

## Healthy Lifestyle Behaviors of Vocational School of Health Services Students During the COVID-19 Pandemic Period

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### ABSTRACT

The goal of this study is to evaluate healthy lifestyle behaviors of students of the Vocational School of Health Services during the COVID-19 pandemic period. A descriptive survey was undertaken online among 425 university students who attended the Vocational School of Health Services during the 2019-2020 Academic Year. All were accepted to participate in the research and maintained sufficient internet access. Data were collected through a "Participant Information Form" consisting of questions regarding personal information and pandemic experiences, as well as a "Healthy Lifestyle Behaviors Scale-II". It was discovered that the students worried significantly about being infected with COVID-19 or infecting someone else, which led to changes in sleep, hygiene, movement, diet, school and social life. Of all the practices recommended for reducing the risk of infection during the pandemic, it was found that the students adapted firstly to increased hand washing, and second to wearing a mask. The adjustment to social distancing was lower. A difference was found in the healthy lifestyle behaviors of the students according to demographics, fear of infection, compliance with prevention recommendations and the changes in their lives ( $p < 0.05$ ). In accordance with these results, it is recommended to include current scientific information about COVID-19 in the educational process, increasing student awareness, especially in regard to social distancing practices, and to generally support healthy lifestyle behaviors.

**Keywords:** COVID-19, Healthy lifestyle behaviors, Health services, Student.

## Sağlık Hizmetleri Meslek Yüksekokulu Öğrencilerinin COVID-19 Pandemisi Döneminde Sağlıklı Yaşam Biçimi Davranışları

### ÖZ

Bu çalışma, Sağlık Hizmetleri Meslek Yüksekokulu öğrencilerinin COVID-19 sürecinde sağlıklı yaşam biçimi davranışlarını değerlendirmeyi amaçladı. Tanımlayıcı tipteki araştırma, 2019-2020 Eğitim-Öğretim yılında Sağlık Hizmetleri Meslek Yüksekokuluna devam eden, araştırmaya katılmayı kabul eden ve internet erişimi sağlayan 425 üniversite öğrencisi ile online olarak gerçekleştirildi. Veriler kişisel bilgiler ile öğrencilerin pandemi deneyimleri hakkında sorular içeren 'Katılımcı Bilgi Formu' ve 'Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II' ile toplandı. Öğrencilerin hastalığa yakalanma veya başkasına bulaştırma endişesi yaşadıkları, pandemi nedeniyle uyku, hijyen, hareket, diyet, okul ve sosyal yaşamlarında değişim olduğu bulundu. Pandemi sürecinde enfeksiyon riskini azaltmak için önerilen uygulamalar arasında öğrencilerin en çok el yıkamaya ve ardından maske takmaya uyum sağladıkları, sosyal mesafe uygulamasına uyumlarının daha düşük olduğu tespit edildi. Öğrencilerin kişisel özelliklerine, enfeksiyon endişesine, enfeksiyondan korunma önerilerine uymalarına ve yaşamlarındaki değişime göre sağlıklı yaşam biçimi davranışları arasında fark bulundu ( $p < 0.05$ ). Bu sonuçlar doğrultusunda eğitim sürecinde COVID-19 ile ilgili güncel bilimsel bilgilere yer verilmesi, öğrencilerin özellikle sosyal mesafe konusunda farkındalıklarının artırılması ve sağlıklı yaşam biçimi davranışlarının desteklenmesi önerilmektedir.

**Anahtar kelimeler:** COVID-19, Öğrenci, Sağlık hizmetleri, Sağlıklı yaşam biçimi davranışları.

## INTRODUCTION

Many people around the world have become infected, seriously ill or even died in a short period of time due to the COVID-19 virus (Velavan & Meyer 2020). As such, the disease was declared a pandemic by the World Health Organization in March 2020. As the pandemic could not be brought under control quickly enough to prevent worldwide spread, many changes were required in physical, social and psychological life. The ongoing pandemic has also affected the emotional and intellectual processes of individuals (Karataş 2020).

The biggest challenge in controlling the spread of this disease is that asymptomatic individuals are contagious (Gandhi et al. 2020). For this reason, social isolation and quarantine measures have been enforced in many countries. It has become necessary to take personal protective measures (isolation, protection of social distance, mask wearing, hand washing and general hygiene measures) in controlling the pandemic and people have been forced to take their own responsibility by maintaining a certain attitude of sacrifice towards the situation (Megan et al. 2020; Türken & Köse 2020). Studies have shown that individuals have exhibited different behaviors in adapting to transmission prevention approaches (Azlan et al. 2020; Ferdousa et al. 2020; Simeneh et al. 2020).

Changes in the habits of individuals have been noticeable, such as hygiene, avoiding crowded environments, communication, receiving information, sleep schedules and diet. Although isolation measures were very effective in preventing infection, the disruption of habitual routines, more sedentary lifestyles, anxiety about becoming sick and the transition process to this new order has caused healthy lifestyle behaviors to be impacted (Kaya & Yazgan 2020).

The employment of health-enhancing behaviors is essential in maintaining well-being, preventing disease and early diagnosis. A healthy lifestyle is defined as controlling all behaviors of individuals that can affect health and regulating daily activities by choosing behaviors appropriate to existing health conditions (Bostan & Beşer 2017). Such actions include spiritual development, exercise, diet, interpersonal relationships and stress management (Bahar et al. 2008). These activities are important for all ages and should be

acquired in childhood. In general, healthy behaviors are introduced under the guidance of parents in childhood and adolescence, while later they become one's own responsibility in older ages (Owen and Çelik 2018). University life can be a stressful experience, though also positive in terms of the sense of independence, with aspects such as leaving the family and learning to live on one's own. Studies indicate that most university students face difficulties maintaining a healthy lifestyle (Algahtani 2020; Hanawi et al. 2020; Whatnall et al. 2020). A mixture of reasons may be responsible, including lack of motivation, lack of support, cognitive learning load and having to work in shifts, though it appears that students are aware of such healthy lifestyle behaviors (Thwaite et al. 2020).

