ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

Üniversite Öğrencilerinde İnternet Bağımlılığı, Yorgunluk ve Obezite Arasındaki İlişkinin İncelenmesi

Investigation of the Relationship Between Internet Addiction, Fatigue and Obesity in University Students

Emine Büşra AYDIN[1]

[1]Öğr. Gör. Gümüşhane University, Health Services Vocational School, Gümüşhane, TURKEY

ÖZET

Amaç: Bu çalışma üniversite öğrencilerinde internet bağımlılığı, yorgunluk ve obezite arasındaki ilişkinin incelenmesi amacıyla planlanmıştır. **Yöntem:** Çalışma Gümüşhane Üniversitesi Sağlık Hizmetleri Meslek Yüksekokulu'nda öğrenim gören 335 öğrencinin katılımı ile gerçekleşmiştir. Verilerin toplanmasında demografik bilgi formu Yorgunluk Şiddet Ölçeği (YŞÖ), Young İnternet Bağımlılığı Testi- Kısa Formu (YİBT-KF) kullanılmıştır. Obezite beden kitle indeksi (BKİ) ile değerlendirilmiştir. **Bulgular:** Katılımcıların %75.2'si kadındı. Öğrencilerin yaş ortalamaları 20.85±1.48 yıl; BKI ortalamaları 22.32±3.57 kg/m2; ortalama YŞÖ skorları 40.19±12.83; ortalama YİBT-KF skorları ise 29.10±8.08 olarak tespit edildi. Yorgunluk şiddetinde kadınlar ile erkekler arasında, obez bireyler ile normal kilolular arasında istatistiksel olarak anlamlı farklılık vardı (p<0.05). Yine yorgunluk şiddetinde 1. sınıflar ile 2. sınıflar arasında ve düzenli egzersiz yapanlar ile yapmayanlar arasında anlamlı farklılık vardı (p<0.05). İnternet bağımlılığında düzenli egzersiz yapanlar ile yapmayanlar arasında anlamlı fark olduğu tespit edildi (p<0.05). İnternet bağımlılığı ile yorgunluk arasında pozitif yönde anlamlı korelasyon olduğu görüldü (p<0.05). **Sonuç**: İnternet bağımlılığı egzersiz yapma alışkanlığını olumsuz etkilerken yorgunluğu da artırmaktadır. Bu nedenle gençlerde ve çocuklarda internet kullanım süresinin azaltılması ve internet bağımlılığı yönetimine ilişkin düzenlemeler önerilmektedir.

Anahtar Kelimeler: İnternet bağımlılığı; obezite; yorgunluk

ABSTRACT

Aim: This study was planned to investigate the relationship between internet addiction, fatigue, and obesity among university students. **Method:** The study was conducted with the participation of 335 students studying at Gümüşhane University School of Health Services. Demographic information forms Fatigue Severity Scale (FSS), Young Internet Addiction Test-Short Form (YIAT-SF) were used to collect data. Obesity was assessed by body mass index (BMI). **Results:** 75.2% of the participants were female. The mean age of the students was 20.85±1.48 year; mean BMI was 22.32±3.57 kg/m²; mean FSS score was 40.19±12.83; and mean YIAT-SF score was 29.10±8.08. There was a statistically significant difference in fatigue severity between women and men, and between obese individuals and normal weight individuals (p<0.05). Again, there was a significant difference in fatigue severity between 1st and 2nd graders and between those who exercised regularly and those who did not (p<0.05). It was found that there was a significant difference in internet addiction between those who exercise regularly and those who do not (p<0.05). A positive significant correlation was found between internet addiction and fatigue (p<0.05). **Conclusion:** Internet addiction negatively affects exercise habits and increases fatigue. For this reason, reducing the time spent on the internet and managing internet addiction in young people and children are recommended.

