ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

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The Effects of Internet-Based Distance Education on University Students During the COVID-19 Pandemic: Cross-Sectional Study

COVID-19 Pandemi Sürecindeki İnternet Tabanlı Uzaktan Eğitimin Üniversite Öğrencileri Üzerindeki Etkileri: Kesitsel Çalışma

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ABSTRACT Objective: This study was designed to examine the effects of the Internet usage time, which increased as a result of the compulsory transition to distance education, on the university students' musculoskeletal system as well as its effects on their perceived stress level and quality of life. **Material and Methods:** One hundred and thirty nine students, aged 18-25, studying at undergraduate, attended this study. The evaluations were made by sharing the link of the questionnaire form prepared using the "Google Forms" application. The demographic characteristics of all participating individuals and the time spent on distance education on the Internet were recorded. Musculoskeletal pain, perceived pain and discomfort were evaluated with the Cornell Musculoskeletal Disorders Assessment Questionnaire, stress level with Perceived Stress Scale, and quality of life with the Quality of Life Short Form-36. **Results:** The mean age of the university students was 19.63±1.3 years. It was determined that the average time students spent on distance education was 5.44±2.08 hours per day. The body parts where the students felt the most pain were neck, back, and lower back; and there was a statistically significant, very weak to weak relationship between the Internet usage time and the pain felt, the level of perceived stress, and quality of life. **Conclusion:** Internet-based distance education, which is perceived as a sedentary lifestyle, can have negative effects on students. Expansion of the study may be useful in determining the effects of distance education, which has become mandatory in pandemic conditions.

Keywords: COVID-19; students; distance education; quality of life; musculoskelatal pain

ÖZET Amaç: Bu çalışma, uzaktan eğitime zorunlu geçiş sonucunda artan İnternet kullanım süresinin üniversite öğrencilerinin kas-iskelet sistemi üzerindeki etkilerinin yanı sıra algılanan stres düzeyi ve yaşam kalitesine olan etkilerinin incelenmesi amacıyla tasarlanmıştır. **Gereç ve Yöntemler:** Bu çalışmaya 18-25 yaşları arasında lisans düzeyinde okuyan 139 öğrenci katıldı. Değerlendirmeler "Google Forms" uygulaması kullanılarak hazırlanan anket formu bağlantı linki paylaşılarak gerçekleştirildi. Katılan tüm bireylerin demografik özellikleri ve İnternet üzerinden uzaktan eğitime harcadıkları zaman kaydedildi. Kas-iskelet ağrısı, hissedilen ağrı ve rahatsızlık hissi Cornell Kas İskelet Sistemi Rahatsızlıkları Değerlendirme Anketi ile stres düzeyi Algılanan Stres Ölçeğiyle ve yaşam kalitesi Yaşam Kalitesi Kısa Form-36 ile değerlendirildi. **Bulgular:** Üniversite öğrencilerinin yaş ortalamaları 19,63±1,3 yıldı. Öğrencilerin uzaktan eğitime harcadıkları ortalama sürenin günde 5,44±2,08 saat olduğu belirlendi. Öğrencilerin en çok ağrı hissettiği vücut kısımları boyun, sırt ve bel bölgeleriydi; İnternet kullanım süresi ile hissedilen ağrı, algılanan stres düzeyi ve yaşam kalitesi arasında istatistiksel olarak anlamlı, çok zayıf ile zayıf arasında değişen bir ilişki olduğu belirlendi. **Sonuç:** Sedanter yaşam biçimi olarak algılanan İnternet tabanlı uzaktan eğitimin öğrenciler üzerinde negatif etkilerinin olabileceği görülmektedir. Çalışmanın genişletilerek yapılması, pandemi koşullarında zorunlu hâle gelen uzaktan eğitimin etkilerinin belirlenmesinde faydalı olabilir.

