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*INTERNET ADDICTION AND RISK OF OBESITY IN PRIMARY EDUCATION STUDENTS (PRELİMİNARY STUDY)
İLKÖĞRETİM ÖĞRENCİLERİNDE İNTERNET BAĞIMLILIĞI VE OBEZİTE RİSKİ (ÖN ÇALIŞMA)

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ABSTRACT

Introduction: The aim of this study was to determine the rate between internet addiction and risk of obesity risk in primary school students.

Materials and Methods: This study was conducted with a total of 358 students. Ethics committee approval and institutional permission as well as verbal and written consents of the students and their parents were obtained to conduct the study. Mann-Whitney U and Kruskal Wallis tests were used to carry out statistical analyses of the data.

Findings: The average age of the students included in the study was 13.75±0.64 and they started using internet at age of 7.71±2.02. It was found that 44.3% used internet for more than five hours. While 51.7% of the students did not have breakfast on the internet, 32.8% skipped eating while using the internet. Also, it was found that while 13.4% of the students were obese, and 14.2% were overweight. The total score obtained by the students from the internet addiction test was 20.36±16.16.

Conclusion: When scores of the internet addiction test were examined; a statistically significant difference was determined between the scores of the internet addiction test and the students' percentile value, age, gender, period of internet use, the state of getting hungry at computer/ internet, and their mothers' educational background.

Keywords: Internet addiction, risk of obesity, students

ÖZ

Giriş: Bu araştırma, ilköğretim öğrencilerinde internet bağımlılığı ve obezite riskinin belirlenmesi amacıyla yapılmıştır.

Gereç ve Yöntem: Bu araştırma 2014-2015 öğretim yılının ikinci döneminde, ikinci kademede öğrenim gören toplam 358 öğrencisi ile gerçekleştirilmiştir. Araştırmanın yapılabilmesi için etik kurul ve kurum izni, çalışmaya katılan öğrenciler ve velilerinden sözlü ve yazılı onamları alınmıştır. Verilerin istatistiksel değerlendirilmesinde Mann-Whitney U ve Kruskal Wallis testi kullanılmıştır.

Bulgular: Araştırmaya katılan öğrencilerin yaş ortalaması 13.75±0.64, ilk internet kullanım yaşı 7.71±2.02'dir. Ek olarak %44.3'ü beş saatten fazla internet kullanmaktadır. Öğrencilerin %51.7'sinin kahvaltı yapmadığı ve %32.8'inin internette iken yemek yemeyi geçiştirdiği belirlenmiştir. Araştırmaya katılan öğrencilerin %13.4'ü obez, %14.2'si hafif kilolu olarak bulunmuştur. Öğrencilerin internet bağımlılık toplam ölçek puanı 20.36±16.16 olarak belirlenmiştir.

Sonuç: İnternet bağımlılık ölçek puanları incelendiğinde; öğrencilerin persentil değeri, yaş, cinsiyet, anne eğitim durumu, internet kullanım süresi ve bilgisayar/ internet başında acıkma durumu ile internet bağımlılık ölçek puanı arasında istatistiksel olarak anlamlı bir fark olduğu saptanmıştır.

Anahtar kelimeler:İnternet bağımlılığı, obezite riski, öğrenciler

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INTRODUCTION

Internet provides conveniences for communication and reaching the information; for this reason, it is used at every stage and field of life. According to data of Turkish Statistical Institute, almost 80.7% of households had internet access (1). Previous studies have reported that students mostly use internet for listening to music, surfing, playing game, sending e-mail, reaching the information, meeting with new people, and using instant messaging (2-5).

Even though basic functions of the internet involve increasing the communication and facilitating the information sharing in the developing world, rapid growth of internet bring along several problems. Because the youth cannot limit the use of internet to required rates, they become addicted and face with problems in their school and social lives due to overuse (3-7). This results in health problems, alienation from sports activities, and weight gain caused by lack of activity and motion as well as changing dietary habits. Physical inactivity is the important problem of the youth who spend time on the internet for a long period of time. It is a vicious cycle; physical inactivity causes obesity and obesity causes physical inactivity (8-10). Prevalence of obesity in school age children in Turkey is reported to be between 9- 16.6% (11-13).

