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The risk of smartphone addiction in university students and its affecting factors

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ABSTRACT

Aim: In this study, it was aimed to determine the risk of smartphone addiction in university students and to reveal the factors affecting it.

Material and Method: This descriptive and cross-sectional study was conducted on first and fourth year students of the Faculty of Health Sciences, Faculty of Economics and Administrative Sciences, and Faculty of Engineering and Architecture of a state university in the Central Anatolia Region. The study was completed with 1181 students who agreed to participate in the research. Data were collected using a sociodemographic information form consisting of 29 questions and a Smartphone Addiction Scale-Short Form (SAS-SF) consisting of 10 questions. Chi-square and logistic regression analysis were used in the comparative analyses, and $p<0.05$ values were considered statistically significant.

Results: 51.6% of the students participating in the study were female and 48.4% were male. The average age of first use of smartphones by students is 15.6±2.6 years. The average score of the students in SAS-SF is 28.12±10.65, According to the evaluation made by considering the cut-off points of the scale (above 31 for men and 33 for women), the risk of smartphone addiction was found in 34.7%.

Conclusion: It has been determined that approximately one third of the students participating in the research are at risk of smartphone addiction, and awareness of the subject should be created in the students.

Keywords: Smartphone addiction, university students, behavioral addiction

INTRODUCTION

With the effect of rapidly developing and advancing technology, mobile phones, which are widely used, have been replaced by smart phones. Smartphones that feature a small pocket computer; In addition to making phone calls, it has the ability to make video calls, connect to the internet, send and receive e-mails, install some applications and programs, and records images and sound (1). The use of smartphones with all these features has become very common in the last ten years (2). For example, it has been reported that 99.3% of internet users in China access it via smartphones (3). Similarly, in Switzerland, almost all adolescents aged 12-19 (97%) have a smartphone (4). In Turkey, the rate of mobile phone use among young people aged 16-24 has been reported as 94.2% in 2020 (5).

When it comes to addiction, the first thing that comes to mind is substance addiction, alcohol addiction, tobacco addiction, but it is known that behavioral addictions such as technology and smartphone addiction can also occur (6-8).

Smartphone addiction, "individual's inability to regulate their smartphone use and eventually leads to negative consequences and clinical deterioration in daily life" (9-12).

In our study, it was aimed to determine the risk of smartphone addiction in university students, one of the groups that use smartphones the most, and to determine the factors that may affect it.

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MATERIAL AND METHOD

Ethics Dimension of The Research

In order to carry out the study, the approval of the Erciyes University Clinical Researches Ethics Committee (Date: 09.02.2018, Decision No: 2018/61) and institutional permission were obtained. In addition, before the research, the students were informed about the research and their consent was obtained. All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki.

Type of Study

This study is descriptive and cross-sectional.

Place/Time of Study

Study was conducted between October and December 2018 on 1st and 4th year students studying Health, Social and Science of a Erciyes University.

Population, Sample and Sampling Research Method

The sample of the research consists of 1st and 4th year students studying at the Faculty of Health Sciences, Faculty of Economics and Administrative Sciences and Faculty of Engineering and Architecture. During the data collection, 260 people who did not attend the classes or did not want to participate in the research could not be interviewed and 28 students who did not use a smart phone were excluded from the study. As a result, a total of 1181 students were reached, including 302 (95.2%) from the Faculty of Health Sciences, 407 (74.4%) from the Faculty of Economics and Administrative Sciences, and 472 (78.1%) from the Faculty of Engineering and Architecture. Participation rate in the study was 80.4%.

Data Collection Tools

The data were collected by giving a 29-question sociodemographic information form prepared by the researchers. In addition, using the Smartphone Addiction Scale-Short Form consisting of 10 questions, it was collected in classroom environments and under the supervision of researchers.