Anahtar Kelimeler: COVID-19; öğrenci; uzaktan eğitim; yaşam kalitesi; kas-iskelet ağrısı

The whole world has been deeply shocked by the coronavirus disease-2019 (COVID-19) outbreak. After first appearing in Wuhan, China in December 2019, this virus did not stay limited to its origin, but spread very rapidly. The World Health Organization declared this outbreak, which has spread to many countries, a pandemic.[1,2]

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The COVID-19 outbreak has had a large-scale effect for the first time in human history, and caused a large portion of the world's population to be locked down in their homes and quarantined, causing people to change their lifestyles. People have been advised to keep social distancing and limit their travels. The same measures have been also used for education which has gained a new dimension. In this regard, UNESCO (2020) reported that schools were closed in approximately 190 countries across the world. In this process, countries launched a rapid transition to distance education in order to both minimize the effects of the pandemic and continue the education and training. For the first time in history, distance education has become so popularly applicable to this extent. Also in Türkiye, all schools and universities were suspended as of March 16, 2020, and later on it was decided to continue the education as distance education.[1-3]

Distance education is an Internet-based education model where individuals are free in terms of learning resources and are not limited by time. Distance education provides a lifelong learning with its advantages such as increasing learning opportunities, improving learning outcomes, facilitating networking and collaboration. On the other hand, it comes with some disadvantages such as a lack of social interaction or participation, which can cause a feeling of isolation, minimize motivation, and worsen the work discipline.[4,5]

Studies have shown that students have different views on distance education. In their study examining the university students' opinions on distance education, in a study conducted by Fatonia et al., university students stated that distance education was advantageous in terms of not being limited by space and time, but they also stated that they experienced some disadvantages of distance education such as lack of concentration, using leisure time, and network instability.[2]

Also in Türkiye, after the universities were closed on March 11, 2020, online education was started under the name of distance education. In a study in which the university students' opinions on distance education in Türkiye were questioned, they stated that distance education was not as effective as face-to-face education, but distance education could be an alternative to face-to-face education. Students also stated that the Internet-based education allowed them to learn at their own pace, but they could not communicate with the instructors comfortably, the learned information was forgotten quickly, and they experienced some technical problems during the education.[1,6]

Distance education means that education reaches the students through web-based platforms with the help of developing Internet technologies and computers, and this increases the time spent on the Internet.[7] In the literature, it has been reported that university students experience upper extremity musculoskeletal symptoms due to increasing Internet usage time. Moreover, some studies reported that, with the increased Internet usage time, emotional and behavioral problems such as loneliness, social isolation, and aggression were more commonly seen in children and adolescents, their general health levels decreased, and the prevalence of depressive symptoms increased.[8,9]

To the best of our knowledge, there is no study in the literature that examines the positive and negative consequences of distance education, which has become popular in the COVID-19 pandemic due to the necessarily changing living conditions, and the use of the Internet for distance education on the university students' musculoskeletal system, perceived stress level, and quality of life. This study was designed to examine the effects of the Internet usage time, which increased as a result of the compulsory transition to distance education, on the university students' musculoskeletal system as well as its effects on their perceived stress level and quality of life.

MATERIAL AND METHODS

INDIVIDUALS

The students studying at the Department of Physiotherapy and the Vocational School of Health Services, Yozgat Bozok University, were invited to participate in this cross-sectional study. The questionnaire prepared using Google Forms was sent to the students between December 2020 and January 2021. The students who volunteered to participate in the study completed the questionnaires after reading

the consent form on the first page. Inclusion criteria of the study were as follows: being a university student between the ages of 18 and 25, having no disease or injury that can cause pain in the musculoskeletal system, and having no communication and emotional problems. The exclusion criteria of the study were as follows: having serious musculoskeletal disorders (having an orthopedic or neurological diagnosis such as disc herniation), having cronic disease and having a communication or emotional problem. All the data were collected 3 months after the distant education process started.

This study was approved by the Clinical Research Ethics Committee, Yozgat Bozok University (date: 30.10.2020/no: 2017 KAEK 189_2020.10.28_11) and carried out in accordance with the Helsinki Declaration.

MEASUREMENT TOOLS

Demographic characteristics of all the individuals participating in the study were recorded, such as age, height, weight and time spent on distance education on the Internet.