We think that this study would make an important contribution in terms of emphasizing hazards of internet addition and obesity, which is an important public health issue in children, revealing preventable risk factors, and taking precautions.

METHODS

This study was designed in order to determine the rate between internet addiction and risk of obesity in primary school students. There are few studies in the literature that investigate the relationship between internet addiction and obesity. This study was conducted to draw attention to the subject. This cross-sectional preliminary study was conducted with 13-15 year-old students who were studying at a public primary school located in the city center and were not visually and hearing impaired. The population of the study consisted of the students studying at a public primary school located in the city center. The reason why this school is preferred; internet dependency and obesity in a single point. It is then aimed to plan this work as a cohort or cross-sectional study. The sample of the study consisted of 392 students aged between 13-15 years who met the inclusion criteria of the study between February-June in the second term of the 2014-2015 school year at a public primary school and agreed to participate in the study. 358 of these students agreed to participate in the study. The inclusion criteria of the study were as follows; being 13-15 years old (age group for implementation of the internet addiction test) and were not visually/hearing impaired.

Ethical Aspect of the Study

Ethics Committee approval from Erciyes University Ethics Committee of Social and Human Sciences (14/07/2015-07), and institutional permission of Public Primary School were received for the study. All participants had written consent from their parents or guardians for participation, and also provided their verbal consents.

Procedures

Fourteen teachers working in the classes, in which the age groups suitable for the study were involved, and 2 researchers made explanations about the study to the students by visiting the classes at an appropriate hour specified by related teacher of each class and determined the voluntary students. Families of voluntary students determined in each class were called and a parents' meeting was held for each class. In this meeting, the researchers and the classroom teacher explained about the aim of the study and what to do and then verbal and written consents of the parents were taken.

The students were taken into research room one by one at the morning hours before lessons. The responsible researchers asked the students to fill in personal questionnaire and then the internet addiction test. Lastly, the responsible researcher took anthropometric measurements of the students and recorded these data on personal questionnaire.

Instruments

Personal questionnaire: The questionnaire prepared by the researchers upon literature review consisted of 25 questions including descriptive characteristics and physical examination information of the students.

Internet Addiction Test: "Internet Addiction Test" developed by Young (14) and adapted into Turkish by Bayraktar (15) in order to determine internet addiction of primary school students was used in the study. The Internet Addiction Test is a 5-point Likert scale consisting of 20 questions. A score between 0 and 100 points can be obtained from the test. Scores obtained from the test are divided into three groups; 80-100 points refer to "Internet Addicted", 50-79 points refer to " limited symptoms [signs]", and 0-50 points refer to " no symptom [sign]". Cronbach Alpha internal consistency reliability of the test was found as 0.91 (15) , 0.81 (16), 0.90 (17), and 0.89 (18). Its Cronbach Alpha internal consistency reliability was 0.89 in this study.

Metabolic values

Height: Heights of the students were measured by using a stadiometer.

Body weight: Fat, muscle, and water ratios of the students were measured via a digital weighing machine (Medisana).

Assessment of Body Mass Index Percentile (kg/m2): Assessment of Body Mass Index (BMI) Percentile is the best evaluation indicating slimness and obesity in children. Percentile value is evaluated as; underweight for less than the 5th percentile, normal weight for 5th percentile to less than the 85th percentile, overweight for 85th to less than the 95th percentile, and obese for 95th percentile or greater (19).

Statistical Analysis

The data were analyzed by using SPSS Statistics version

22.0 (IBM, Armonk, New York). The number of units (*n*), percentage (%), and mean ± standard deviation($\bar{x} \pm sd$) were determined as the summary statistics. The normality distribution of the data was assessed with Shapiro-Wilk test and Q-Q plot. Mann-Whitney *U* test and Kruskal Wallis test were used for the non-normally distributed variables. Pairwise comparison was made for multiple comparisons. $p<0.05$ was accepted as statistically significant.