Keywords: Fatigue; internet addiction; obesity

INTRODUCTION

Although the primary purpose of using the Internet was to access information and increase interpersonal communication, over time it has become central to some users' lives. Young people in particular use the internet at a much higher rate than normal. This negatively affects their physical and psychological state, interpersonal communication, and causes their academic success to decline (1). The rapid spread of internet use than expected has brought the concept of internet addiction to the agenda. This concept can be generally expressed as the inability to reduce the desire for excessive internet use, becoming angry and aggressive when the internet cannot be accessed, and the negative effects of this on the individual's work, family and social life (2). These negative effects that occur in people's lives are the main reasons for research on internet addiction. On the other hand, the death cases reported as a result of using the internet for too long without sleeping in young people have also made this subject popular (3). Internet addiction has become a subject for which treatment is sought, and pharmacological and behavioral treatments for this disorder have gained importance (2).

Obesity, one of the important public health problems, is defined by the World Health Organization (WHO) as "excessive fat accumulation in the body that impairs health." The prevalence of obesity in adults in Turkey is more than 30%, and in the WHO 2022 report, Turkey is the country with the highest rate of obesity in Europe (4). Obesity brings about cardiovascular diseases, cancer and many other diseases, therefore, leaving it untreated leads to serious consequences (5). In young people, the new conditions, increased responsibilities, and adaptation processes to a new environment that come with university life have a negative impact on their health. Research shows that behaviors such as unhealthy nutrition and inactivity increase in these young people. On the other hand, studies in the literature emphasize the high rates of overweight and obesity in university students (6).

The aim of this study is to examine the relationship between internet addiction, fatigue and obesity in university students.

MATERIAL and METHOD

Type of Research

The research is a cross-sectional type of research.

Location of the Research

The research was conducted at Gümüşhane University Health Services Vocational School.

Universe and Sample

The students of Gümüşhane University Health Services Vocational School constitute the universe of the research. The research population consists of 1700 people. According to Büyüköztürk et al., considering the .95 confidence interval and .05 deviation amount, the sample size for the 2000-person population was determined as 322 people. In this direction, the study was completed with 335 people to represent the population (7).

Criteria for Inclusion and Exclusion from the Study

The inclusion criteria for the study were being a student at Gümüşhane University Health Services Vocational School; and the exclusion criteria were not using a smartphone or not being a member of social media**.**

Data Collection Tools

Demographic Information Form, Fatigue Severity Scale (FSS) and Young Internet Addiction Test-Short Form (YIAT-SF) were used to collect data.

Demographic Information Form: Participants' age, gender, height, weight, education time, grade, smoking status and regular exercise habits were questioned. Those who exercised for 30 minutes at least 3 days a week were considered to be exercising regularly.

Fatigue Severity Scale (FSS): The scale was created by Krupp et al. (1989). This scale, the validity and reliability of which was done for our country by Armutlu et al. (2007), contains 9 items. The score of each item is minimum 1 and maximum 7. The participant gives the closest value to each statement and the total score varies between 9 and 63. Increasing scores indicate more fatigue (8,9).

Young Internet Addiction Test-Short Form (YIAT-SF): The validity and reliability study of this scale, which was developed by Young (1998) and converted into a short form by Pawlikowski et al. (2013), was conducted by Kutlu et al. (2016) for Turkey. The scale contains 12 items. This 5-point Likert-type scale provides a minimum score of 12 and a maximum score of 60. As the score increases, internet addiction also increases (10-12).

Obesity Assessment: Obesity assessment was made using the "body mass index" formulated by the World Health Organization. In the calculation, the participants' weight in kilograms was divided by the square of their height in meters (BMI = kg/m^2). As a result, those with a body mass index of 30 and above were classified as obese, and those between 25-29.9 were classified as overweight. Those with a body mass index below 18.5 were considered underweight, and those between 18.5-24.9 were considered in the normal weight group (13).

Data Collection Method

Data were collected using face-to-face interview technique.

Statistical Analysis: IBM SPSS V23 was used for data analysis. Normal distribution was determined by Shapiro-Wilk and Kolmogorov-Smirnov tests. Data showing normal distribution in two groups were compared with independent sample t-test, and those not showing normal distribution were compared with Mann-Whitney U test. Data not normally distributed in three or more groups were compared with Kruskal Wallis test and multiple comparisons were made with Dunn test. Relationships between data conforming to normal distribution were examined with Spearman's rho correlation coefficient. $p < 0.050$ was determined for the significance level.

Ethical Dimensions of the Research: Ethics committee approval was obtained before the study. This study was found ethically appropriate by the decision of Gümüşhane University Scientific Research and Publication Ethics Committee dated 27/04/2022 and numbered 2022/3.