One of the first sectors affected by social isolation and restriction measures early in the pandemic was education. Immediately after the virus was detected in Turkey, education and training activities at universities were suspended and moved to online forms of education, which meant learning from home. Due to restriction practices across the country, the school and social order that students in the university environment were accustomed to was also uprooted (Arslan & Karagül 2020). Some studies have reported that the lifestyle habits of university students have changed significantly during the COVID-19 period, severely affecting healthy lifestyle behaviors (Kilani et al. 2020; Lu et al. 2020). In this study, the goal was to evaluate the healthy lifestyle behaviors of health services vocational school students and associated, influencing factors during the COVID-19 pandemic.

### Research questions

How are students complying with the COVID-19 transmission prevention recommendations?

What are students' concerns about COVID-19 transmission?

Have there been any changes in students' living habits due to COVID-19?

Do healthy lifestyle behaviors vary according to the socio-demographics of the students?

Have students' healthy lifestyle behaviors changed due to COVID-19?

## METHODS

**Type of Research:** This research was carried out descriptively and cross-sectionally.

**Population and Sample:** The research sample consisted of 668 students (from Elderly care, Physiotherapy, Medical Laboratory, Child Development, Medical Documentation and Secretary studies) learning at the academy in the 2019-2020 academic year. While the optimal goal was to include the entire student body, the study was completed with 425 students who agreed to participate in the research and who were able to reliably access the internet.

**Data collection tool:** Two questionnaires, a Personal Information Form and the Healthy Lifestyle Behaviors Scale II (HLBS II) were used to collect necessary data.

**Healthy Lifestyle Behaviors Scale-II (HLBS II):** This scale was developed by Walker et al. in 1987, reorganized in 1995 and named the Healthy Lifestyle Behaviors Scale II (Walker et al. 1987; Walker et al. 1995). It consists of 52 items and 6 sub-dimensions: Spiritual Development, Health Responsibility, Physical Activity, Diet, Interpersonal Relationships and Stress Management. Sample statements of the scale sub-dimensions are as follows: regarding Spiritual Development: "I look to the future with hope", Diet: "I eat 3-5 portions of vegetables per day", Interpersonal Relationships: "I hug the people I love", Stress Management: "I use appropriate methods to control my stress", Health Responsibility: "I consult health personnel about my health problems", Physical Activity: "I get regular exercise". The items are rated on a 4 point Likert scale (from 1= "never" to 4= "routinely"). The lowest score is 52 and the highest is 208. Higher scores obtained from the scale indicate that the individual performs the recommended health behaviors at an advanced level. A Turkish validity and reliability of the scale was performed by Bahar and colleagues. The Cronbach Alpha coefficient of the scale was 0.92 (Bahar et al. 2008). In our study, the Cronbach alpha internal consistency coefficient for the scale was found to be 0.92.

**Implementation of the research:** Research was conducted between 1 September and 10 September 2020. Students were contacted via the Whatsapp messaging application, the

purpose of the study was explained and consent obtained. Forms were then sent to students who volunteered to participate in the study, which were completed online.

**Evaluation of the data:** Collected data were evaluated using the SPSS package program (SPSS for Windows, version 22.0) and descriptive statistical methods (number, percentage, mean, standard deviation, minimum, maximum) were used. Non-parametric methods were used in the comparison of scale scores because the data did not fit a normal distribution. A Mann Whitney U test was used to compare two groups, and a Kruskal Wallis test was used for comparisons of three or more groups.

**Ethical approval:** A utilization permit was obtained from the people who performed the validity and reliability of the scale for HLBS used in the study. Written permission and non-invasive clinical research ethics committee approval was obtained from the institution where the study was conducted (Decision No: 2020.187.07.20 Date: 28.07.2020).

## RESULTS

The demographics of students included is: 91.1% female, 31.3% graduates of the School of Health, average age 20.00 ± 1.84 (18-34) and 88.9% stated that they do not have any chronic illness. All characteristics of the students are listed in Table 1.

**Table 1.** Personal characteristics of the students

		Mean±SD (Min.-Max.) 20, 00±1.84(18-34)	
		n	%
<b>Gender</b>	Female	387	91.1
	Male	38	8.9
<b>Graduated high school</b>	School of health	133	31.3
	Other	292	68.7
<b>Chronic disease</b>	Yes	47	11.1
	No	378	88.9
<b>Own room</b>	Yes	305	71.8
	No	120	28.2
<b>Financial situation</b>	High	51	12.0
	Moderate	339	79.8
	Low	35	8.2

**Table 2.** COVID-19 pandemic process experiences of students

		n	%
Following mask wearing recommendation	Rarely	7	1.6
	Sometimes	34	8.0
	Often	82	19.3
	Always	302	71.1
Following social distancing recommendation	Rarely	17	4.0
	Sometimes	73	17.2
	Often	180	42.4
	Always	155	36.5
Following hand washing recommendation	Rarely	5	1.2
	Sometimes	12	2.8
	Often	18	4.2
	Always	390	91.8
Worry about being infected with COVID-19	None	45	10.6
	Low	94	22.1
	Medium	141	33.2
	High	145	34.1
Worry about infecting others with COVID-19	None	68	16.0
	Low	103	24.2
	Medium	154	36.2
	High	100	23.5
Affecting hygiene habits during the COVID-19 process	Yes-positive	361	94.9
	Yes-negative	15	3.3
	No	50	11.8
Affecting social life during the COVID-19 process	Yes-positive	44	10.4
	Yes-negative	356	83.8
	No	25	5.9
Affecting sleeping habits during the COVID-19 process	Yes-positive	31	7.3
	Yes-negative	272	64.0
	No	122	28.7
Affecting dietary habits during the COVID-19 process	Yes-positive	56	13.2
	Yes-negative	247	58.1
	No	122	28.7
Affecting exercise habits during the COVID-19 process	Yes-positive	50	11.8
	Yes-negative	297	69.9
	No	78	18.4
Affecting school life during the COVID-19 process	Yes-positive	30	7.1
	Yes-negative	379	89.2
	No	16	3.8