Cornell Musculoskeletal Discomfort Questionnaire (Cornell MDQ) was used to evaluate the individuals in terms of the musculoskeletal discomfort caused by work postures. Turkish adaptation study of the scale was carried out by Erdinç et al.[10] This questionnaire evaluates the frequency and severity of musculoskeletal discomfort. Musculoskeletal ache, pain and discomfort felt in the last week are questioned bilaterally according to the anatomical parts of the body. In this questionnaire, rows are the anatomical parts of the body, and columns show the frequency and severity of musculoskeletal discomfort and their effect on work performance. The frequency of musculoskeletal discomfort is evaluated according to the following options: "never last week", "1-2 times last week", "3-4 times last week", "once every day" and "several times every day"; its severity according to the following options: "slightly severe', "moderately severe" and "very severe"; and its interference in the work according to the following options: "not at all", "slightly interfered", and "substantially interfered." The level "moderate" is accepted as the limit value for musculoskeletal discomfort.[10]

The Perceived Stress Scale (PSS) was used to measure how stressful certain situations are perceived by individuals. This scale was developed by Cohen et al.[11] Its Turkish validity and reliability study was carried out by Eskin et al.[12] The scale consists of 14 items. Each item in the scale is evaluated on a 5-point Likert-type scale ranging from "never (0)" to "very often (4)". 7 items containing positive statements are scored in reverse. The score for the long version of the scale, which consists of 14 items and was used in our study, ranges from 0 to 56. The higher the score, the higher the stress perceived by the individual. A score between 11 and 26 refers to a low level of stress, 27 and 41 to a moderate level of stress, and 42 and 56 to a high level of stress.

The Short Form Health Survey-36 (SF-36) was used to evaluate the participants' quality of life. SF-36 is generally considered to be suitable for evaluating the quality of life after the age of 14. Its Turkish validity and reliability study was carried out by Koçyiğit.[13] This scale has 8 sub-dimensions: physical and social functioning, physical and emotional role limitations, mental health, energy, pain assessment and general health perception. Each domain is scored between 0 (the worst health status) and 100 (the best health status).The scale is evaluated taking into account the last four weeks.[13]

STATISTICAL ANALYSIS

In the power analysis carried out using Raosoft Sample Size Calculator, it was found that a sample of 60 participants was enough with a power of 80% and a bilateral significance level of 5% at the confidence interval of 97%.

Statistical analysis was carried out using IBM Statistics SPSS (v21.0, SPSS Inc, Armonk. NY, USA). Normality of the data was tested using Kolmogorov-Smirnov Test. Variables were identified by measurement (histograms, Kolmogorov-Smirnov test). Categorical variables were expressed in percentages. Mean, median, standard deviation, minimum and maximum values were used for the descriptive statistics.

Correlation coefficients and statistical significance were calculated using Spearman test for the relationships between variables, at least one of which

was found to be not normally distributed in correlation analysis. According to the absolute value of the correlation coefficient, correlations were classified as very weak (0.00-0.25), weak (0.26-0.49), moderate (0.50-0.69), high (0.70-0.89), or very high (0.90-1.00).[14] The statistical significance was set at $p<0.05$.

RESULTS

Evaluation phase of the study was started with the data of 157 volunteers who accepted to participate in the study; however, since 11 participants failed to fill out the questionnaire completely and 7 participicants had cronic disease, the statistical analysis was carried out using the data obtained from 139 participants.

The participants' demographic characteristics are summarized in Table 1. Their mean age was 19.63±1.3 (18-25) years and the majority of them were women (66.1%). Their mean sleep duration was 7.59±1.1 (4-10) hours, and 77 participants (55.4%) did not have a habit of exercise whereas 62 (44.6%) had a habit of exercise. The mean time they spent on distance education was found to be 5.44±2.08 (2-12) hours per day.

According to the Cornell MDQ, it was found that the highest frequency of pain score was reported to be in the back, followed by lower back and neck. When the participants were examined in terms of pain severity, it was found that they had a moderately severe pain in their back, lower back, and neck. As for the interference in the work, the participants reported that the pain they felt in their back, neck, and lower back affected them moderately (Table 2).