RESULTS

The distribution of participants according to demographic information is in Table 1. 75.2% of the participants were female, 72.5% were of normal weight, 52.5% were studying in the 1st grade, 54.9% were studying in the 2nd grade, 72.2% were non-smokers, and 54.3% did not exercise regularly.

***Table 1:** Frequency Distribution of Categorical Variables*

	n	%
Gender		
Female	252	75.2
Male	83	24.8
BMI class		
Underweight	35	10.4
Normal	243	72.5
Overweight	47	14
Obese	10	3
Study time		
1st Education	176	52.5
2nd Education	159	47.5
Class		
Class 1	151	45.1
Class 2	184	54.9
Smoking		
Using	93	27.8
Not Using	242	72.2
Regular exercise		
Yes	153	45.7
No	182	54.3

n: number %: percentage BMI: Body mass index

Table 2 presents the descriptive statistics of the participants for quantitative variables. The average age of the participants was 20.85±1.48 years, and the age range varied between 18 and 27 years. The average height was 166.77±9.14 cm, and the median height was determined as 165 cm. The average weight of the participants was 62.42±12.76 kg, and the median weight was 60 kg. The average body mass index (BMI) was 22.32±3.57 kg/m^2, and the median BMI value was determined as 21.82 kg/m^2. The average fatigue level of the participants was 40.19±12.83, and the median fatigue score was measured as 41. The average internet addiction level was 29.10±8.08, and the median internet addiction score was determined as 28.

Table 3 compares the fatigue scores of the participants according to the variables. The median fatigue was determined as 44 for women and 32 for men, and the fatigue medians differed according to gender (p<0.001). The fatigue medians differed according to BMI classes (p=0.020). The median fatigue was obtained as 44 for thin people, 41 for normal people, 40 for overweight people and 53.5 for obese people. A statistically significant difference was obtained between normal and obese people. The fatigue medians differed according to classes (p=0.017). While the median of class 1 was 39, the median of class 2 was 42.5. The fatigue means differed according to regular exercise (p=0.011). While the mean of those who exercised regularly was

38.22, the mean of those who did not was 41.84. The fatigue score medians did not differ according to other variables (p>0.050)

Table 2*: Descriptive Statistics of Quantitative Variables*

	Mean±sd	Median (min - max)
Age (year)	20.85±1.48	21.00 (18.00 – 27.00)
Height (cm)	166.77±9.14	165.00 (150.00 – 193.00)
Body weight (kg)	62.42±12.76	60.00 (38.00 – 130.00)
BMI (kg/m^2)	22.32±3.57	21.82 (14.50 – 47.75)
FSS	40.19±12.83	41.00 (9.00 – 63.00)
YIAT-SF	29.10±8.08	28.00 (12.00 – 59.00)

FSS: Fatigue Severity Scale   YIAT-SF:Young Internet Addiction Test-Short Form   BMI: Body mass index
sd: standart deviation cm: centimeter kg: kilogram m: meter min: minimum max: maximum

Table 3: *Comparison of Fatigue Scores According to Variables*

		FSS		Test statistics	p	Post-hoc
		Mean±sd	Median (min - max)			
Gender	Female	41.91±12.53	44.00 (9.00 – 63.00)	7059.500	**<0.001***	
	Male	34.95±12.37	32.00 (11.00 – 63.00)			
BMI class	Underweight	42.17±13.73	44.00 (14.00 – 63.00)	9.882	**0.020****	4>2
	Normal	39.31±12.87	41.00 (9.00 – 63.00)			
	Overweight	40.87±11.48	40.00 (11.00 – 63.00)			
	Obese	51.30±9.57	53.50 (32.00 – 60.00)			
Study time	1st Education	39.67±12.73	40.00 (9.00 – 63.00)	14778.500	0.374*	
	2nd Education	40.75±12.96	43.00 (9.00 – 63.00)			
Class	Class 1	38.28±12.97	39.00 (9.00 – 63.00)	15999.000	**0.017***	
	Class 2	41.75±12.53	42.50 (9.00 – 63.00)			
Smoking	Using	38.44±13.34	39.00 (9.00 – 63.00)	12506.500	0.114*	
	Not Using	40.86±12.59	42.00 (9.00 – 63.00)			
Regular exercise	Yes	38.22±13.87	39.00 (9.00 – 63.00)	-2.551	**0.011*****	
	No	41.84±11.66	43.00 (9.00 – 63.00)			

