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Araştırma Makalesi / Research Article

Farkındalık Programları Covid-19 Pandemisinde Teknoloji Bağımlılığını Azaltabilir mi? Yarı Deneysel Bir Çalışma

Can Awareness Programs Reduce Technology Addiction During the Covid-19 Pandemic? A Quasi-Experimental Study

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ÖZET

COVID-19 pandemisi sırasında yaşanan kısıtlamalar, teknoloji bağımlılığının artması gibi çeşitli sorunlara neden olabilir. Bu çalışmada farkındalık programının üniversite öğrencilerinin boş zaman yönetimi ve teknoloji kullanımına etkisini incelemek amaçlanmıştır. Bu yarı deneysel çalışma, hemşirelik fakültesinde öğrenim gören toplam 77 üniversite öğrencisi ile, 40'ı girişim grubunda ve 37'si kontrol grubunda olmak üzere gerçekleştirilmiştir. Veriler, Sosyodemografik Özellikler Formu, Teknoloji Bağımlılığı Ölçeği ve Boş Zaman Yönetimi Ölçeği ile toplanmıştır. Veri değerlendirmesinde ki-kare, bağımsız t-testleri, varyans analizi ve Bonferroni testleri kullanılmıştır. Girişim ve kontrol grupları arasında sosyal ağlarda ve anlık mesajlaşma uygulamalarında geçirilen ortalama süreler arasında istatistiksel olarak anlamlı bir fark olduğu bulunmuştur. Girişim grubunun Teknoloji Bağımlılığı Ölçeği ön test ve son test ortalama puanları arasında istatistiksel olarak anlamlı bir fark göstermiştir. Katılımcıların teknoloji bağımlılığı düzeyi farkındalık programı ile azalmıştır. Öğrencilere farkındalık eğitimi vermek, teknoloji bağımlılığını azaltabilir ve daha etkili bir boş zaman yönetimi oluşturabilir. Öğrenciler hobilerine yönlendirildiğinde ve boş zamanlarını daha etkili bir şekilde kullanabildiklerinde, teknolojiye harcadıkları zamanın azaldığı sonucuna varılmıştır.

Anahtar kelimeler: Covid 19, Pandemi, Teknoloji Bağımlılığı, Zaman Yönetimi

ABSTRACT

The restrictions experienced during the COVID-19 pandemic can cause various problems, such as increased technology addiction. We aimed to examine the impact of an awareness program on university students' free time management and their use of technology. This quasi-experimental study was conducted with a total of 77 university students of the faculty of nursing, 40 of whom were in the intervention group and 37 in the control group. Data were collected with the Sociodemographic Characteristic Form, Technology Addiction Scale, and Free Time Management Scale. We used chi-square, student t-tests, analysis of variance, and Bonferroni tests in the data evaluation. It was found that there was a statistically significant difference between mean time spent in social networks and instant messaging applications between intervention and control groups. The Technology Addiction Scale pre-test and post-test mean scores of the intervention group showed a statistically significant difference. The participants' level of technology addiction decreased with the awareness program. Giving students awareness education can reduce technology addiction and create more effective free time management. When students are directed to hobbies and can use their free time more effectively, the time they spend on technology decreases.

Keywords: Covid 19**,** Pandemic, Technology Addiction, Time Management

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INTRODUCTION

With the diversity of its areas of use, technology is continuing to have an increasingly high impact on our daily life and social relations. Especially young people use technology in various fields, such as school subjects, entertainment, social communication, and the internet (Osorio-Molina et al., 2021). While technology has positive effects on facilitating life, social development, and modernization, new behavioral problems, such as technological addiction, also emerge.

Despite its perceived invisibility or lack of attention, technology addiction is a significant public health issue with grave consequences. It progresses quietly compared to other types of addiction, but the number of technology addicts is increasing day by day. The previous definition of addiction includes cigarette, alcohol, and substance use, but the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) involves technology addiction as well (American Psychiatric Association, 2013).