Data Collection

Smartphone Addiction Scale-Short Form (SAS-SF) is a scale developed by Kwon, Kim, Cho and Yang to measure smartphone addiction in adolescents in 2013 and consists of 10 items in total. The scale, which has no sub-factors, is evaluated with a 6-point Likert scale, and the scale items are scored correctly from 1 to 6 (1-Strongly disagree, 2-Disagree, 3-Partly disagree, 4-Partly agree, 5-Agree, 6-Strongly agree). The total score obtained from the scale varies between 10 and 60, and it has been reported that the risk of addiction increases as the score gets higher. The cronbach alpha coefficient of the scale was 0.91, with cut-off points of 31 for men and 33 for women in the Korean sample (13). The Turkish validity and reliability study of the scale was conducted by Noyan et al. (14) and It has been reported as a valid and reliable scale that can be applied to evaluate smartphone addiction in university students and young adults. However, a separate cut-off point was not determined in the relevant study, and cut-off scores of 31 for men and 33 for women in the Korean sample were accepted as valid.

Statistical Analysis

While evaluating the data, the chi-square test was used to compare categorical variables as well as descriptive statistics. In order to show the relationships between smartphone addiction and independent variables, a model containing statistically significant ($p<0.05$) values according to the chi-square analysis was created and logistic regression analysis was performed. The dependent variable in the model is "smartphone addiction"; gender, age, education areas, economic status according to their own evaluations, perception of health status, smoking and alcohol use, sleep quality, frequency of checking smartphones during the day, taking pictures with smartphones, socializing smartphones Media usage status, smartphone use time, age of first use of the smartphone, where the smartphone was left before going to bed at night and the frequency of smartphone replacement were taken as independent variables.

RESULTS

A total of 1181 students participated in the research, and the average age of the students studying in the first year was determined as 19.5, and the average age of the students studying in the fourth year was determined as 22.1. 51.6% of the students are female, 60.5% are in the first class and 69.0% are living in the dormitory. Some features related to smartphone usage are given in **Table 1**.

Table 1. Some characteristics of students' smartphone use.

Characteristics (n=1181)	X±SD
Age of first use of smartphone	15.6±2.6
How long has he used the smartphone (years)	5.1±2.0
How long he uses the smartphone per day (hours)	5.5±3.5
Frequency of checking smartphone during the day (times)	41.7±62.9
Monthly paid invoice/credit amount (TL)	40.9±36.6

It was determined in **Table 2** that the students participating in the study mostly used their smart phones for internet use, communication and social media (90.6%, 90.0%, 87.3%, respectively). The average score of the students participating in the study in SAS-SF is 28.12±10.65. The median value is 27. According to the evaluation made by considering the cut-off points of the scale (above 31 points for men and 33 points for women), 34.7% of the students participating in the research are smartphone addicts.

Table 2. Smartphone addiction risk status by some sociodemographic characteristics of the participants

Feature	n	%	Risk of smartphone addiction				x^2, p
			Yes		No		
			No.	%	No.	%	
Total	1181	100	410	34.7	771	65.3	
Gender							x^2: 9.036 p: 0.003
Male	572	48.4	174	30.4	398	69.6	
Women	609	51.6	236	38.8	373	61.2	
Education area							x^2: 17.602 p: 0.001
Health*	302	25.6	121	40.1	181	59.9	
Social daytime education	316	26.8	90	28.5	226	71.5	
Social evening education*	91	7.7	43	47.3	48	52.7	
Science daytime education	318	26.9	111	34.9	207	65.1	
Science evening education	154	13.0	45	29.2	109	70.8	
Class							x^2:6.330 p:0.012
1st class	714	60.5	268	37.5	446	62.5	
4th class	467	39.5	142	30.4	325	69.6	
Age range							x^2:6.297 p:0.043
18-20	631	53.4	234	37.0	397	63.0	
21-23	459	38.9	154	33.6	305	66.4	
24 and above*	91	7.7	22	24.2	69	75.8	
Self-assessment of sleep quality							x^2:14.228 p:0.007
Good	411	127	30.9	284	69.1	411	
Medium	452	146	32.3	306	67.7	452	
Bad*	318	137	43.0	181	57.0	318	

The risk of smartphone addiction; It was found to be higher in social sciences and health sciences students, younger students, female students, and students who stated that their sleep quality was low. It was determined that the risk of addiction was statistically significantly higher in those who started using a smartphone at a young age, checked their phone frequently, kept the phone in bed or under the pillow at night, and used the phone for social media (**Table 3**).