Limitations

This study included the sample limitation because it was conducted with students at one school. Since external validity could not be provided, results of the study cannot be generalized but may contribute to generalization. Another limitation is that the data were self-reported.

RESULTS

Average age of the students included in the study was 13.75±0.64, their mean percentile value was 53.33±32.94, their total score of the internet addiction test was 20.36±16.16, and they started using internet at age of 7.71±2.02. 50.8% of the students were boys, mothers of 41.1% had primary or below education, and fathers of 40.2% had university degree (Table I). Also, it was found that while 13.4% of the students were obese, 14.2% were overweight. 88.2% of the students have computers in their homes. It was also determined that 59.6% of the students used the internet over the weekend and 51.7% did not have breakfast. (Table II)

When the scores obtained by the students from the internet addiction test were examined; a statistically significant difference was found between scores of the internet addiction test and the students' BMI percentile value (5th-85th percentile, 85th-95th percentile, >95th percentile), age, gender, period of internet use, the state of getting hungry on the computer/ internet, and their mothers' educational background ($p<0.05$) (Table III). In multiple comparisons, it was determined that the difference in age group was arising from the age group of 13 and 14 years ($p=0.048$), the difference in period of

Table I. Distribution of descriptive characteristics (n=358)

Characteristics		
Age	13.75±0.64	
Percentile Value (kg/m2)	53.33±32.94	
Total score of Internet addiction	20.37±16.16	
Age to start using internet	7.71±2.02	
	n	**%**
Gender		
Girl	176	49.2
Boy	182	50.8
Mother-father together		
Yes	329	91.9
No	29	8.1
Educational level of mother		
Primary education and below*	147	41.1
High school	128	35.8
University	83	23.2
Educational level of father		
Primary education and below [0]	82	22.9
High school	132	36.9
University	144	40.2
BMI Percentile Value		
0-5 th percentile	0.0	0.0
5-85 th percentile	259	72.3
85-95 th percentile	51	14.2
>95 th percentile	48	13.4

* Number of illiterate mothers: 5
[0] Number of illiterate fathers: 4

Table II. Distribution of internet use and dietary characteristics n=358

Characteristics	n	%
Having a computer at home		
Yes	318	88.2
No	40	11.2
Period of using internet (weekly)		
Less than 5 hours	195	54.5
5-10 hours	95	26.5
11-20 hours	42	11.7
More than 21 hours	22	6.1
Never	4	1.2
Time for playing game in the internet º		
When coming home from school	96	27.1
In the evening	31	8.8
At night	1	1.1
At weekends	211	59.6
I do not play games	12	3.4
Status of internet addiction		
No symptom	337	94.1
Limited symptoms	20	5.6
Internet addicted	1	0.3
Having breakfast		
Yes	173	48.3
No	185	51.7
Feeling hungry on the computer/ internet		
I don't eat until I complete my works on the computer	30	8.5
I go to the kitchen and eat	208	58.8
I eat sandwich, chips, cola, biscuits, etc.	74	20.9
I appease my hunger with fruits	42	11.9

ºEvaluation was performed out of n=351.

using the internet was associated with those using internet more than 21 hours ($p<0.001$), and the difference in percentile group was caused by the students with >95th percentile ($p=0.007$).