Technology addiction related to the use of the internet and technological devices is defined as follows: overuse; inability to satisfy the desire to use technology; neglecting activities due to excessive use; damaging social relations due to excessive use; using technology as an escape from negative emotions and life stress; experiencing problems in reducing and stopping its use; feeling tense and nervous when it is not possible to use technology; lying about the duration and amount of use(Ekticioglu et al., 2020). A meta-analysis of 81 studies on smartphone addiction conducted in 24 countries showed that addiction increased significantly from 2014 to 2020 (Olson et al., 2022). Despite its prevalence across all age groups, young people are particularly susceptible to technology addiction (Uysal & Balcı, 2018). According to the report from TURKSTAT on the use of information technologies in children and households (2021), it was determined that the rate of technology use by individuals aged 16 %74 increased significantly between 2020 and 2021. Individuals in the 16-74 age group used the internet at a rate of 82.6% in 2021 (TUIK, 2021; TUIK, 2022). In the literature on information technology addiction, internet addiction is mainly associated with digital game addiction and social media addiction(Van Rooj & Prause, 2014).

Some studies indicated that people tended to engage in behaviors that carry a risk of addiction, such as watching TV series and videos, using social media, surfing the internet, or playing video games, to reduce their anxiety about changing living conditions during the pandemic period compared to before the pandemic (Majeed et al., 2020; Gao et al., 2020; Kiraly et al., 2020). Doing necessary activities, such as accessing information independently of time and place, interacting and communicating with other people, listening to music, and shopping, are among the benefits of using technology(Minaz & Bozkurt, 2017). However, technology addiction can have negative effects on physical, psychosomatic, social, and educational areas (Mondal et al., 2020). Studies with nursing students revealed that the use of smart mobile phones, in particular, led to poor sleep quality(Orhon et al., 2023). Another study found a negative correlation between smartphone use and self-confidence(Marquez-Hernandez et al., 2020). Nbudukaou et al. (2020) conducted a study with university students and found that their academic success decreased as their technology addiction increased. Adolescents' inability to prevent themselves from digital devices and not to find alternative leisure activities is an important factor in reducing addiction. It is important to highlight the significance of proactive measures against technology addiction, which negatively affects university students in terms of sleep quality, academic success, self-efficacy, and self-confidence. Also, researchers emphasized the importance of conducting interventional studies, particularly in this regard (Orhon et al., 2023). For this reason, students should be good at leisure management (Arslan, 2020). As a profession that addresses different segments of society, it is important for nursing students to exhibit exemplary behavior. It is important for students to use technology without

becoming dependent on it, as this sets a role model for others (Ozlu et al., 2024).In this context, this study was conducted to examine the effect of a technology addiction awareness program applied to university students on free time management and technology addiction. The hypotheses of the study are as follows:

After educating people about technology addiction, researchers compared the intervention and control groups.

H1: There is a difference in terms of the average time spent on social networks.

H2: There is a difference in terms of the average time spent in instant messaging applications.

H3: The intervention and control groups differ in the average amount of time they spend playing online games.

H4: The intervention and control groups differ in the average amount of time they spend on websites.

H5: There is a difference between the intervention and control groups in terms of the mean total score of the Free Time Management Scale.

H6: There is a difference between the intervention and control groups in terms of the mean scores they received from the subscales of the Leisure Time Management Scale

MATERIAL AND METHODS

Study Design

We conducted the study using a quasi-experimental design between December 2020 and November 2021.

Population and sample

We conducted the study with 4th-year nursing students at the nursing faculty of a state university in Izmir. We assigned 42 students to each of the intervention and control groups, assuming a potential reduction. We informed the students about the study procedures and included those who agreed to participate in the research. At the time of the study, there were approximately 300 students studying in their final year.

A general announcement was made to the students explaining the purpose and content of the study. After the announcement, volunteer senior students who wanted to participate in the study were included in the sampling. The study was completed with 40 students in the intervention group and 37 students in the control group due to missing data in the posttest and withdrawals during the study. As a result of the study, post hoc analysis was conducted for sample power. With the G*Using the G Power software, we calculated the study's effect size as 0.51 (moderate) and its power as 0.72. Criteria are being a student of the faculty of nursing (the students were selected from the senior year in order for the students to know the researchers for a longer period of time and to provide ease of communication), being voluntarily agreeing to participate in the study, and using a smartphone (for joining an instant messaging group). The sample will exclude individuals who wish to withdraw from the study at any stage. Both experimental and control group students were studying at the same school, but they lived in different places during the study because they received home education through distance education. In addition, both groups did not know who took part in the study. These factors led to the assumption that there was no transmission between the two groups.