The PSS score was found to be low in 32 participants (22.87±2.99), moderate in 99 participants (32.98±4.02), and high in 8 participants (45.75±3.05) (Table 3). According to SF-36, it was found that the participants had the lowest quality of life score in the sub-parameter "energy" (40.26±22.03), followed by "emotional role limitation" (43.46±37.67), "mental health" (46.38±23.19), and "social functioning" (50.19±25.18) (Table 3).

Correlation analyzes were carried out between the time spent on the Internet for distance education and the scores for the Cornell MDQ, the PSS, and the sub-parameters of SF-36; and it was found that a statistically significant correlation existed (Table 4). It was found that there was a statistically significant, very weak relationship ($r=0.177$; $p<0.05$) between the time spent on the Internet for distance education and the neck pain felt by the participants; and there was a statistically significant, weak relationship ($r=0.262$-0.358; $p<0.01$) between the time spent on the Internet for distance education and the pains felt in the back, right upper arm, left upper arm, right forearm, left forearm, right wrist, lower back, hip, right upper leg, left upper leg, right knee, and left knee. It was seen that there was a statistically significant, weak correlation between the time spent on the Internet for distance education and the perceived stress ($r=0.298$;

TABLE 1: Demographic characteristics of participants.

Students (n=139)	$\bar{x}$±SD	Minimum-Maximum	n (%)
Age (years)	19.63±1.3	18-25	
Gender			
Female			92 (66.1)
Male			47 (33.9)
BMI (kg/m^2)	21.80±3.2	16.4-30.3	
Exercise habit			
Yes		62 (44.6)	
No		77 (55.4)	
Smoking habit			
Yes		24 (17.2)	
No		115 (82.8)	
Daily sleep time (hour)	7.59±1.1	4-10	
Time spent on daily distance education (hour)	5.44±2.08	2-12	

$p<0.05$; Data are presented as number (%) participants (frequencies); SD: Standart deviasion; BMI: Body mass index.

TABLE 2: Cornell musculoskeletal discomfort questionnaire scores of participants.