DISCUSSION

In this study, it was found that mean score of boys for internet addiction test was higher compared to girls and the difference between them was significant ($p<0.05$) (Table III). Similarly, there are studies determining that the difference between internet addiction and gender is significant and indicating that boys are more internet addicted than girls (20-22). And again in this study, 44.3% of the students were determined to use internet for more than 5 hours. In the study of Özcan and Buzlu (30), they reported that students spent maximum 2-5 hours on the internet per week. Young stated that mean internet use among problematic internet users was 38.5 hours per week and mean internet use among healthy users was 4.9 hours/week. In their study, Cassidy-Bushrow et al (22) found that adolescents used internet for 15 hours a week. When the result of this study was compared with other studies, students' daily duration of internet use was similar. This

Table III. Differences between Internet Addiction and sample characteristics

Characteristics	Mean score of Internet addiction test ±sd	*p*
Age		
13	23.37±16.90	0.028
14	18.93±16.11	
15	17.60±12.58	
Gender		
Girl	16.26±12.71	0.001
Boy	24.34±18.07	
BMI Percentile		
5-85 th percentile	18.38±14.43	
85-95 th percentile	20.84±14.88	0.001
>95 th percentile	30.56±21.86	
Educational level of mother		
Primary education and below	16.59±14.58	
High school	21.49±14.96	0.001
University	25.31±18.97	
Educational level of father		
Primary education and below	18.95±16.20	
High school	20.92±16.18	0.474
University	20.65±16.20	
Period of using internet		
Less than 5 hours	15.34±12.30	
5-10 hours	23.84±16.05	
11-20 hours	29.69±17.34	0.001
More than 21 hours	35.81±22.64	
Never	0.00±0.00	
Feeling hungry on the computer/ internet		
I don't eat until I complete my works on the computer	25.66±16.96	
I go to the kitchen and eat	16.13±12.72	0.001
I eat sandwich, chips, cola, biscuits, etc.	32.48±18.49	
I appease my hunger	18.09±14.95	
Having breakfast		
Yes	18.54±15.80	
No	22.07±16.35	0.017
Leisure time activity		
I play game on the computer	26.78±17.43	
I surf in the internet	26.92±18.75	
I do exercise	16.27±12.04	
I spend time with my friends	16.83±14.15	
I watch TV	12.28±6.91	0.001
Other*	11.61±11.75	

* I spend time with my family /I study/I read a book/I listen to music/I paint

situation is an indicator for increasing risk of problematic internet use. It can be asserted that the students included in the sample of this study did not have serious risks in terms of addiction.

It was found in the present study that the rate of the students being addicted and having limited symptoms in terms of internet use was low. Different rates were obtained in studies conducted on internet addiction. In their study, Li et al. reported that internet addiction rate was 11.5% among primary school students (23). In the study conducted by Yang et al., in Taiwan, the internet addiction rate was found to be 13.8% (24). The rate of internet addiction was reported as 2.8% in other studies (25-26). In a study conducted on 3399 people in Norway, the rate of internet addiction was 1% (27). On the other hand, in their study Balcı and Gülnar stated that 23.2% showed symptoms of internet addiction; whereas 28.4% were involved in risky internet user group (28). Reason for different rates in studies can be commented as the fact that methodological methods, age, method of research, and scales used are different. When the studies were examined, high rates are observed as a result of studies conducted via internet or telephone. However, the rates of internet addiction in studies conducted through face-to-face interviews were generally observed as 1-2% (29-30).

According to results of the present study, it was observed that there was a significant difference between percentile values and internet addiction test mean score of the students; as BMI percentile value increased, internet addiction level increased ($p<0.05$) (Table III). In addition, internet addiction test mean score of those consuming unhealthy food, appeasing, and not having breakfast was significantly high ($p<0.05$) (Table III). Similar studies revealed that dietary quality is low in high risk internet users, internet addiction is higher in obese boys than non-obese ones, and internet addiction is a risk factor for obesity (9,10,20,23,26). One exception to this general trend is a study on sedentary behavior and BMI among adolescents, which found that computer usage was positively associated with BMI among girls but not boys (31). Another study found a correlation between computer use and BMI (32-33). Overweight individuals have a bad dietary quality and sedentary time they spend within a day is much. Internet addicted people mostly spend their time in a day without doing any physical activity and they had unhealthy nutrition in studies (23,26,34-35). Tendency of internet addiction may have a negative effect on body health of adolescents. The results of this study make us think that as the tendency of internet addiction increases and poor diet and sedentary life continue, addiction level of these students would increase at advanced ages and they would face with the risk of obesity. Determining the effect of internet addiction on development of obesity and related interventions is a significant step in fighting against health problems. It is required to increase the interest in internet addiction and obesity issues.