**Table 3.** Comparison of HLBS II scores of students according to personal characteristics

	HLBS Health Responsibility		HLBS Physical Activity		HLBS Diet		HLBS Spiritual Development		HLBS Interpersonal Relationships		HLBS Stress Management		HLBS Total	
	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p
Gender	Female	19.86±4.39	16.29±4.40	20.11±3.57	24.66±4.65	24.75±3.92	18.26±3.71	24.75±3.92	24.75±3.92	18.26±3.71	123.95±18.68	Z=-0.256	123.95±18.68	Z=-0.205
	Male	19.57±5.13	18.50±5.86	20.89±4.60	24.63±5.25	23.05±3.82	p>0.05	17.94±3.43	23.05±3.82	17.94±3.43	124.60±22.35	p>0.05	124.60±22.35	p>0.05
Graduated High school	School of Health	20.56±4.75	16.68±4.92	20.40±3.90	24.25±4.85	24.68±3.89	Z=-1.046	18.45±3.76	24.68±3.89	18.45±3.76	125.04±20.77	Z=-0.821	125.04±20.77	Z=-0.886
	Other	19.51±4.28	16.40±4.43	20.08±3.70	24.84±4.62	24.56±3.96	p>0.05	18.13±3.64	24.56±3.96	18.13±3.64	123.54±18.16	p>0.05	123.54±18.16	p>0.05
Chronic Disease	Yes	19.97±5.30	14.51±3.84	19.51±4.21	23.74±4.95	24.06±4.78	Z=-0.987	17.12±3.99	24.06±4.78	17.12±3.99	118.93±21.19	Z=-2.187	118.93±21.19	Z=-1.601
	No	19.82±4.35	16.73±4.61	20.27±3.70	24.77±4.66	24.66±3.82	p>0.05	18.37±3.62	24.66±3.82	18.37±3.62	124.64±18.65	p<0.05	124.64±18.65	p>0.05
Own Room	Yes	20.01±4.42	16.85±4.77	20.36±3.83	24.78±4.40	24.89±3.78	Z=-1.000	18.61±3.62	24.89±3.78	18.61±3.62	125.52±18.61	Z=-3.712	125.52±18.61	Z=-2.816
	No	19.40±4.52	15.55±3.95	19.75±3.56	24.34±5.39	23.85±4.24	p>0.05	17.27±3.66	23.85±4.24	17.27±3.66	120.17±19.53	p<0.05	120.17±19.53	p<0.05
Financial situation	High (a)	20.74±4.59	17.09±4.55	21.31±3.64	26.00±4.89	25.45±3.74	$\chi^2=12.643$	19.54±3.66	25.45±3.74	19.54±3.66	130.15±19.46	$\chi^2=7.947$	130.15±19.46	$\chi^2=12.289$
	Moderate(b)	19.80±4.35	16.56±4.62	20.14±3.72	24.71±4.61	24.67±3.84	p<0.05	18.09±3.63	24.67±3.84	18.09±3.63	123.99±18.40	p<0.05	123.99±18.40	p<0.05
	Low(c)	18.88±5.11	14.91±3.98	18.94±4.00	22.20±5.79	22.68±4.61	a>b,c	17.65±3.85	22.68±4.61	17.65±3.85	115.28±21.12	a>b,c	115.28±21.12	a>b,c; b>c