	Cornell frequency					Cornell severity			Cornell MDQ work disability status		
	"I never felt" n (%)	"I've felt several times during the week" n (%)	"I felt 3-4 times during the week" n (%)	"I felt once a day" n (%)	"I have felt many times a day" n (%)	Mild severe n (%)	Moderate n (%)	High severity n (%)	"Never prevented" n (%)	"A little hindered" n (%)	"It was very obstacle" n (%)
Neck	35 (25.2)	35 (25.2)	42 (30.2)	10 (7.2)	17 (12.2)	28 (26.9)	49 (47.1)	27 (26)	34 (32.7)	51 (49)	19 (18.3)
Right shoulder	62 (44.6)	32 (23)	24 (17.3)	12 (8.6)	9 (6.5)	26 (33.8)	37 (48)	14 (18.1)	35 (45.4)	35 (45.4)	7 (9.2)
Left shoulder	58 (41.7)	37 (26.6)	24 (17.3)	11 (7.9)	19 (6.5)	26 (32.1)	38 (46.9)	17 (21)	39 (48.2)	33 (40.7)	9 (11.1)
Toracal back	26 (18.7)	36 (25.9)	36 (25.9)	16 (11.5)	25 (18)	21 (18.6)	59 (52.2)	33 (29.2)	33 (29.2)	56 (49.5)	24 (20.6)
Right upper arm	64 (46)	37 (26.6)	23 (16.5)	5 (3.6)	10 (7.2)	34 (45.3)	30 (40)	11 (14.6)	41 (54.8)	29 (38.6)	5 (6.8)
Left upper arm	71 (51.1)	37 (26.6)	17 (12.2)	5 (3.6)	9 (6.5)	32 (47.1)	27 (39.7)	9 (13.2)	36 (52.9)	28 (41.2)	4 (5.9)
Right forearm	82 (59)	24 (17.3)	17 (12.2)	7 (5)	8 (5.8)	21 (36.8)	28 (49.2)	8 (14)	30 (52.6)	20 (35.1)	7 (12.2)
Left forearm	82 (59)	28 (20.1)	15 (10.8)	7 (5)	7 (5)	29 (52.8)	21 (36.8)	7 (12.2)	33 (57.8)	21 (36.8)	3 (5.2)
Right wrist	57 (41)	29 (20.9)	27 (19.4)	10 (7.2)	16 (11.5)	36 (43.9)	30 (36.6)	16 (19.5)	35 (42.6)	34 (41.4)	13 (15.8)
Left wrist	75 (54)	29 (20.9)	18 (12.9)	9 (6.5)	8 (5.8)	32 (50)	21 (32.8)	11 (17.8)	31 (48.4)	28 (43.7)	5 (7.8)
Lumbal back	29 (20.9)	34 (24.5)	37 (26.6)	10 (7.2)	29 (20.9)	25 (23.4)	43 (40.2)	39 (36.5)	29 (27.1)	45 (42.1)	33 (30.8)
Hip	71 (51.1)	24 (17.3)	17 (12.2)	10 (7.2)	17 (12.2)	22 (32.4)	28 (41.2)	18 (26.5)	32 (47.1)	27 (39.7)	9 (13.2)
Right upper leg	77 (55.4)	30 (21.6)	13 (9.4)	9 (6.5)	10 (7.2)	33 (53.2)	24 (38.8)	5 (8)	39 (62.9)	20 (32.2)	3 (4.8)
Left upper leg	76 (54.7)	31 (22.3)	13 (9.4)	9 (6.5)	10 (7.2)	33 (52.3)	23 (36.5)	7 (11.1)	43 (68.2)	17 (26.9)	3 (4.7)
Right knee	81 (58.3)	23 (16.5)	15 (10.8)	11 (7.9)	9 (6.5)	25 (43.1)	25 (43.1)	8 (13.7)	31 (53.4)	21 (36.2)	6 (10.3)
Left knee	79 (56.8)	27 (19.4)	14 (10.1)	10 (7.2)	9 (6.5)	28 (46.7)	23 (38.3)	9 (15)	35 (58.3)	18 (30)	7 (11.7)
Right lower leg	81 (58.3)	29 (20.9)	16 (11.5)	5 (3.6)	8 (5.8)	29 (50)	25 (43.1)	4 (6.8)	40 (68.9)	15 (25.8)	3 (5.1)
Left lower leg	84 (60.4)	28 (20.1)	15 (10.8)	4 (2.9)	8 (5.8)	28 (50.9)	22 (40)	5 (9.1)	40 (72.7)	13 (23.6)	2 (3.6)
Right foot	88 (63.3)	26 (18.7)	13 (9.4)	6 (4.3)	6 (4.3)	25 (49.1)	22 (43.1)	4 (7.8)	44 (86.2)	5 (9.8)	2 (3.9)
Left foot	90 (64.7)	25 (18)	12 (8.6)	7 (5)	5 (3.6)	24 (48.9)	20 (40.8)	5 (10.2)	42 (85.7)	5 (10.2)	2 (4.1)

$p<0.05$; Data are presented as number (%) participants (frequencies); Cornell MDQ: Cornell Musculoskeletal Discomfort Questionnaire.

TABLE 3: Quality of life and stress levels of participants.

Students (n=139)	x̄±SD	Minimum-Maximum	Median
PSS			
Low (n=32)	22.87±2.99	14-26	23
Moderate (n=99)	32.98±4.02	27-41	33
High (n=8)	45.75±3.05	43-52	44
SF-36			
Physical functioning	84.84±20.5	10-100	95
Role- physical	57.25±37.61	0-100	50
Bodily pain	58.61±23.06	0-100	57.5
General health	56.09±19.52	5-100	60
Role- emotional	43.46±37.67	0-100	33
Vitality	40.26±22.03	0-95	45
Mental health	46.38±23.19	0-92	46
Social functioning	50.19±25.18	0-100	50

p<0.05; Data are presented as number (%) participants (frequencies); SD: Standart deviasion; BMI: Body mass index.

p<0.01), and the level of perceived stress increased as the time spent on the Internet for distance education increased. A statistically significant, very weak to weak correlation was found to exist between all the sub-parameters of SF-36 quality of life and the time spent on the Internet for distance education (r=0.205-0.384; p<0.05, p<0.01). It was also found that there was a statistically significant, very weak relationship (r=0.205-0.248; p<0.05, p<0.01) between the duration of distance education and the sub-parameters of quality of life "energy", "mental health" and physical functioning and a statistically significant, "weak relationship" (r=0.263-0.384; p<0.01) between the duration of distance education and the sub-parameters "physical role", "pain", "general health", "emotional role", and "social functioning."