Data Collection Measures

Sociodemographic Characteristics Form

This form was developed by the researchers. It consists of 21 questions about students' school year, family type, longest place of residence, and technology use habits.

Technology Addiction Scale (TAS)

This scale was developed by Aydin and Simsek in 2017 to determine the technology addiction levels of

students. It consists of a total of 30 items and 4 subscales. The subscales are social network addiction, instant messaging addiction, online gaming addiction, and website addiction. The items on the scale are evaluated on a five-point Likert-type scale with the following options: ‘’1-never; 2-rarely‘‘; 3-occasionally‘‘; 4-very often‘‘; 5- always‘‘. Scores on the subscales range from 6 to 30. The total scale score varies between 24 and 120, which is interpreted as follows: 0-24, "not addicted"; 25-48, "low level of addiction"; 49-72, "moderate level of addiction"; 73-96, "high level of addiction"; 97-120, "full addiction". In this study, Cronbach’s alpha values of the subscales were found as .78 for social network addiction, .80 for instant messaging addiction, .89 for online gaming addiction, and .86 for website addiction.

Free Time Management Scale (FTMS)

The original form of the scale is called the “Free time management scale”. It was developed by Wang et al. (2011). It was adapted into Turkish by Akgul and Karakucuk (2015).

The original scale consists of 15 items and 4 subscales: goal setting and technique (6 items- 1-2-3-4-5-6), evaluating (3 items, 7-8-9), free time attitude (3 items-10-11-12), and scheduling (3 items-13-14-15). Each item is scored between 1.00 and 5.00 with the following options: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree. The items on the 'scheduling' subscale consist of negative statements and are reverse scored. All other items are positive. High scores on the scale indicate that leisure management practices are better. In this study, Cronbach’s Alpha value of the total scale was found as .83, and it ranged from .71 to .81 for subscales.

Implementation of the Study Plan

Information about the interventions applied to the experimental group and the forms applied to the experimental and control groups are presented in Figure 1.

This study was planned as face-to-face education for the intervention group. However, since the university education was carried out by distance education due to the Covid 19 pandemic after the study started, the study was carried out remotely via instant messaging programs.

An instant messaging group was created with the intervention group, and awareness brochures were shared weekly through the group. In addition to Figure 1, after one-on-one interviews in the 4th week, participants were asked to choose a method to reduce their use of technology (options included reading books, doing sports, starting a hobby, or participants' suggestions). In the 5th week, they were interviewed about the method they chose and whether they applied this method in the following 2 weeks, and they were supported to apply the method.

An another instant messaging group was created with the control group, and the pretest and posttest application of the scales were carried out through these groups. Later, the awareness brochures given to the intervention group were shared with the control group considering the ethics of the study.

After the awareness brochures were created, expert opinions were obtained from three academics who teach technology and information addiction courses in undergraduate education and the program was revised in line with the feedback.

Variables of the Study

Independent variables: Awareness programme

Dependent variables: Average time spent on social networks, instant messaging applications, online gaming, and websites, mean score on the total Technology Addiction Scale and TAS-subscales, the total Free Time Management Scale.