Z=mann whitney u test;  $\chi^2$ =kruskal wallis test

**Table 4.** Comparison of HLBS II scores of students according to COVID-19 pandemic process experiences (I)

	HLBS Health Responsibility		HLBS Physical Activity		HLBS Diet		HLBS Spiritual Development		HLBS Interpersonal Relationships		HLBS Stress Management		HLBS Total		
	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	
Following mask wearing recommendation	Rarely (a)	18.57±5.65	17.42±5.25	17.85±3.62	24.85±7.35	22.57±5.22	16.85±5.24	118.14±23.29	16.85±5.24	22.57±5.22	118.14±23.29	16.85±5.24	22.57±5.22	118.14±23.29	$\chi^2=11.205$ $p<0.05$
	Sometimes(b)	18.70±4.26	15.26±5.16	19.11±4.23	23.26±4.82	22.73±4.81	17.85±3.97	116.94±20.04	17.85±3.97	22.73±4.81	116.94±20.04	17.85±3.97	22.73±4.81	116.94±20.04	$\chi^2=12.636$ $p<0.05$
	Often(c)	19.06±3.90	16.80±4.99	19.70±3.22	24.01±4.04	24.36±3.81	17.41±3.44	121.35±15.96	17.41±3.44	24.36±3.81	121.35±15.96	17.41±3.44	24.36±3.81	121.35±15.96	$\chi^2=6.884$ $p>0.05$
	Always (d)	20.20±4.56	16.52±4.24	20.49±3.81	24.98±4.76	24.92±3.77	18.53±3.64	125.66±19.34	18.53±3.64	24.92±3.77	125.66±19.34	18.53±3.64	24.92±3.77	125.66±19.34	$\chi^2=21.079$ $p<0.05$
Following social distancing recommendation	Rarely (a)	17.41±2.91	15.29±4.52	18.52±4.07	21.88±4.62	22.94±4.33	16.70±3.86	112.76±14.57	16.70±3.86	22.94±4.33	112.76±14.57	16.70±3.86	22.94±4.33	112.76±14.57	$\chi^2=19.157$ $p<0.05$
	Sometimes(b)	19.09±3.78	16.01±4.51	19.52±3.03	23.71±3.64	24.56±3.87	17.26±2.87	120.15±14.82	19.52±3.03	23.71±3.64	120.15±14.82	17.26±2.87	23.71±3.64	120.15±14.82	$\chi^2=13.262$ $p<0.05$
	Often(c)	19.55±4.31	15.99±4.42	19.81±3.40	24.24±4.74	24.27±3.92	17.96±3.66	121.85±18.61	19.81±3.40	24.27±3.92	121.85±18.61	17.96±3.66	24.27±3.92	121.85±18.61	$\chi^2=5.737$ $p>0.05$
	Always (d)	20.79±4.85	17.42±4.73	21.11±4.25	25.89±4.82	25.18±3.88	19.17±3.82	129.58±20.24	21.11±4.25	25.89±4.82	129.58±20.24	19.17±3.82	25.18±3.88	129.58±20.24	$\chi^2=2.218$ $p>0.05$
Following hand washing recommendation	Rarely (a)	16.20±2.58	11.20±0.44	16.80±4.20	19.20±4.76	18.00±5.14	14.40±1.94	95.80±14.42	18.00±5.14	18.00±5.14	95.80±14.42	14.40±1.94	18.00±5.14	95.80±14.42	$\chi^2=6.705$ $p<0.05$
	Sometimes(b)	17.00±4.15	13.41±3.72	19.16±4.30	22.83±3.90	24.00±3.35	15.75±3.79	112.16±13.91	24.00±3.35	24.00±3.35	112.16±13.91	15.75±3.79	24.00±3.35	112.16±13.91	$\chi^2=5.737$ $p>0.05$
	Often(c)	19.16±4.60	15.33±4.86	19.27±2.39	23.66±5.06	24.33±3.91	17.00±3.51	118.77±18.44	24.33±3.91	24.33±3.91	118.77±18.44	17.00±3.51	24.33±3.91	118.77±18.44	$\chi^2=2.394$ $p>0.05$
	Always (d)	20.00±4.44	16.70±4.55	20.30±3.78	24.83±4.66	24.71±3.88	18.41±3.64	124.99±18.83	24.71±3.88	24.71±3.88	124.99±18.83	18.41±3.64	24.71±3.88	124.99±18.83	$\chi^2=14.065$ $p<0.05$
Worry about being infected with COVID-19	Rarely (a)	20.48±5.68	17.46±5.10	20.57±5.07	27.22±5.36	25.73±5.00	18.66±4.49	130.15±25.42	25.73±5.00	25.73±5.00	130.15±25.42	18.66±4.49	25.73±5.00	130.15±25.42	$\chi^2=5.790$ $p>0.05$
	Sometimes(b)	19.09±4.23	16.09±4.30	19.51±3.70	24.29±4.31	24.23±3.76	17.85±3.25	121.05±18.13	24.23±3.76	24.23±3.76	121.05±18.13	17.85±3.25	24.23±3.76	121.05±18.13	$\chi^2=1.532$ $p>0.05$
	Often(c)	19.59±4.05	16.27±4.85	20.52±3.32	24.50±4.64	24.60±3.52	18.42±3.77	123.92±17.77	24.60±3.52	24.60±3.52	123.92±17.77	18.42±3.77	24.60±3.52	123.92±17.77	$\chi^2=6.930$ $p>0.05$
	Always (d)	20.39±4.49	16.65±4.31	20.17±3.73	24.24±4.57	24.49±4.03	18.16±3.58	124.11±18.14	24.49±4.03	24.49±4.03	124.11±18.14	18.16±3.58	24.49±4.03	124.11±18.14	$\chi^2=7.981$ $p<0.05$
Worry about infecting others with COVID-19	Rarely (a)	20.66±5.20	16.91±5.22	20.51±4.52	25.88±5.40	25.30±4.78	18.98±4.39	128.26±23.75	25.30±4.78	25.30±4.78	128.26±23.75	18.98±4.39	25.30±4.78	128.26±23.75	$\chi^2=1.369$ $p>0.05$
	Sometimes(b)	18.96±4.41	16.21±5.01	20.15±4.00	24.33±4.68	24.27±3.87	18.19±3.68	122.13±20.71	24.27±3.87	24.27±3.87	122.13±20.71	18.19±3.68	24.27±3.87	122.13±20.71	$\chi^2=0.488$ $p>0.05$
	Often(c)	19.31±3.63	16.38±4.33	20.05±3.25	24.14±4.37	24.11±3.55	17.70±3.25	121.73±11.58	24.11±3.55	24.11±3.55	121.73±11.58	17.70±3.25	24.11±3.55	121.73±11.58	$\chi^2=7.293$ $p>0.05$
	Always (d)	20.99±4.82	16.65±4.05	20.20±3.75	24.94±4.59	25.22±3.84	18.58±3.70	126.58±17.81	25.22±3.84	25.22±3.84	126.58±17.81	18.58±3.70	25.22±3.84	126.58±17.81	$\chi^2=1.369$ $p>0.05$