According to the Logistic Regression analysis results, the risk of smartphone addiction; 1.38 times for women compared to men, 2.22 times for those studying in social evening education compared to those studying at social daytime education, 2.11 times for those with good family economic status, according to their own assessment, According to his own assessment, it was found that those with poor sleep quality were 1.60 times more likely than those with good sleep. The same risk; Those who check their smartphones 50 or more times a day are 1.49 times compared to those who check 20 times or less, 1.54 times those who use their smartphones to take pictures, and 2.19 times those who use a smartphone for 7 hours or more a day (**Table 4**).

Table 3. Smartphone addiction risk status by students' smartphone and ınternet usage characteristics

Feature	n	%	Risk of smartphone addiction				x^2, p
			Yes		No		
			No.	%	No.	%	
Total	1181	100.0	410	34.7	771	65.3	
Age of first use of the smartphone							x^2:7.184 p:0.007
Under 15	637	53.9	243	38.1	394	61.9	
15 years and over	544	46.1	167	30.7	377	69.3	
How many hours of internet use per day							x^2:52.196 p<0.001
0-4 hours*	644	54.6	165	25.6	479	74.4	
5-6 hours	265	22.4	117	44.2	148	55.8	
7 and above	272	23.0	128	47.1	144	52.9	
Frequency of checking the smartphone during the day							x^2:35.770 p<0.001
20 times and below*	616	52.2	168	27.3	448	72.7	
21-49 times*	182	15.4	67	36.8	115	63.2	
50 times or more*	383	32.4	175	45.7	208	54.3	
How many hours a day he uses a smartphone							x^2:54.095 p<0.001
0-4 hours*	582	49.3	146	25.1	436	74.9	
5-6 hours*	278	23.5	107	38.5	171	61.5	
7 hours or more*	321	27.2	157	48.9	164	51.1	
Where the smartphone is left before bed at night							x^2:38.070 p<0.001
Outside the bedroom	14	1.2	2	14.3	12	85.7	
In the bedroom away from the bed*	106	9.0	17	16.0	89	84.0	
Near the bed	824	69.7	277	33.6	547	66.4	
In bed/under pillow*	237	20.1	114	48.1	123	51.9	
Smartphone replacement frequency							x^2:10.049 p:0.002
Less than 2 years	290	24.5	123	42.4	167	57.6	
3 Years or more	891	75.5	287	32.2	604	67.8	
Invoice/credit amount paid monthly to the smartphone							x^2:7.629 p:0.022
30 Tl and below*	612	51.9	191	31.2	421	68.8	
31-99 Tl	519	43.9	197	38.0	322	62.0	
100 Tl and more	50	4.2	22	44.0	28	56.0	
Considering himself a smartphone addicted (n=1113)**							x^2:200.509 p<0.001
Yes i am addicted*	162	13.7	111	68.5	51	31.5	
I'm partially dependent	492	41.7	222	45.1	270	54.9	
No, i am not addicted*	459	38.8	59	12.9	400	87.1	
Using the smartphone for social media							x^2:19.529 p<0.001
Yes	1031	87.3	382	37.1	649	62.9	
No	150	12.7	28	18.7	122	81.3	
Using a smartphone to take photographs							x^2:25.073 p<0.001
Yes	844	71.5	330	39.1	514	60.9	
No	337	28.5	80	23.7	257	76.3	

**: The number of students who answered "I have no idea" is 68, 5.8% is not included.

Table 4. Analysis of variables that may be effective on smartphone addiction with binary logistic regression.

