic internet use can be

Turk J Public Health 2015;13(3)

explained by the fact that a student demonstrating one risky behaviour may have the potential to adopt another risky behaviour. A statistically significant relationship was found between sleeping problems and problematic internet use. Some studies reported that as problematic internet use increased, general health conditions of individuals declined and sleeping problems associated with increased prevalence of depressive symptoms emerged.^{25,26}

According to this study a statistically important relationship between gender and existence of a PC in the home by problematic internet use demonstrated. Health complaints associated with computer use were seen in the students. Especially in females, the ones who are smoking and have sleeping problems, problematic internet use is higher than in the others.

Students and parents can be educated about the use of effective and efficient internet and the negative effects of problematic internet use on health. Especially girls and all students can socialize in the school environment, it is recommended provision of activities where they can spend their leisure time.

One limitation of this study is that it is a small sample from a specific geographical area. We suggest that other studies increase the sample size, consider the use of additional school grades and schools from different geographical areas.

Acknowledgments

We would like to thank the secondary educational centers that participated in this study.

Author disclosure statement

No competing financial interests exist.

References

1. Young KS. Internet addiction. *Am Behav Sci* 2004;48:402-441.

2. Ceyhan E, Ceyhan AA, Gürcan A. The validity and reliability of the problematic internet usage scale. *Educational Sciences: Theory & Practice (ESTP)* 2007;7:387-416.
3. Kerberg CS. Problem and pathological gambling among college athletes. *Ann Clin Psychiatry* 2005; 17:243-247.
4. Nalwa K, Anand AP. Internet addiction in students: a cause of concern. *Cyberpsychology and Behavior* 2003;6:653-656.
5. Guan SA, Subrahmanyam K. Internet use of the youth: risks and opportunities. *Current Opinion in Psychiatry* 2009; 22:351-356.
6. Yang CK, Choe BM, Baity M, et al. SCL-90-R and 16PF profiles of senior high school students with excessive internet use. *Can J Psychiatry* 2005;50:407-414.
7. Esen BK. Prediction of internet addiction in adolescents on the basis of the variables of relative oppression and perceived social support. 1stInternational Addiction Congress; 2007 May 28-31; Istanbul, Turkey.
8. Livingstone S. Children's use of the internet: reflections on the emerging research agenda. *New Media & Society* 2003;5:147-166.
9. Yiğit R. *Growth and development in childhood*. 1th ed. Ankara: Sistem Ofset Press House; 2009.
10. Türkiye İstatistik Kurumu. 2014 Hanehalkı Bilişim Teknolojileri Kullanım Araştırması. Available at: <http://www.tuik.gov.tr/> Accessed June 01, 2015.
11. Kelleci M, Güler N, Sezer H, Gölbaşı Z. Relationship of internet usage time with gender and psychiatric symptoms in high-school students. *TAF Prev Med Bull* 2009;8:223-230.
12. Cao H, Sun Y, Wan Y, Hao J, Fangbiao Tao F. Problematic Internet use in Chinese adolescents and its relation to psychosomatic symptoms and life satisfaction. *BMC Public Health* 2011; 11:802-810.
13. Korkmaz Ö, Mahiroğlu A. Purpose of using internet cafes, wrong habits and differences due to education level. *Ahi Evran University, Kırşehir Education Faculty Journal* 2007; 8:99-116.
14. Blais JJ, Craig WM, Pepler D, Connolly J. Adolescents online: the importance of internet activity choices to salient relationships. *J Youth Adolesc* 2008; 37:522-536.
15. Özmutaf MN, Özgür Z, Gökmen F. A general perspective to individual health versus computer use in university students. *Ege Medical Journal* 2008;47:81-86.
16. Kayri M, Günüş S. Adaptation of internet addiction scale to Turkish: a validity and reliability study. *Journal of Ankara University Educational Sciences Faculty* 2009;42:157-175.
17. Üneri ÖŞ, Tanıdır C. Bir grup lise öğrencisinde internet bağımlılığı değerlendirmesi: Kesitsel Bir Çalışma. *Düşünen Adam Psikiyatri ve Nörolojik Bilimler Dergisi* 2011;24:265-272.
18. Zorbaz O, Dost MT. Lise öğrencilerinin problemleri internet kullanımının cinsiyet, sosyal kaygı ve akran ilişkileri açısından incelenmesi. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi* 2014;29:298-310.
19. Chisholm JF. Cyberspace violence against girls and adolescent females. *Annals New York Academy of Sciences* 2006;1087: 74-89.
20. Doğan H, Işıklar A, Eroğlu SE. Effect of problem oriented psychological consultancy on the extent of problematic internet use in university students. *Journal of Atatürk University Kazım Karabekir Education Faculty* 2008;18:106-124.
21. Akın A. Gender discrimination and health. *Bulletin of Community Medicine* 2007;26:1-9.
22. Cömert T, Ögel K. Prevalence of internet and computer dependence and its relationship with various factors in a population from Istanbul. *Turkish Clinics J Foren Med* 2009; 6:9-16.

23.Esen E, Siyez DM. Ergenlerde İnternet Bağımlılığını Yordayan Psiko-sosyal Değişkenlerin İncelenmesi. Türk Psikolojik Danışma ve Rehberlik Dergisi 2011;4(36):127-138.

24.Aras Ş, Günay ÖS, Orçın E. Risky behavior of high-school students in Izmir. Anatolian Psychiatry Journal 2007;8:186-96.

25.Milani L, Osualdella D, Di Blasio P. Quality of interpersonal relationships and problematic internet use in adolescence. Cyberpsychol Behavior 2009;12:681-684.

26. Flisher C. Getting plugged in: an overview of internet addiction. J Paediatr Child Health 2010;46:557-559.