$\chi^2$ =kruskal wallis test

**Table 5.** Comparison of HLBS II scores of students according to COVID-19 pandemic process experiences (II)

	HLBS Health Responsibility		HLBS Physical Activity		HLBS Diet		HLBS Spiritual Development		HLBS Interpersonal Relationships		HLBS Stress Management		HLBS Total	
	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p	Mean±SD	analysis/p
Affecting hygiene habits during the COVID-19 process	19.88±4.35 19.00±3.67 19.74±5.39	$\chi^2=0.174$ p>0.05	16.26±4.53 17.78±3.90 17.76±4.94	$\chi^2=8.741$ p<0.05	20.09±3.65 21.85±3.97 20.36±4.46	$\chi^2=3.969$ p>0.05	24.67±4.55 21.07±4.17 25.54±5.47	$\chi^2=9.753$ p<0.05	24.54±3.89 23.00±2.88 25.46±4.39	$\chi^2=3.491$ p>0.05	18.17±3.58 16.92±3.54 19.02±4.33	$\chi^2=3.377$ p>0.05	123.65±18.31 119.64±15.91 127.88±23.94	$\chi^2=2.982$ p>0.05
Affecting social life during the COVID-19 process	20.02±4.28 19.85±4.45 19.36±4.97	$\chi^2=0.367$ p>0.05	17.50±5.30 16.41±4.48 15.88±4.72	$\chi^2=2.051$ p>0.05	20.54±2.75 20.21±3.85 19.16±3.98	$\chi^2=2.869$ p>0.05	25.36±4.74 24.61±4.60 24.04±5.96	$\chi^2=0.797$ p>0.05	25.27±4.01 24.55±3.86 24.08±4.82	$\chi^2=1.245$ p>0.05	20.11±3.90 17.96±3.61 18.76±3.28	$\chi^2=11.318$ p<0.05	128.81±18.95 123.61±18.74 121.28±22.14	$\chi^2=2.614$ p>0.05
Affecting sleeping habits during the COVID-19 process	19.77±4.60 19.77±4.50 20.00±4.35	$\chi^2=0.239$ p>0.05	17.64±5.46 16.12±4.27 17.00±4.95	$\chi^2=4.031$ p>0.05	20.16±3.32 19.87±3.90 21.00±3.44	$\chi^2=10.263$ p<0.05	25.09±5.08 24.19±4.70 25.59±4.47	$\chi^2=8.266$ p<0.05	25.19±4.18 24.39±3.96 24.91±3.81	$\chi^2=2.858$ p>0.05	19.80±4.59 17.60±3.53 19.24±3.43	$\chi^2=20.754$ p<0.05	127.67±20.68 121.91±18.73 127.77±18.60	$\chi^2=9.296$ p<0.05
Affecting dietary habits during the COVID-19 process	20.85±5.05 19.66±4.44 19.72±4.17	$\chi^2=2.355$ p>0.05	18.60±5.62 15.79±3.81 16.93±5.14	$\chi^2=13.192$ p<0.05	22.48±4.76 19.51±3.53 20.49±3.26	$\chi^2=19.013$ p<0.05	26.08±4.76 23.81±4.66 25.71±4.41	$\chi^2=18.685$ p<0.05	25.92±3.68 24.28±3.97 24.63±3.88	$\chi^2=7.884$ p<0.05	19.51±4.16 17.48±3.45 19.16±3.55	$\chi^2=21.594$ p<0.05	133.48±21.98 120.56±17.57 126.65±18.58	$\chi^2=19.532$ p<0.05
Affecting exercise habits during the COVID-19 process	20.16±4.63 19.92±4.49 19.29±4.21	$\chi^2=1336$ p>0.05	20.36±4.43 15.83±3.86 16.50±5.88	$\chi^2=39.320$ p<0.05	20.86±3.61 20.03±3.90 20.34±3.29	$\chi^2=1.891$ p>0.05	26.04±4.67 24.47±4.64 24.47±4.86	$\chi^2=3.830$ p>0.05	25.58±3.76 24.55±3.91 24.16±4.10	$\chi^2=3.218$ p>0.05	20.18±4.09 17.82±3.47 18.55±3.79	$\chi^2=13.856$ p<0.05	133.18±19.10 122.65±18.28	$\chi^2=11.317$ p<0.05
Affecting school life during the COVID-19 process	19.70 ±5.24 19.78±4.40 21.31±4.20	$\chi^2=1.804$ p>0.05	16.83±5.60 16.33±4.51 19.50±3.03	$\chi^2=10.967$ p<0.05	20.06±2.97 20.13±3.83 21.56±3.59	$\chi^2=2.730$ p>0.05	26.83±4.49 24.40±4.68 26.62±4.25	$\chi^2=9.959$ p<0.05	26.26±3.93 24.44±3.93 25.18±3.52	$\chi^2=5.252$ p>0.05	20.90±4.37 17.94±3.52 20.06±3.67	$\chi^2=17.100$ p<0.05	130.60±19.62 123.06±18.83 134.25±17.43	$\chi^2=7.515$ p<0.05

It was found that 36.5% of students always followed social distancing recommendations, 71% wore a mask consistently and 91.8% washed their hands with regularity. 23.5% of the students reported that they were highly worried about infecting someone else with COVID-19, and 34.1% worried about being infected themselves with COVID-19. It was determined that there were negative changes of varying rates in the daily lives of students during the pandemic. These were seen in school life (89.2%), social life (83.8%), exercise (69.9%), sleep patterns (64%), diet (58.1%) and hygiene (3.3%)(Table 2).

An analysis of the collected data revealed the following: Physical Activity sub-dimension scores of male students were higher than female students, yet Interpersonal Relationship sub-dimension scores of female students were higher than males ( $p < 0.05$ ). The Health Responsibility sub-dimension score of high school health graduates was higher than other high school graduates ( $p < 0.05$ ). Physical Activity and Stress Management sub-dimension scores of students without chronic diseases were higher than those with chronic diseases ( $p < 0.05$ ). Physical Activity, Interpersonal Relationships, Stress Management, and Total scale scores of those who have their own room at home were higher than those who do not have their own room ( $p < 0.05$ ). Relative to one's family financial situation, a difference was found between the sub-dimension scores of Physical Activity, Diet, Spiritual Development, Interpersonal Relations, Stress Management and Total scores ( $p < 0.05$ )(Table 3).