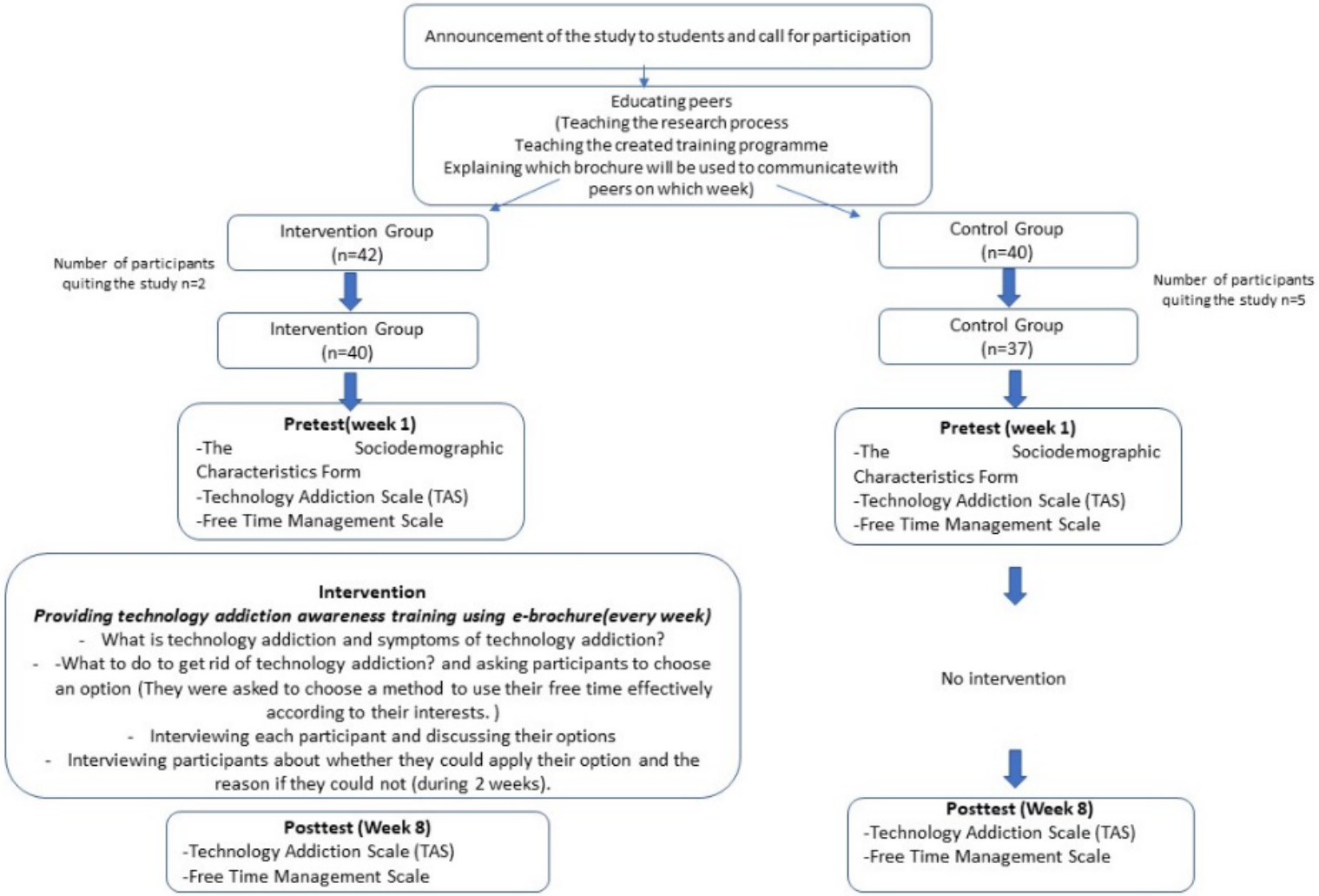

Figure 1. Implementation scheme of the study

Data analysis

The data were analyzed on the SPSS (29.0) software package. To determine whether the data is normally distributed, the kurtosis and skewness values were examined. Parametric tests were applied to the data that were found to be normally distributed. In the evaluation of the data, chi-square, student t tests, analysis of variance and bonferroni methods were employed. The significance value was taken as p<.05.

Ethical Issues

After obtaining written permission from the Faculty of Nursing, where the study would be conducted, ethics committee approval was obtained from the Dokuz Eylul University Non-Interventional Studies Ethics Committee of a state university(date:23/06/2021 and number: 2021/19-32). Verbal and written consent was obtained from the participants before starting the study.

RESULTS

The sociodemographic and technology use characteristics of participants in the intervention and control groups are given in Table 1. A homogeneity test was performed to see that there was no difference between the sociodemographic variables of participants in the intervention and control groups, such as age, count of siblings, sex, family type, longest place of residence, education level of the mother and the father and a total of eight variables of technology use, such as social network membership, the effect of the pandemic process on technology use, use of instant messaging applications, average daily time spent on social networks, etc. As a result of the analysis, the difference between the groups was found to be statistically insignificant (p>.05).