*Mann-Whitney U test, **Kruskal Wallis test, ***Independent sample t test FSS: Fatigue Severity Scale
BMI: Body mass index sd: standard deviation min: minimum max: maximum

Table 4 compares the participants' internet addiction scores according to variables. The internet addiction medians of those who exercise regularly and those who do not differ (p=0.042). The median of those who exercise regularly was 28, while the median of those who do not was 29. There is no significant difference according to other variables (p>0.050).

Table 4: *Comparison of Internet Addiction Scores According to Variables*

		YIAT-SF		Test statistics	p
		Mean±sd	Median (min - max)		
Gender	Female	28.95±7.97	28.00 (12.00 – 59.00)	10964.500	0.472*
	Male	29.55±8.46	30.00 (12.00 – 53.00)		
BMI class	Underweight	27.71±7.04	27.00 (16.00 – 47.00)	2.013	0.570**
	Normal	29.19±8.22	28.00 (12.00 – 59.00)		
	Overweight	28.98±7.79	28.00 (15.00 – 53.00)		
	Obese	32.40±9.66	29.00 (20.00 – 48.00)		
Study time	1st Education	28.72±7.39	28.00 (13.00 – 48.00)	14382.500	0.594*
	2nd Education	29.52±8.79	28.00 (12.00 – 59.00)		
Class	Class 1	28.52±8.22	28.00 (12.00 – 59.00)	14969.000	0.183*
	Class 2	29.57±7.96	28.00 (12.00 – 54.00)		
Smoking	Using	29.87±8.13	30.00 (12.00 – 47.00)	10159.000	0.185*
	Not Using	28.80±8.06	28.00 (12.00 – 59.00)		
Regular exercise	Yes	28.03±8.00	28.00 (12.00 – 53.00)	15615.500	**0.042***
	No	29.99±8.06	29.00 (13.00 – 59.00)		

*Mann-Whitney U test, **Kruskal Wallis test, YIAT-SF:Young Internet Addiction Test-Short Form
BMI: Body mass index sd: standart deviation min: minimum max: maximum

Table 5 shows the correlation between internet addiction, fatigue and body mass index. It is seen that there is a statistically significant weak positive correlation between fatigue and internet addiction (p=0.008). No significant correlation was found between BMI and internet addiction or fatigue (p>0.050).

Tablo 5: *Correlation Analysis Results*

		BMI	FSS	YIAT-SF
BMI	r	---		
	p	---		
FSS	r	0.028	---	
	p	0.610	---	
YIAT-SF	r	0.031	**0.145**	---
	p	0.573	**0.008**	---

r: Spearman's rho correlation coefficient FSS: Fatigue Severity Scale YIAT-SF:Young Internet Addiction Test-Short Form   BMI: Body mass index

DISCUSSION

This study was planned to examine the relationship between internet addiction, fatigue and obesity in university students.

As a result of the study, the median of fatigue of women was found to be 44 and the median of fatigue of men was found to be 32. Women's fatigue is significantly higher than men. In a study conducted on medical faculty research assistants, chronic fatigue was found to be higher in women than in men (14). In a study in which female university students were significantly more tired than males, no significant difference was found between the means of the two groups. (15). During the Covid-19 pandemic, female parents were found to be significantly more tired than male parents. (16) In a study conducted on emergency medicine assistants, Fatigue severity

in women was found to be significantly higher than in men. (17). The literature results are generally parallel to our study. However, the number of studies conducted on university students and young individuals is limited.