Projects and activities can be organized to develop the internet addiction and obesity prevention program for health protection and promotion in children and adolescents. Internet addiction and obesity prevention interventions including parents, teachers, peers, and community, which are a part of the environment shaping children and adolescents at risk of internet addiction, could be planned. And results of newly designed interventional studies focusing on internet addiction could be evaluated. Using the probabilistic sampling method, it may be suggested that this situation be detected in children in Kayseri universe.

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REFERENCES

1. Türkiye İstatistik Kurumu [Internet]: Türkiye İsta tistikleri Araştırması. c2017 - [cited 2017 May 8]. Available from: http://www.tuik.gov.tr/
2. Madell D, Muncer S. Gender differences in the use of the internet by English secondary school children. Social Psychology of Education 2004; 7:229-251.
3. Berson I, Berson M. Digital literacy for effective citizenship. Social Education 2003; 67:164-167.
4. Colwell J, Kato M. Investigation of the relationship between social isolation, self-esteem, aggression and computer game play in Japanese adolescents. Asian Journal of Social Psychology 2003; 6:149-158.
5. Kubey RW, Lavin MJ, Barrows JR. Internet use and collegiate academic performance decrements:Early findings. Journal of Communication 2001; 51:366-382.
6. Kerberg CS. Problem and pathological gambling among college athletes. Annals of Clinical Psychiatry 2005; 17:243-247.
7. Caplan SE. Problematic Internet use and psychosocial well-being: Development of a theorybased cognitive–behavioral measurement instrument. Computers in Human Behavior 2002; 18:553-575.
8. Barbaros H, Balcı S. Küreselleşen Dünyada Çocuklarda Büyüyen Sorun: Obesite. Yıldırım Beyazıt Üniversitesi Sağlık Bilimleri Fakültesi Hemşirelik e-Dergisi 2015; 3:38-46.
9. Lajunen HR, Keski-Rahkonen A, Pulkkinen L, et al. Are computer and cell phone use associated with body mass index and overweight? A population study among twin adolescents. BMC Public Health 2007; 7:24.
10. Yen CF, Hsiao RC, Ko CH, et al. The relationships between body mass index and television viewing, internet use and cellular phone use: The moderating effects of socio-demographic characteristics and exercise. International Journal of Eating Disorders 2010; 43:565–571.
11. Çalışır H, Karaçam Z. The prevalence of overweight and obesity in primary schoolchildren and its correlation with sociodemographic factors in Aydın, Turkey. International Journal of Nursing Practice 2011; 17:166–173.
12. Metinoğlu İ, Pekol S, Metinoğlu Y. Kastamonu'da 10-12 yaş grubu öğrencilerde obezite prevalansı ve etkileyen faktörler. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi 2012; 3:117-123.
13. Türkiye Çocukluk Çağı Şişmanlık Araştırması COSI-TUR 2016. c2017- [cited 2017 May 10]. Available from: https://hsgm.saglik.gov.tr/depo/haberler/turkiye-cocukluk-cagi-sismanlik/COSI-