DISCUSSION

The purpose of our study was to examine the effects of Internet use, which has become a must for continuing education due to changing living conditions, on university students' musculoskeletal discomfort, level of perceived stress, and quality of life. In this study, it was found that the body parts where the university students felt the most pain were neck, back, and lower back; and there was a statistically significant, very weak to weak relationship between the Internet usage time and the pain felt, the level of perceived stress, and quality of life.

Education plays an important role in the development of societies.[15] Unfortunately, the 2019-2020 coronavirus (COVID-19) pandemic has affected all the education systems across the world, causing widespread closures of schools and universities.[2] For the first time in Türkiye, due to COVID-19, all the universities adopted the Internet-based distance education model at the same time.[4]

In the literature, the Internet and computer use, which is a must for the Internet-based distance education model, is also referred to as one of the sedentary behaviors that have the potential to negatively affect health and are becoming more common. It was reported that there were strong inverse relationships between these sedentary behaviors, that is, the time spent in a sedentary lifestyle and different health indicators.[16]

The studies in the literature reported that university students experienced pain related to the musculoskeletal system as a consequence of computer use, and moreover, in a systematic review, it was found that there was a positive relationship between computer use and the upper extremity musculoskeletal symptoms and severe disorders.[8,17] In their study, Amick et al. reported that the symptom severity increased as the daily computer use time increased.[18] Moreover, unlike our study, Menéndez et al. examined only the upper extremity pain caused by the computer use in university students and reported that the

TABLE 4: Correlations between stress, quality of life, Cornell MDQ and time spent on daily distance education.

	Time spent on daily distance education
	r value
PSS	0.298**
SF-36	
Physical functioning	-0.221**
Role-physical	-0.340**
Bodily pain	-0.263**
General health	-0.384**
Role- emotional	-0.323**
Vitality	-0.248**
Mental health	-0.205*
Social functioning	-0.336**
Cornell MDQ	
Neck	0.177*
Right shoulder	0.209*
Left shoulder	0.157
Thoracal back	0.316**
Right upper arm	0.289**
Left upper arm	0.334**
Right forearm	0.291**
Left forearm	0.262**
Right elbow	0.357**
Left elbow	0.240**
Lumbal back	0.358**
Hip	0.312**
Right upper leg	0.270**
Left upper leg	0.295**
Right knee	0.320**
Left knee	0.346**
Right lower leg	0.242**
Left lower leg	0.246**
Right foot	0.184*
Left foot	0.222*

*p<0.05; **p<0.01; PSS: Perceived Stress Scale; SF-36: Short Form 36- Quality of Life Questionnaire; Cornell MDQ: Cornell Musculoskeletal Discomfort Questionnaire; Spearman Correlation Test.

students had pain in their neck, shoulder, and wrist.[8] They also asserted that the musculoskeletal system pain caused by computer use had a relationship with the increased duration of university education and having a computer use time of 20-29 hours per week. On the other hand, in a study carried out by Schlossberg et al., it was reported that the musculoskeletal system pain caused by computer use was associated with a computer use time of at least 10 hours per week for 8 years or at least 20 hours per week.[19]

In the present study, the duration of Internet use for distance education was found to reach 20-25 hours per week (5 hours a day). In line with the literature, it was found that the short-term effects of this duration of Internet use caused the university students to have a moderate pain in their neck, back, and lower back, and these pains moderately limited their daily lives.