When the fatigue of the participants was examined according to their body mass index, Fatigue severity in obese individuals is significantly greater than in normal weight individuals. More weight has been found to increase fatigue in women with type 2 diabetes. (18). In a study conducted on hockey players, body mass index showed a positive significant correlation with fatigue in both genders (19). No statistically significant difference was found between fatigue severity between body mass index groups in patients with heart failure (20). In a study conducted on women with knee osteoarthritis, a statistically significant relationship was found between fat percentage and fatigue (21). In a study conducted on university students, fatigue did not differ significantly according to body mass index. (22). Although normal weight individuals were found to be significantly more tired than obese individuals in this study, no significant correlation was found between body mass index and fatigue score. It is thought that the fact that a large portion of the participants were in the normal weight group may be one of the possible reasons for the result in the correlation. Although it is seen in the literature that body mass index increases fatigue, research groups generally consist of individuals with various diseases. One study was found on healthy young individuals and further research is needed in this group.

When fatigue is examined according to the class, it is seen that the fatigue median of the 2nd graders is statistically significantly higher than the 1st graders. In a study where upper grades had higher fatigue scores, it was observed that there was no significant difference between grades (15). No other study comparing fatigue between grades was found in the literature, but the increased course intensity of the upper graders and the fact that they have internships are thought to be the possible reasons for this result.

In this study, individuals who did not exercise regularly had a statistically significant higher fatigue score than those who did. Similarly, studies involving university students have found that physical activity significantly reduces fatigue severity. (22-24) In a study conducted on healthcare workers during the Covid-19 period, a negative statistically significant correlation was observed between physical activity level and fatigue severity (25). Literature findings are parallel to the research results.

When the participants' internet addiction status was examined according to their regular exercise habits, the median of individuals who did not exercise regularly was found to be statistically significantly higher than those who did exercise regularly. The level of internet addiction was found to be significantly lower in high school students who did sports than in those who did not (26). Physical activity and internet use were negatively correlated in Chinese university students (27). It has been determined that internet addiction reduces physical activity in medical students. (28). While the findings of the relevant study are parallel to this study, some studies do not show parallelism. In Vietnam, it was observed that there was no significant relationship between physical activity and internet addiction in young people (29). Similarly, in Turkey, no effect of internet addiction on physical activity was detected in university students

(30). Considering the important effects of physical activity on health, it is thought that more comprehensive and more studies are needed on this subject.

In this study, a statistically significant weak positive relationship was obtained between students' fatigue and internet addiction. In this study, a statistically significant weak positive relationship was obtained between students' fatigue and internet addiction. A significant relationship was observed between internet addiction and fatigue in female nurses (31). Fatigue was found to be associated with internet addiction in university students (32, 33). It was determined that undergraduate students in Turkey with smartphone and internet addiction were more tired (34). Similarly, it was determined that internet addiction increased fatigue symptoms in undergraduate students (35). Studies in the literature are parallel to the results of this study.

CONCLUSION AND RECOMMENDATIONS

Internet addiction has become a growing problem today. The findings of this study show that as internet addiction increases, fatigue also increases. On the other hand, it is seen that exercise habits are negatively affected by internet addiction. Internet addiction management has an important place in reducing health problems that may be caused by fatigue and insufficient physical activity. This situation is even more important for young people who constitute an important workforce of the country. At this point, it is recommended to reduce the time spent on the internet in young people. In particular, parents should ensure that the time spent on the internet by children is kept to a minimum. In this way, the risk of internet addiction in the future can be minimized and the health problems it may cause can be prevented.

REFERENCES

1. Balcı Ş, Gülnar B. Üniversite öğrencileri arasında internet bağımlılığı ve internet bağımlılarının profili. Selçuk İletişim. 2013;6(1):5-22. https://doi.org/10.18094/si.44854

2. Arısoy Ö. İnternet bağımlılığı ve tedavisi. psikiyatride güncel yaklaşımlar. Current Approaches in Psychiatry. 2009;1(1):55-67.

3. Bozkurt H, Şahin S, Zoroğlu S. İnternet bağımlılığı: güncel bir gözden geçirme. J Contemp Med. 2016;6(3):235-47. https://doi.org/10.16899/ctd.66303

4. Demiray G, Yorulmaz F. Halk sağlığı bakışıyla obezite yönetimi. SABD. 2023;13(1):147-55. https://doi.org/10.33631/sabd.1101432

5. Berberoğlu Z, Hocaoglu C. Küresel sağlık sorunu 'obezite': güncel bir gözden geçirme. CBU-SBED. 2021;8(3):543-52. https://doi.org/10.34087/cbusbed.886473

6. Özkan İ, Adıbelli D, İlaslan E, Taylan S. Üniversite öğrencilerinin obezite farkındalıkları ile beden kitle indeksleri arasındaki ilişki. Acıbadem Üniversitesi Sağlık Bilimleri Dergisi. 2020;11(1):120–126. https://doi.org/10.31067/0.2020.249

7. Büyüköztürk Ş, Kılıç Çakmak E, Akgün ÖE, Karadeniz Ş, Demirel F. Bilimsel Araştırma Yöntemleri. 20. Baskı. Ankara: Pegem Akademi; 2016.