Variable (reference)	B	Exp(B)	%95 G.A	p
Gender (Male)		1.000		
Women	0.323	1.381	1.026-1.859	0.033
Age (24 and over)		1.000		
21-23	0.397	1.488	0.868-2.551	0.149
18-20	0.467	1.595	0.921-2.761	0.095
Field of education (social daytime education)		1.000		
Faculty of health sciences	0.508	1.662	1.168-2.365	0.005
Social evening education	0.800	2.226	1.360-3.644	0.001
Science daytime teaching	0.336	1.399	0.982-1.994	0.063
Science evening education	0.182	1.200	0.759-1.896	0.435
His family's economic situation according to his self evaluation (poor)		1.000		
Middle	0.648	1.912	1.056-3.459	0.032
Good	0.747	2.110	1.129-3.945	0.019
Self-assessment of health (good)		1.000		
Middle	0.298	1.347	0.997-1.818	0.052
Bad	0.069	1.072	0.450-2.554	0.876
Smoking status (not smoking)				
Using	0.151	1.000	0.859-1.573	0.328
		1.163		
Alcohol use status (using)		1.000		
Not using	0.145	1.156	0.763-1.751	0.493
Self-assessment of sleep quality (good)		1.000		
Middle	0.005	1.005	0.746-1.354	0.974
Bad	0.471	1.602	1.152-2.226	0.005
Frequency of checking smartphones during the day (20 or less)		1.000		
21-49 times	0.236	1.267	0.879-1.825	0.205
50 or more times	0.404	1.497	1.119-2.003	0.007
Those who use smartphones to take photos (no)		1.000		
Yes	0.434	1.543	1.118-2.129	0.008
People using smartphone for social media purposes (no)		1.000		
Yes	0.381	1.464	0.907-2.365	0.119
How many hours of smartphone use per day (0-4 hours)		1.000		
5-6 hours	0.412	1.509	1.098-2.075	0.011
7 hours or more	0.786	2.195	1.611-2.993	<0.001
Age of first use of the smartphone (15 years and above)		1.000		
Under	0.215	1.240	0.931-1.651	0.142
Where the smartphone is left before bed at night (outside the bedroom/away from the bed)		1.000		
Near/inside the bed	0.763	2.144	1.265-3.632	0.005
Smartphone replacement frequency (every 3 years or more)		1.000		
Less than 2 years	0.347	1.415	1.061-1.888	0.018

DISCUSSION

In this study, it was determined that the average score of the students in SAS-SF was 28.12±10.65. As a result of the evaluation made by considering the cut-off points of the scale (above 31 for men and 33 for women), it was determined that 34.7% of the students participating in the study had a risk of smartphone addiction. As the scale score average increases, it is considered that the risk for addiction increases (14). In a study conducted with medical school students, the average score of the students from the short form of the smartphone addiction scale was found to be 27.72±11.07 (15).

In another study, the average score of 170 university students from the smartphone addiction scale was found to be 29.60±11.08 (16). In the study conducted with high school students in Kütahya, the average score of the students from the short form of the smartphone addiction scale was found to be 26.60 (17). In a study conducted on individuals aged 18-25 who applied to the family medicine outpatient clinic of a university, the mean SAS-SF score was reported as 31.18±14.59 (18). In the study examining the relationship between sleep quality and smartphone addiction in Pamukkale University students, the mean SAS-SF score was reported as 28.63±10.15. In the same study, 34.6% of the students were found to be at risk of smartphone addiction, and it is possible to say that the result is similar to our study (19). It can be thought that this may be due to the fact that the researched population has similar age groups. In a study conducted with 1,043 young adults at a university in England, the rate of smartphone addiction risk was similar to our study and reported as 38.9% (2). Considering other studies in the literature, 30.5% of the students in a study conducted with 210 university students from Korea, 17.9% of adolescents in another study conducted in Korea in 2013, In a study conducted among 414 Chinese university students, 13.5% of the students, In a study conducted with 249 students studying at a private university in Lebanon, it was shown that 44.6% of the students had the risk of smartphone addiction (9-12).

In the study, when the students' evaluation of themselves as smartphone addicts was examined, it was determined that 68.5% of the students who answered yes, I am addicted, had a risk of smartphone addiction. In another study, similar to our study, it was determined that students who evaluated themselves as smartphone addicts were more addicted to smartphones than other groups, and the difference between the groups was found to be statistically significant (20). In another study conducted on university students, it was reported that 52.69% of the students defined themselves as smartphone addicts (21). Young people's inability to control their time during mobile phone use and their more active use of social platforms cause them to be exposed to the screen for a longer period of time, making them more prone to problematic mobile phone use.