A small difference was noted between Diet, Interpersonal Relationships, Stress Management sub-dimension scores and Total scale scores according to the reported status of compliance with the suggestion of wearing a mask ( $p < 0.05$ ). According to the status of compliance with social distance recommendations, a difference was found between all sub-dimensions and total scores except the Interpersonal Relations sub-dimension ( $p < 0.05$ ). There was also a certain difference between Spiritual Development sub-dimension scores relating to the fear of being infected by COVID-19. There was a noted difference between Health Responsibility and Interpersonal Relations sub-dimension scores and Total scale scores according to the fear of infecting someone else with COVID-19 ( $p < 0.05$ )(Table 4).

All sub-dimension and Total scale scores, except Health Responsibility, were found to be higher in students who reported that their diet was positively affected. Students who indicated that their hygiene habits were positively affected had higher Spiritual Development scores and lower Physical Activity scores. The Stress Management scores of students who stated that their social lives were positively affected were found to be higher. Stress Management and Total scale scores of students who mentioned that their sleeping habits were affected positively were also higher. The Spiritual Development and Diet scores of students who said that their sleeping habits were affected negatively were lower. All scale scores of students who said that their diet was positively affected, except for Health Responsibility scores, were found to be higher. Stress Management, Physical Activity and Total scale scores of students who stated that their exercise habits were positively affected were found to be higher. Finally, Stress Management, Spiritual Development, Physical Activity and Total scale scores of students who said that their school life was negatively affected were found to be lower ( $p < 0.05$ ) (Table 5).

## DISCUSSION

### Compliance with Recommendations and Concern for Contagion of COVID-19

Our study found that students firstly followed the suggestion of increased hand washing, secondly wearing a mask and thirdly social distancing recommendations during the pandemic. Yakar et al. (2020) stated in studies conducted with medical faculty students that students had no change in attitudes about hand washing or wearing masks, however, they paid more attention to social distancing. In the same study, it was determined that students were especially worried about infecting family members with COVID-19. Similarly, in our study more than half of the students stated that they had medium to high concerns about being infected and infecting others with COVID-19.

While it was found in some studies conducted during the COVID-19 period that individuals wore masks in crowded areas (Ferdousa et al. 2020) and paid attention to hand washing (Azlan et al., 2020; Ferdousa et al. 2020), it was also noted that the number of individuals who did not use masks or did



not practice social distancing was not negligible (Azlan et al. 2020; Simeneh et al. 2020). Reviewing the current research, compliance with personal protective measures regarding COVID-19 varies according to country and characteristics of participants. It is understandable that health program students are more aware of the risks of COVID-19 and are more likely to comply with the recommendations of hand washing and masks, however, it should be recognized that there is a need to increase the awareness of even these students about the pandemic (Modi et al. 2020). On the other hand, university life is an important time for socialization and friendship, which is a possible explanation for why young people have less compliance with social distancing compared to other personal measures.

### **Change in Life Habits during the COVID 19 Process**

In our study, almost all of the students stated that their hygiene habits were positively affected due to the pandemic. Similarly, in a study conducted with nursing students, it was observed that students' hygiene practices increased during the pandemic (Ünal et al. 2020). The positive change in students' hygiene behavior seems to be related to their desire to be protected from disease transmission.

One important consequence of the pandemic has been a decrease in the rate of physical activity (Ercan et al. 2020; Kaya et al. 2019; Mattioli et al. 2020). In our study, the majority of students stated that their exercise habits were negatively affected due to the pandemic. This may be related to the restriction of group sport activities and areas such as gyms, plus spending more time at home in order to reduce transmission.

Some studies have shown that the sleep quality of students was good during the pandemic process (Dragun et al. 2021; Majumdar et al. 2020). However, in our study, the majority of students stated that their sleep habits were negatively affected due to the pandemic. During the COVID 19 period, students' lack of exercise was found to be associated with a decrease in sleep quality (Lu et al. 2020). Students were not tied to routines such as sleeping and waking hours, which they usually need to heed in order to participate in face-to-face education. This could have led to the changes in their sleeping habits.

Dragun et al. (2021) stated that some students gained weight and some lost weight during the pandemic quarantine period, and that there was no significant change in their dietary habits in general. In our study, it was discovered that the diet of more than half of the students was negatively affected. Changes in meal times and frequency, as in other daily routines of students, may be related to the negative impact of diet on these students.

In our study, the vast majority of students stated that their social life was negatively affected due to the pandemic. In other studies, it was found that most of the students felt that social life had stopped temporarily during the COVID-19 period (Aktaş et al.2020). University campuses are an important socialization area in terms of sport, artistic and cultural activities. It is understandable that students who cannot take part in face to face education on campus due to online classwork say that their social life is affected negatively.

In research undertaken by Aktaş and colleagues, university students declared that they did not want to receive online education under normal conditions (Aktaş et al.2020). Savaş (2021) emphasized that a majority of university students have difficulty focusing during online education. In another study, students reported that the disadvantages of online education outweigh its advantages (Altuntaş 2020). In our research, the vast majority of students stated that school life was negatively affected due to the pandemic. Students may feel that they will have inadequate professional skills due to the lack of practice that occurs in online education.