8. Krupp LB, Larocca NG, Muir-Nash J, Steinberg AD. The fatigue severity scale application to patients with multiple sclerosis and systemic lupus erythematosus. Arch neurol 1989;46(10):1121-1123. https://doi.org/10.1001/archneur.1989.00520460115022.

9. Armutlu K, Çetişli Korkmaz N, Keser İ, Sümbüloğlu V, Akbıyık D İ, Güney Z et al. The validity and reliability of the Fatigue Severity Scale in Turkish multiple sclerosis patients. Int J Rehabil Res. 2007;30(1):81-85. https://doi.org/10.1097/MRR.0b013e3280146ec4

10. Young KS. Caught in the Net: How to Recognize the Signs of Internet Addiction and a Winning Strategy for Recovery. New York: John Wiley &Sons, 1998.

11. Pawlikowski M, Altstötter-Gleich C, Brand M. Validation and psychometric properties of a short version of Young's Internet Addiction Test. Comput Human Behav 2013; 29(3):1212-1223. https://doi.org/10.1016/j.chb.2012.10.014

12. Kutlu M, Savcı M, Demir Y, Aysan F. Young İnternet Bağımlılığı Testi Kısa Formunun Türkçe uyarlaması: Üniversite öğrencileri ve ergenlerde geçerlilik ve güvenilirlik çalışması. Anadolu Psikiyatri Derg. 2016; 17(Ek.1):69-76. https://doi.org/10.5455/apd.190501

13. https://www.who.int/europe/news-room/fact-sheets/item/a-healthy-lifestyle---who-recommendations Erişim Tarihi: 01.08.2024

14. Sayın S. Tıp fakültesinde görev yapan araştırma görevlilerinde kronik yorgunluk ve depresyon sıklığının incelenmesi. Konuralp Medical Journal. 2013;5(1):11-7.

15. Saygılı S, Akıncı AÇ, Arıkan H, Dereli E. Üniversite öğrencilerinde uyku kalitesi ve yorgunluk. Ejovoc (Electronic Journal of Vocational Colleges). 2011;1(1): 88-94.

16. Ataman N, Demir A. (2022). Pandemi döneminde ebeveynlerin uyku kalitesi ve yorgunluk düzeylerinin incelenmesi. İnönü Üniversitesi Sağlık Hizmetleri Meslek Yüksek Okulu Dergisi. 2022;10(3), 860-874. https://doi.org/10.33715/inonusaglik.1040010

17. İz M, Topaçoğlu H, Dikme Ö, Bayıl E, Layık ME, Ay İz FB, ve ark. İstanbul'daki eğitim ve araştırma hastanelerinde çalışan acil tıp asistanlarının piper yorgunluk ölçeği ve epworth uykululuk ölçeği ile yorgunluk ve uykululuk değerlerinin ölçülmesi ve etkileyen faktörlerin değerlendirilmesi. Van Tıp Dergisi. 2019;26(1):91-96. https://doi.org/10.5505/vtd.2019.75010

18. Fritschi C, Quinn L, Hacker E D, Penckofer S M, Wang E, Foreman M et al. Fatigue in Women With Type 2 Diabetes. The Diabetes Educator. 2012;38(5):662-672. https://doi.org/10.1177/0145721712450925

19. Hanjabam B, Kailashiya J. Gender difference in fatigue ındex and its related physiology. Indian J Physiol Pharmacol. 2015;59(2):170-174.