TUR-2016-Kitap.pdf
14.Young KS. Internet addiction: The emergence of a new clinical disorder. CyberPsychology & Behavior 1998; 1:237-244.
15.Bayraktar F. İnternet Kullanımının Ergen Gelişimindeki Rolü. Yayınlanmamış Yüksek Lisans Tezi, Ege Üniversitesi 2001; ss 42-55.
16.Canbaz S, Sunter AT, Peksen Y, Canbaz MA. Prevalence of the pathological internet use in a sample of Turkish school adolescents. Iranian Journal of Public Health 2009; 38:64-71.
17.Şahin M. İlköğretim Okulu Öğrencilerindeki Internet Bağımlılığı. Yüksek Lisans Tezi, Yeditepe Üniversitesi Sağlık Bilimleri Enstitüsü, İstanbul 2011; ss 54-57.
18.Esen E, Siyezi DM. Ergenlerde internet bağımlılığını yordayan psiko-sosyal değişkenlerin incelenmesi. Türk Psikolojik Danışma ve Rehberlik Dergisi 2011; 4:127-138.
19.Centers for Disease Control and Prevention [Internet]: BMI Percentile Calculator for Child and Teen English Version. c2016 – [cited 2016 Mar 10]. Available from: https://nccd.cdc.gov/dnpabmi/calculator.aspx
20.Baek SI, So WY. Association between times spent on the internet and weight status in Korean adolescents. Iranian Journal of Public Health 2011; 40:37–43.
21.Yang SC, Tung CJ. Comparison of Internet addicts and non-addicts in Taiwanese high school. Computers in Human Behavior 2007; 23:79–96.
22.Cassidy-Bushrow AE, Johnson DA, Peters RM, et al. Time Spent on the Internet and Adolescent Blood Pressure. The Journal of School Nursing 2015; 31:374-384.
23.Li Y, Zhang X, Lu F, Zhang Q, Wang Y. Internet Addiction Among Elementary and Middle School Students in China: A Nationally Representative Sample Study. Behavior and Social Networking 2014; 17:111-116.
24.Yang CK, Choe BM, Baity M, Lee JH, Cho JS. SCL 90-R and 16PF profiles of senior high school students with excessive internet use. Canadian Journal of Psychiatry 2005; 50:407-414.
25.Jang KS, Hwang SY, Choı JY. Internet addiction and psychiatric symptoms among Korean adolescents. Journal of School Health 2008; 78:165-171.
26.Kim Y, Young Park J, Kim SB, et al. The effects of Internet addiction on the lifestyle and dietary behavior of Korean adolescents. Nutr Res Pract 2010; 4:51 –57.
27.Johansson A, Götestam KG. Internet addiction: Characteristics of a questionnaire and prevalence in Norwegian youth (12–18 years). Scandinavian Journal of Psychology 2004; 45:223–229.
28.Balcı Ş, Gülnar B. Üniversite öğrencileri arasında internet bağımlılığı ve internet bağımlılığının profili. Selçuk Üniversitesi İletişim Fakültesi Akademik Dergisi 2009; 6:917-924.
29.Çetinkaya M. İlköğretim Öğrencilerinde İnternet Bağımlılığının İncelenmesi. Yüksek Lisans Tezi, Dokuz Eylül Üniversitesi Eğitim Bilimleri Enstitiüsü, İzmir 2013; ss 93-102.
30.Özcan NK, Buzlu S. Problemli internet kullanımını belirlemede yardımcı bir araç: "İnternette Bilişsel Durum Ölçeği"nin üniversite öğrencilerinde geçerlik ve güvenirliği. Bağımlılık Dergisi 2005; 6:19-26.
31.Utter J, Neumark-Sztainer D, Jeffery R, Story M. Couch potatoes or french fries: are sedentary behaviors associated with body mass index, physical activity, and dietary behaviors among adolescents? J Am Diet Assoc 2003; 103:1298 –305.
32.Arluk SL, Branch JD, Swain DP, Dowling EA. Child hood obesity's relationship to time spent in sedentary behavior. Mil Med 2003; 168:583– 586.
33.Schneider M, Dunton GF, Cooper DM. Media use and obesity in adolescent females. Obesity 2007; 15:2328 –2335.
34.Marshall SJ, Biddle SJ, Gorely T, Cameron N, Murdey I. Relationships between media use, body fatness and physical activity in children and youth: A meta-analysis. International Journal of Obesity and Related Metabolic Disorders 2004; 28:1238–1246.
35.Sarı SV, Aydın B. Problematic internet use and body mass index in university students. Eurasian Journal of Educational Research 2014; 54:135-150.