Table 1: Sociodemographic and technology use characteristics of students (n=77)

Descriptive characteristics	**Control group (n=37)**		**Intervention group (n=40)**		**t**	**p**
Age	x±SD 21.56±.72		x±SD 21.35±.69		1.337	.185
Mean number of siblings	x±SD 4.10± 2.56		x±SD 3.97±2.14		.247	.806
	Control group (n=37)		**Intervention group (n=40)**			
	n	**%**	**n**	**%**		
					χ^2	P
Sex						
Female	24	64.9	20	50.0	1.734	.188
Male	13	35.1	20	50.0		
Family type						
Core	35	94.6	36	90.0	.676*	
Extended	2	5.4	4	10.0		
The longest place of residence						
Village	5	13.5	4	10.0	1.200	.753
County	10	27.0	12	30.0		
Province	22	59.5	24	60.0		
Mother's education						
Non-literate	3	8.1	9	22.5		
Literate	7	18.9	8	20.0		
Primary education	19	51.4	13	32.5	6.465	.167
High school education	6	16.2	8	20.0		
University and above	2	5.4	2	5.0		

Father's education						
Non-literate	1	2.7	3	7.5		
Literate	3	8.1	3	7.5		
Primary education	15	40.5	17	42.5	3.246	.662
High school education	12	32.4	8	20.0		
University and above	6	16.2	7	17.5		
Member of social networking sites						
Yes	37	100.0	38	95.0	.494*	
No	-		2	5.0		
Did the pandemic process affect the time spent on social networks?						
Yes, it caused an increase.						
No, it did not.	34	91.9	34	85.0	2.029	.363
Yes, it caused a decrease.	3	8.1	4	10.0		
	-		2	5.0		
Use of instant messaging apps						
Yes	37	100.0	39	97.5	1.000*	
No	-		1	2.5		
Do you always play online games?						
Yes	16	43.2	11	27.5	.161*	
No	21	56.8	29	72.5		
Is there a website that you always go to?						
Yes					.393*	
No	32	85.7	31	77.5		
	7	14.3	9	22.5		
Does the time you spent on technology disturb you?						
Yes					1.000*	
No	20	54.1	21	52.5		
	17	45.9	19	47.5		
Where do you connect the Internet from? (Multiple choices are possible.)						
Home/hostel						
School	25	67.6	29	72.5	.804*	
Mobile	3	8.1	5	12.5	.713*	
Other	28	75.7	21	52.5	.057*	
	-		3	7.5	.241*	
Which device do you use to connect to the Internet (Multiple choices are possible.)						
Desktop PC	4	10.8	3	7.5	.705*	
Mobile phone	35	94.6	34	85	.432*	
Laptop PC	20	54.1	25	62.5	.494*	
Tablet	4	10.8	5	12.5	1.000*	
Television	1	2.7	2	5.0	1.000*	

SD: Standard Deviation; * Fisher Chi-square

Table 2 presents the comparison of the intervention and control groups in terms of the mean duration of technology use, their mean scores on the total FTMS, and the total TAS before and after the intervention.

The examination of the mean pretest and posttest scores of the control group in terms of all variables indicated that there was no statistically significant difference between the variables (p>.05).

Table 2: Comparison of the mean scores of the students in the experimental and control groups before and after the intervention (n=77)