In the study, it was determined that the risk of smartphone addiction was higher in women than in men, and the difference between them was found to be statistically significant (**Table 2**). When the variables that may affect the smartphone addiction of the students participating in the study were evaluated by binary logistic regression analysis, it was determined that the risk of smartphone addiction was 1.38 times higher in women than in men (**Table 4**). In other studies, it was found that smartphone addiction is higher in female students, which supports our study (13,20,22,23). Although men are more inclined to use technological devices than women (24). It is possible to say that smartphone addiction is more common in women (25-27). The reason why smartphone addiction is seen more frequently in women than in men is attributed to the purposes of using the smartphone (26). However, there are opposite results in the literature. For example; in the study conducted by Taylan (28) with 300 university students, it was determined that the average score of male students from the smartphone addiction scale was higher than that of females.

In some studies, no statistically significant difference was found between gender and smartphone addiction (14,15,17,18,20,29).

In the study, when the educational areas of the students and the risk of smartphone addiction were examined, it was determined that the highest rate of smartphone addiction was found among students studying in social sciences evening education with 47.3%, and students studying in health department with 40.1% in the second place (**Table 2**). In our study, when the variables that may affect students' smartphone addiction are evaluated with binary logistic regression analysis (**Table 4**.), it is found that the risk of addiction is 1.66 times higher for those studying at the Faculty of Health Sciences, and 2.22 times for students studying at evening education in social sciences, compared to those studying in daytime education detected. In a study conducted in Lebanon, it was determined that the addiction score average of the students studying in the Health department was higher than the students studying in the Architecture, Engineering, Humanities and Law Departments (22). The fact that students studying in health sciences could spend longer time with a smartphone due to the need to search for more information on subjects such as practice courses and case tracking may have caused a higher addiction score average.

In the study, the risk of smartphone addiction among students aged 18-20 was found to be 37.0% (**Table 2**). When evaluated by logistic regression analysis (**Table 4**), although no significance was demonstrated, the risk of smartphone addiction was found to be 1.59 times higher in students aged 18-20 compared to students aged 24 and over. When the relationship between the class in which the students study and smartphone addiction is examined, it was determined that 37.5% of the first-year students and 30.4% of the fourth-year students were smartphone addicts, and the difference between them was found to be statistically significant. It was determined that the average age of the first-year students was 19.5, and the fourth-year students were 22.1 years old. As it can be seen from **Table 4**, although there is no significant difference, it is seen that the age of first use of the smart phone is below the age of 15 and the use of social media may have an effect on addiction. Earlier acquaintance with the smartphone makes it easier for the individual to adapt to the use of smartphones, which can be predicted to increase the risk of addiction. When the studies in the literature are examined; It has been reported that university students who use social media actively have a high level of smartphone addiction (30).

In another study, it was reported that those who instant messaging with their friends, those who use social media actively, and those who play games with their smartphones are at high risk for smartphone addiction (31).

In the study, when the variables that may affect students' smartphone addiction were evaluated with binary logistic regression analysis (**Table 4**), it was determined that those with good economic status had a 2.11 times higher risk of addiction than those with bad economic status, according to the student's self-assessment. Contrary to our study, when the literature was examined, no difference was found when it was examined in terms of family income (32).

With the developing technology, high-end smartphones with different functional features and hardware are coming to the market and the ease of access to these phones is increasing with the increase in economic income. It can be thought that the young people who want to benefit from these innovations offered by the smart phone world will spend more time with the smart phone and this will increase the risk of addiction.

CONCLUSION

In conclusion; The risk of smartphone addiction; women, those who are studying in the first year, those who start using the smartphone at the age of 15, those who use the internet or smartphone for 7 or more hours a day, those who check their phones 50 times or more during the day, those who change their smartphones in less than one year, those who use their smartphones at night. It is higher in those who keep it near the bed/under the pillow, and in those who use their smartphones for social media and taking photos. The risk of smartphone addiction was determined in 34.7% of the students participating in the study.

ETHICAL DECLARATIONS

Ethics Committee Approval: The study was initiated with the approval of the Erciyes University Clinical Researches Ethics Committee (Date: 09.02.2018, Decision No: 2018/61).

Informed Consent: Before the interview, the individuals who agreed to participate in the research were explained about the purpose and importance of the research, the time they would spend for the interview, and their consent was obtained. In the study "Informed Consent Principle", "Voluntary Principle" and "Privacy Protection Principle" were fulfilled.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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