20. Ermiş N, Sayın Kasar K, Karaman E, Yıldırım Y. Self care agency and fatigue in patients with chronic heart failure. Turk J Card Nur. 2018;9(20):105-112. https://doi.org/10.5543/khd.2019.30164

21. Mood AC, Justine M, Bukry SA, Mohan V. The association of fatigue severity with pain level, obesity indices and functional performances in women with knee osteoarthritis. Med J Malaysia. 2024;79(Suppl1):1-7.

22. Baskan Ö, Çorum M, Büyükyılmaz G. Üniversite öğrencilerinde akıllı telefon bağımlılığı ile fiziksel aktivite, yorgunluk ve uyku kalitesinin ilişkisinin incelenmesi. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi. 2023;12(1):299-305. https://doi.org/10.37989/gumussagbil.1049962

23. Arslan M, Aydın EB. Üniversite öğrencilerinde metabolik sendrom riski, fiziksel aktivite, uyku kalitesi ve yorgunluk arasındaki ilişki. Turk J Card Nur. 2022;13(30):9-13. https://doi.org/10.5543/khd.2022.210905

24. Güneş M, Demirer B. A comparison of caffeine ıntake and physical activity according to fatigue severity in university students. Eval Health Prof. 2023;46(1):92-99. https://doi.org/10.1177/01632787221141504

25. Üstün K, Yıldız Kızkın Z, Amır Rashedı Bonab M, Armağan, M, Hasırcı Y, Kuru Çolak T. Covid-19 salgını sürecinde sağlık personelinin fiziksel aktivite düzeyi, yaşam kalitesi ve yorgunluk düzeyi arasındaki ilişki. Sakarya Üniversitesi Holistik Sağlık Dergisi. 2023;6(3):419-437. https://doi.org/10.54803/sauhsd.1223683

26. Aycan A, Üzüm H. The effects of sports participation on internet addiction of high school students. Journal of Human Sciences. 2020;17(4):1022–1033. https://doi.org/10.14687/jhs.v17i4.6051

27. Du Z, Zhang X. Analysis of the mediating effects of self-efficacy and self-control between physical activity and Internet addiction among Chinese college students. Front. Psychol. 2022;13:1-13. https://doi.org/10.3389/fpsyg.2022.1002830

28. Khan MA, Shabbir F, Rajput TA. Effect of gender and physical activity on internet addiction in medical students. Pak J Med Sci. 2017;33(1):191-194. https://doi.org/10.12669/pjms.331.11222

29. Dang AK, Nathan N, Le QNH, Nguyen LH, Nguyen HLT, Nguyen CT et al. Associations between internet addiction and physical activity among Vietnamese youths and adolescents. Child Youth Serv Rev 2018;93:36-40. https://doi.org/10.1016/j.childyouth.2018.06.030

30. Çevik Saldıran T. İnternet bağımlılığında cinsiyet, fiziksel aktivite ve yaşam kalitesinin tahmini etkileri: üniversite öğrenci örneklemi. Bağımlılık Dergisi. 2021;22(1):10-19. https://doi.org/10.51982/bagimli.784565

31. Lin SC, Tsai KW, Chen MW, Koo M. Association between fatigue and Internet addiction in female hospital nurses. J Adv Nurs. 2013;69(2):374-383. https://doi.org/10.1111/j.1365-2648.2012.06016.x

32. Liang S, Ren Z, Yang G. Cross-sectional and prospective association between internet addiction and risk of fatigue among Chinese college students. Medicine (Baltimore). 2022;101(33):1-6 https://doi.org/10.1097/MD.0000000000030034

33. Gu S, Min X, Xu J, Chen S. Correlation of negative emotion, fatigue level and internet addiction in college students: implication for coping strategies. BMC Psychiatry. 2024;24(1):1-7 https://doi.org/10.1186/s12888-024-05711-5

34. Sert H, Taskin Yilmaz F, Karakoc Kumsar A, Aygin D. Effect of technology addiction on academic success and fatigue among Turkish university students. Fatigue: Biomedicine, Health & Behavior. 2019;7(1):41–51. https://doi.org/10.1080/21641846.2019.1585598

35. Bener A, Yıldırım E, Torun P, Çatan F, Bolat E, Alıç S, et al. Internet addiction, fatigue, and sleep problems among adolescent students: A large-scale study. International Journal of Mental Health and Addiction. 2019;17 (4):959-969. https://dx.doi.org/10.10