	Group	**Control**	**Intervention**		
		n= 37	**n= 40**	**t**	**p**
		X± SD	**X± SD**		
	Follow-ups				
Average time spent on social networks (hours/day)	**Pretest**	3.027±1.092	2.875±.965	.648	.519
	Posttest	3.135±.976	2.625±.952	2.320	**.023**
	t	-1.071	1.818		
	p	.291	**.047**		
Average time spent on instant messaging applications (hours/day)	**Pretest**	2.378±1.114	2.425±1.059	-.188	.851
	Posttest	2.540±1.043	2.100±1.032	1.861	**.047**
	t	-1.640	2.690		
	p	.110	**.010**		
Average time spent on online gaming (hours/day)	**Pretest**	.810±1.221	.750±1.276	.213	.832
	Posttest	.837±1.258	.525±1.037	1.194	.236
	t	-.374	1.778		
	p	.711	.083		
Average time spent on websites (hours/day)	**Pretest**	1.810±1.023	1.875±1.066	-.269	.789
	Posttest	1.702±.938	1.650±1.144	.220	.827
	t	.702	1.138		
	p	.487	.262		
Free Time Management Scale (FTMS)	**Pretest**	53.432±12.075	49.650±8.876	1.574	.120
	Posttest	52.675±10.214	52.100±7.817	.279	.781
	t	.545	-1.589		
	p	.589	.120		
Technology Addiction Scale	**Pretest**	49.189±16.438	52.600±18.306	-.858	.394
	Posttest	46.351±15.092	48.950±16.486	-.720	.474
	t	1.869	1.900		
	p	.070	**.045**		

The examination of the mean pretest and posttest scores of the intervention group in terms of all variables indicated that there was a statistically significant difference between their mean score on the total Technology Addiction Scale and average time spent on social networks and instant messaging applications (p<.05). There was no statistically significant difference between their mean scores on

the total Free Time Management Scale and the average time spent on online gaming and websites (p>.05).

When the mean pretest scores of the intervention and control groups were examined in terms of all variables, it was found that there was no statistically significant difference between the variables (p>.05).

The examination of the mean posttest scores of the intervention and control groups in terms of all variables indicated that there was a statistically significant difference between the mean time spent on social networks and instant messaging applications (p<.05).

The comparison of the post-intervention technology use times and the mean scale scores of the control and intervention groups is given in Table 3. The effect size for the significant 'average time spent on social networks' value was examined, and the Cohen's d value was found to be 0.52, indicating a medium effect size.

A statistically significant difference was found between the time spent on social networks and the mean score on the TAS-instant messaging subscale in the control group and between the time spent on social networks and the mean scores on the TAS-social networks subscale, TAS-instant messaging subscale, TAS-websites subscale, the total TAS, and the total FTMS in the intervention group (p<.05).

Table 3: Comparison of post-intervention technology use times and mean scale scores of participants in the control and intervention groups

Feature	Scale Dimension/ Sub-Dimension	Control group (n=37)			Intervention group(n=40)		
		F	p	Bonferroni	F	p	Bonferroni
Time spent on social networks	TAS- social network	2.514	.061	*	4.203	.007	*
	TAS-instant messaging	3.041	.031		3.928	.010	
	TAS-online gaming	.013	1.000		.255	.905	
	TAS-websites	1.176	.340		2.905	.036	
	TAS total	2.056	.110		2.855	.038	
	FTMS total	.145	.964		2.829	.039	
Time spent on instant messaging applications	TAS- social network	.496	.739		1.218	.321	
	TAS-instant messaging	1.380	.263		1.265	. 302	
	TAS-online gaming	.404	.805		.313	.867	
	TAS-websites	1.907	.133		1.299	.289	
	TAS total	.364	.832		.728	.579	
	FTMS total	.726	.581		1.263	.303	

Time spent on online gaming	TAS- social network	.619	.652		1.515	.219	
	TAS-instant messaging	.702	.596		1.068	.387	
	TAS-online gaming	5.821	.001	5-6 h>less than 1 h	15.682	.000	*
	TAS-websites	.238	.915		1.979	.119	*
	TAS total	.520	.722		4.690	.004	*
	FTMS total	2.056	.110		3.021	.031	
Time spent on websites	TAS- social network	1.400	.256		2.940	.034	5-6 h** >1 h
	TAS-instant messaging	.792	.539		2.527	.058	
	TAS-online gaming	.102	.981		6.520	.000	5-6 h > less than 1 h; 5-6 h>1-2 h; 5-6 h >3-4h
	TAS-websites	1.869	.140		3.130	.027	5-6 h > less than 1 h
	TAS total	.768	.554		6.668	.000	5-6 h > less than 1 h; 5-6 h >1-2 h; 5-6 h>3-4h
	FTMS total	1.101	.373		1.371	.264	

*Post hoc tests were not performed because at least one group had fewer than two cases. ** hour

No statistically significant difference was found between the mean scores of the control and intervention groups in terms of the variable of time spent on instant messaging applications (p>.05).