### **Healthy Lifestyle Behaviors of Students according to Socio-demographic Characteristics in the COVID-19 Pandemic**

In our work, it was found that the healthy lifestyle behaviors of the students were at a moderate level, with some differences relating to the personal characteristics of the students. It was found that the Physical Activity levels of male students and the Interpersonal Relations levels of female students were higher. Şen et al. (2017), contrary to our results, determined that gender is not associated with a healthy lifestyle. On the other hand, in our study, it was found that students who have their own room at home and characterize their financial situation as good maintain better healthy lifestyle behaviors. Şen et al. (2017), found that income level related to healthy lifestyle

behaviors, which is also supported by our study results. As can be seen in the study of Tüygür et al. (2015), the health responsibility of health high school graduates was found to be higher than other high school graduates in our study. We believe that the education in personal health that students received during their high school education increased the awareness of health, and thus health responsibility. In our study, the Physical Activity and Stress Management levels of students with chronic diseases were lower than other students. This may be related to concerns about experiencing a more serious COVID-19 infection.

### **Healthy Lifestyle Behaviors of Students according to Changing Life Habits in the COVID-19 Pandemic**

In our study, the healthy lifestyle behaviors of students who always followed the recommendations about COVID-19 were found to be higher. This may be related to the fact that those who had attached an importance to healthy lifestyle behaviors in their pre-pandemic life also perceived the recommendations more seriously.

Students who were worried about COVID-19 contamination rarely were found to have higher levels of Spiritual Development. We can say that believing in the power of spirituality in preventing disease reduces worry. The Health Responsibility, Interpersonal Relationships and Total scale scores of students who experienced an intense fear of infecting others were found to be higher. This may be related to an overall sense of responsibility, which is important among interpersonal relationships, and subsequently being sensitive to the health of both one's own person and his/her environment.

The importance of a healthy diet, regular sleep and physical activity is emphasized in the prevention of and recovery from COVID-19 (Barazzoni et al. 2020; Jurak et al. 2020). In our study, it was found that the healthy lifestyle behaviors of students who said their sleep, diet and exercise habits were positively affected during the pandemic were also better. This may be that students who know the importance of a healthy lifestyle sought to increase immunity during the pandemic.

This study found that the healthy lifestyle behaviors of the students who stated that their school life was negatively

affected was also at a lower level. Face-to-face school life provides necessary routines for students to carry out daily life activities and work discipline in a certain order. The interruption of school life may lead to lower external motivation and may cause a decrease in the maintenance of healthy lifestyle behaviors in students with a lack of self-management.

It has been shown that the pandemic situation has caused psychological distress in students (Li et al. 2020). In our study, it was found that the Stress Management behaviors of students who reported that their social life was negatively affected were also at a lower level. Social support from friends and the environment, and participation in social activities are important aids in coping with stress. Therefore, due to a decrease in social life during the pandemic, students may have had difficulties in coping with their problems.

A major limitation of this study is that only a single school sample was included and that the healthy lifestyle behaviors of students before the pandemic were not evaluated. This must be taken into account as results are interpreted.

### **CONCLUSION AND RECOMMENDATIONS**

As a result of this study, it was found that students followed the hand washing rule most in terms of the practices recommended due to the pandemic, paid attention to wearing a mask less frequently and behaved most carelessly in complying with social distancing rules. Also, it was found that the healthy lifestyle behaviors of the students were at a moderate level and were both positively and negatively affected by their pandemic experience.

In line with the results obtained, we recommend:

- Raising awareness to students about protection from COVID-19 and preventing transmission, especially following social distancing guides.
- Providing training on the importance of healthy lifestyle behaviors in daily life and during the pandemic period and how they can be applied in accordance with pandemic measures within the scope of the new curriculum term of the students.
- Developing programs and course curricula that will enable students to better participate in online education lessons

and enriching programs with a variety of educational methods.

Supporting students in adapting to innovations while they are maintaining healthy lifestyle behaviors and daily routines during these periods will help students to minimize the effects of bio-psychosocial aspects.

#### AUTHOR CONTRIBUTIONS

Conceptualization:FD, MT; Literatür searching: FD, MT; Methodology:FD, MT; Writing - original draft: FD, MT; Writing-review & editing:FD, MT

#### CONFLICT OF INTEREST

All authors of this article declare that there is no conflict of interest. Also, we have no relevant financial interests in this manuscript.