When the literature was reviewed, it was seen that Internet use was discussed with different dimensions, and in the studies on general Internet users, it was also reported that people had some psychological problems such as social isolation, depression, loneliness, and poor management of time due to Internet use.[9,20] In their study examining the relationship between increased Internet use and anger expression styles in university students, Ata et al. asserted that there was a weak, positive relationship between the increase in Internet use time and anger expression style.[9] Moreover, Fatehi et al. emphasized that, in university students, the quality of life decreased as the Internet use time increased, especially the following sub-dimensions of quality of life: physical health, mental health, and social relations.[21]

In line with the literature, in our study, it was found that the perceived stress level was mild in 23% of the university students, moderate in 71% of them, and high in 5% of them; and when the sub-parameters of quality of life were examined, they had the lowest scores in the sub-parameters "energy", "emotional role", and "mental health."

On the other hand, we are of the opinion that the students' conditions are very different due to COVID-19, and it should not be ignored that these conditions may cause different results. The previous studies reported that social isolation associated with COVID-19 negatively affected the quality of life, especially its sub-parameters "mental health" and "physical health".[22,23] Zhang and Ma carried out a study in China on a group 31.6% of which was young individuals and found that the COVID-19 pandemic caused a mild stress.[22] Also in the study by Özkul, investigating the university students' levels of quality of life, stress, anxiety, and depression during the COVID-19, it was reported that the university stu-

dents had a high prevalence of stress, anxiety, and depression during this period, and these factors were found to negatively affect the students' mental health, one of the sub-parameters of quality of life.[23]

When the results of our study are evaluated in terms of fast and compulsory changing living conditions, it is seen that there is a significantly very weak to weak relationship between the Internet use in distance education and the sub-parameters of the perceived stress level and quality of life in the university students. These results suggest that the decline in the university students' quality of life may not only be due to the duration of Internet use in the distance education process, but also to the consequences of the rapidly changing living conditions they live in; so, there is a need for more detailed studies on this subject.

This study is limited in that its results show only the short-term effects and it is cross-sectional.

The COVID-19 pandemic has affected the whole world and changed the living conditions in Türkiye too. It is seen that education is one of the most important fields where the living conditions have changed. We are of the opinion that the current effects of the Internet-based distance education system, which was adopted mandatorily and rapidly due to the sudden start of the process, can be identified, and this insight can be used to improve this education system, which will be on the agenda more in the near future, and to eliminate its shortfalls. In this regard, we think that, in order to minimize the negative effects of the Internet-based distance education system and improve its conditions, the duration of the education should be determined adequately, the students should be taught on how to use Internet in a right way, and they should be provided psychological support; and there is a need for more extensive research on this subject.

CONCLUSION

COVID-19 pandemic has affected all the education systems across the world. In Türkiye, due to COVID-19, all the universities adopted the Internet-based distance education model. But in the literature, the Internet and computer use, which is a must for the Internet-based distance education model, is also referred to as one of the sedentary behaviors that have the potential to negatively affect health. In our study, where we consider the distance education process as a sedentary lifestyle like the literature, we found that during the distance education, the areas where university students felt the most pain were the neck, back, and lower back; and there was a statistically significant, very weak to weak relationship between the Internet usage time and the pain felt, the level of perceived stress, and quality of life. And in addition, we think that more observational studies are needed to investigate the current effects of the Internet-based distance education system, which was adopted quickly and compulsorily due to the sudden onset of the pandemic process.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Nilay Şahan, Mehmet Akif Güler;* ***Design:*** *Nilay Şahan, Mehmet Akif Güler;* ***Control/Supervision:*** *Nilay Şahan, Mehmet Akif Güler;* ***Data Collection and/or Processing:*** *Nilay Şahan, Mehmet Akif Güler;* ***Analysis and/or Interpretation:*** *Nilay Şahan;* ***Literature Review:*** *Nilay Şahan;* ***Writing the Article:*** *Nilay Şahan;* ***Critical Review:*** *Nilay Şahan, Mehmet Akif Güler;* ***References and Fundings:*** *Mehmet Akif Güler;* ***Materials:*** *Nilay Şahan, Mehmet Akif Güler.*

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