There were statistically significant differences between the mean scores of the control group on the TAS-online gaming subscale, and between mean scores of the intervention group on the TAS-online gaming subscale and the TAS total and FTMS total (p<.05). It was determined that the difference in the control group stemmed from the difference between those who played online games 5-6 hours a day and those who played less than 1 hour (p<.05).

Regarding the time spent on websites, while no statistically significant difference was found between the mean scores of the control group (p>.05), a statistically significant difference was found between the mean scores of the intervention group on TAS-social networks, TAS-online gaming, and TAS-websites subscales, and the total TAS (p<.05). It was found that the difference in TAS-social networks and TAS-web subscale scores was due to the difference between those who played online games for 5-6 hours and those who played less than 1 hour (p<.05). The difference in TAS-online gaming subscale and the TAS-total scores was found to come from the difference between those who played games 5-6 hours and those who played less than 1 hour, 1-2 hours, and 3-4 hours (p<.05).

DISCUSSION

As a generation that has grown up with technology from the moment they were born. individuals born in 2000 and later are defined as the digital natives of the technology age (Potas et al., 2022). The mean age of participants in both the intervention and control groups indicates that they are in this age group. There was no difference between the intervention and control groups in terms of the average daily time spent on social networks before the study, but a difference was found between the groups after the study.

It was seen that the average daily time that participants in the control group spent increased slightly, but that the increase was not statistically significant. In parallel with this finding, in a study with a large sample of university students, Arslan (2020) found that students' digital addiction levels were moderate and that the highest mean score was obtained on the inability to give up digital tools subscale. Some studies have shown that social media addiction can cause cognitive, physical, interpersonal, and psychological problems in students (Blachnio et al., 2017; Tang et al., 2016). In addition, it has been shown that there is a strong relationship between individuals' perceptions of self-identity and excessive use of social networks (Ho et al., 2017). It was found that participants in the intervention group who received technology awareness education were able to reduce the average time spent on social networks. Although studies on raising students' technology awareness are limited, available studies support our findings (Buyukozturk et al., 2019; Hou et al., 2019; Busiol & Lee, 2015).

Today, especially young people prefer communication using instant messaging applications on their mobile phones instead of verbal communication (Monacis et al., 2017). There was no statistical difference between the intervention and control groups before the study in terms of the average daily time spent on instant messaging applications, but there was a difference between the groups after the study. It was seen that the average daily time spent by the participants in the control group increased slightly, but that this increase was not statistically significant. Mobile phone use for more than four hours a day by university students negatively affects their psychosomatic-social skills, well-being, and anxiety levels (Mondal et al., 2020). In a study conducted with nursing students, it was determined that problematic mobile phone use negatively affected their decision-making processes (Marquez-Hernandez et al., 2020). It was found that the participants in the intervention group who received technology awareness education were able to reduce the average time spent on instant messaging applications.

Online gaming is very common all over the world. Perceived enjoyment has the strongest effect on the actual use of online games (Alzahrani et al., 2017). In today's digital age, students see these areas as a part of socialization and interpersonal communication. The examination of the average time spent by participants in the study on online games indicated that there was no statistically significant difference; however, it was seen that the amount of time spent by the participants in the control group remained almost the same, but that the time spent by the participants in the intervention group decreased by 1/3. Based on this result, it can be said that the interventions conducted are clinically effective and increase students' awareness. In addition, it has been stated that individuals participate in activities such as social media use and online gaming due to pressure from their friends (Alzahrani et al.,2017). It is known that people can use technology more frequently due to depression, anxiety, and helplessness (Potas et al., 2022). The increase in the control group can be explained by the increased rates of anxiety and depression during the COVID-19 pandemic (Schafer et al., 2022) and therefore the increase in the time spent by students. We can assume that we prevented the increase in the intervention group with the awareness education carried out during this period.

The examination of the variable of the average time spent by participants in the study on websites indicated that there was no statistically significant difference, but that the time spent by participants in both groups decreased. In a meta-analysis consisting of

studies on the effect of interventions on students' internet addiction, it was found that the internet addiction of the group receiving education decreased (Schafer et al., 2022; Malinauskas &Malinauskiene, 2019). In their study on interventions to reduce students' internet addiction, Uysal and Balcı (2018) found that there was a significant difference between the intervention and control groups in the 3rd month. In our study, posttest data were obtained in the 2nd month. Based on the difference in the results, it can be thought that longer exposure to awareness education is effective in reducing addiction.

In a multicenter study conducted with adolescents, it was found that 29% of adolescents did not continue their hobbies during the pandemic period (Orhon et al., 2023). In our study, it was determined that participants in the intervention and control groups had a moderate level of free time management. Similar to our results, Oksuz et al. (2018) found a moderate level of free time management in a study conducted with nursing students. Although there was no statistically significant difference between the groups in terms of the posttest results of our study, free time management remained almost the same in the control group. It was observed that the free time management of the intervention group increased slightly in clinical terms. Based on this result, it can be said that the awareness of the intervention group about free time management increased and that the intervention was effective at the clinical level. Good time management will bring success in business, academic, and private life (Nayak, 2019). Oksuz et al. (2018), determined that while the free time management of nursing students was better in the first year, it decreased as the school year increased. All of the participants in our study were fourth-year students. In this sense, our findings were consistent with the literature. It can be thought that nursing students cannot perform effective time management due to doing intern practice in the last year, working shifts in hospitals and starting the work pace at the same time, and attending school lessons and exams.

The technology addiction of the participants in the experimental and control groups in our study was found to be moderate. Although there was no statistically significant difference between the groups in the posttest results of our study, the level of technology addiction was found to be low in the control group. It is stated in the literature that sex is an important factor in technology addiction and that males are more prone to technology addiction (Mondal et al., 2020; Ndubuaku et al., 2020; Kocaaslan et al., 2021). The high number of female participants in the group may have been effective in the clinical decrease in the level of technology addiction without any intervention in the control group. In the intervention group, on the other hand, post-intervention technology addiction reached a low level, and this decrease was statistically significant. Unlike the control group, half of the intervention group consisted of male students. In general, the decrease in the level of addiction in the group with more participants with the disadvantaged sex in terms of technology addiction both clinically and statistically showed that awareness education was beneficial.

It was found that technology addiction increased as the daily time spent by the participants in the control group on online games and the time spent on websites by the participants in the intervention group increased. Kocaaslan et al. (2021) determined that the time spent on websites was directly proportional to internet addiction, which is consistent with our findings. Similarly, in an experimental study conducted with high school students in our country, it was found that the internet addiction of the intervention group decreased (Yanık &Arslan, 2023).

Limitations

This study has some limitations. The study plan was planned face-to-face but had to be conducted remotely due to the pandemic. Not being able to meet with the students and announcing the call for participation in the study via e-mail and instant messaging programs may have caused our sample loss. Because our students live in very different regions of the country. There may have been problems such as not being able

to access the internet, not seeing the announcement or seeing it late.

CONCLUSIONS

There are studies on technology addiction in the literature, but interventional studies on reducing addiction are few. This study is an innovative study in this sense. According to the results of this study, the awareness education given to university students can reduce technology addiction and more effective free time management can be created. In addition, when students are directed to hobbies and can use their free time more effectively, the time they spent on technology decreases.

Interventional studies have an important place in terms of showing the effect of care, especially in the field of nursing. In line with the results of the study, it is recommended that students should be given consultancy and education on the conscious use of technology and its benefits and taught skills to manage their free time from the first years of university education. It is thought that the provision of peer education and support in the education and counseling programs to be organized and also planning these programs continuously will increase the effectiveness of awareness education programs. In addition, increasing the extracurricular activities at universities will reduce the time spent on technology. The information technology course, which is taught as an elective course at universities, can be made a compulsory course, allowing all students to reach it. Relevant non-governmental organizations can be invited to universities to raise awareness among students. Technology addiction is a serious adolescent health problem, which does not only include university students. In this sense, it is recommended that public health nurses working in the field should develop strategies that will bring together the youth in their own region and the experts on the subject.

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