#### FINANCIAL DISCLOSURE

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#### REFERENCES

- Algahtan FD. (2020). Healthy Lifestyle among Ha'il University Students, Saudi Arabia. *International Journal of Pharmaceutical Research & Allied Sciences*, 9(1):160-167.
- Altuntaş N. (2020). Investigation of students' attitudes towards applied distance education in the COVID-19 pandemic process in higher education institutions: Example of physiotherapy and rehabilitation department. *Necmettin Erbakan University Faculty of Health Sciences Journal*, 3(1): 15-20.
- Aktaş Ö, Büyüktaş B, Gülle M, Yıldız M. (2020). Sports Science Students' Attitudes Towards Distance Education During Isolation Days Caused By COVID-19 Virus. *Sivas Cumhuriyet Üniversitesi Spor Bilimleri Dergisi*, 1(1):1-9.
- Arslan İ. Karagül S.(2020). A Global Threat (COVID-19 Pandemic) and the Journey to Change. *Üsküdar University Journal of Social Sciences*, 10:1-36.
- Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E. (2020). Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS ONE*, 15(15):1-15.
- Bahar Z, Beser A, Gördes N, Ersin F, Kissal A. (2008). Healthy life style behavior scale II:A reliability and validity study. *Journal of Cumhuriyet University School of Nursing*, 12:1-13.
- Barazzoni R, Bischoff SC, Krznaric Z, Pirlich M, Singer P. (2020). Expert Statements and Practical Guidance for Nutritional Management of Individuals With SARS-CoV-2 Infection. *Clinical Nutrition*, 4(20):301-400.
- Bostan N, Beşer A. (2017). Factors Affecting the Healthy Lifestyle Behaviors of Nurses. *HEAD*, 14 (1): 38-44.
- Dragun R, Veček, NN, Marendić M, Pribisalić A, Đivić G, Cena H, Polašek O, Kolčić I. (2021). Have Lifestyle Habits and Psychological Well-Being Changed among Adolescents and Medical Students Due to COVID-19 Lockdown in Croatia? *Nutrients*, 13(97). <https://doi.org/10.3390/nu13010097>
- Ercan Ş, Keklicek E. (2020). COVID-19 Investigation of the Change in Physical Activity Levels of University Students Due to COVID-19 Pandemic. *Izmir Katip Çelebi University Faculty of Health Science Journal*, 5(2): 69-74.
- Ferdousa MZ, Md. Islama S, Mosaddek TS, Zegarra-Valdivia JA, Gozal D. (2020). Knowledge, attitude, and practice regarding COVID-19 outbreak in Bangladesh: An online-based cross-sectional study. *medRxiv preprint*, 3:1-29.
- Gandhi RT, Lynch JB, del Rio C. (2020). Mild or Moderate COVID-19. *The New England Journal of Medicine*, 1-9.
- Hanawi SA, Saat NZM, Zulkafly M, Hazlenah H, Taibukahn NH, Yoganathan D, Abdul Rahim NN, Mohd Bashid NAA, Abdul Aziz FA, Low FJ. (2020). Impact of a Healthy Lifestyle on the Psychological Well-being of University Students. *International Journal of Pharmaceutical Research & Allied Sciences*, 9(2):1-7.
- Jurak G, Morrison SA, Leskosek B, Kovac M, Hadzic V, Vodinar J, Truden P, Starc G. (2020). Physical activity recommendations during the coronavirus disease-2019 virus outbreak. *J Sport Health Sci*, 2095-2546.
- Karataş Z. (2020). Social Impacts of COVID-19 Pandemic, Change and Empowerment. *Turkey Journal of Social Service Research*, 4(1):3-17.
- Kaya Ciddi P, Yazgan E. (2019). The effect of physical activity status on quality of life during social isolation in COVID-19 epidemic. *Istanbul Commerce University Journal of Social Sciences*, 37: 262-279.
- Kilani HA, Bataineh MF, Al-Nawayseh A, Atiyat K, Obeid O, Abu-Hilal MM, Mansi T, Al-Kilani M, Al-kitani M, el-Saleh M, Jaber RM, Sweidan A, Himsi M, Yousef I, Alzeer F, Nasrallah M, Al Dhaeri AS, Al Zaabi A, Allala O, Al-kilani L, Alhasan AM, Ghieda M, Najah Y, Alshhekly S, Alhaifi A, Shukri R, Al Adwani J, Waly M, Kilani L, Kilani LH, alShaareef AS, Kilani A. (2020) Healthy lifestyle behaviors are major predictors of mental wellbeing during COVID-19 pandemic confinement: A study on adult Arabs in higher educational institutions. *PLoS ONE*, 15(12): e0243524. <https://doi.org/10.1371/journal.pone.0243524>
- Li Y, Wang Y, Jiang J, Valdimarsdottir UA, Fall K, Fang F, Song H, Lu D, Zhang W. (2020). Psychological distress among health professional students during the COVID-19 outbreak. *Psychological Medicine*, 1-3.
- Lu C, Chi X, Liang K, Chen S, Huang L, Guo T, Jiao C, Yu Q, Veronese N, Soares FC, Grabovac I, Yeung A, Zou L. (2020). Moving More and Sitting Less as Healthy Lifestyle Behaviors are Protective Factors for Insomnia, Depression, and Anxiety Among Adolescents During the COVID-19

- Pandemic. *Psychol Res Behav Manag*, 13:1223-1233.
- Majumdar P, Biswas A, Sahu S. (2020). COVID-19 pandemic and lockdown: cause of sleep disruption, depression, somatic pain, and increased screen exposure of office workers and students of India. *Chronobiology International*, 1-10.
- Mattioli AV, Ballerini Puviani M. (2020). Lifestyle at Time of COVID-19: How Could Quarantine Affect Cardiovascular Risk. *American Journal of Lifestyle Medicine*, 14(3):240-242.
- Megan L, Ranney MD, Griffeth V. (2020). Critical Supply Shortages – The Need for Ventilators and Personal Protective Equipment during the COVID-19 Pandemic. *The New England Journal of Medicine*, 382(18):41.
- Modi PD, Nair G, Uppe A, Modi J, Tuppekar B, Gharpura AS, Langade D. (2020) COVID-19 Awareness Among Healthcare Students and Professionals in Mumbai Metropolitan Region: A Questionnaire-Based Survey. *Cureus*, 12(4): e7514.
- Owen KF, Çelik DN. (2018). Yaşam Boyu Sağlıklı Yaşam ve İyilik Hali. *Psikiyatride Güncel Yaklaşımlar*, 10(4): 440-453. doi: 10.18863/pgy.364108
- Savaş G. (2021). Üniversite öğrencilerinin COVID-19 salgın dönemindeki uzaktan eğitim deneyimine yönelik algıları. *Yükseköğretim Dergisi*, doi: 10.2399/yod.20.744889
- Simeneh Mola S, Aweke Z, Hussein R, Neme D, Mulugeta H, Zemedkun A. (2020). Magnitude and associated factors for attitude and practice of Southern Ethiopian residents toward COVID-19 and its preventions: A community based cross sectional study. *Research Square*, 1-14.
- Şen MA, Ceylan A, Kurt ME, Palancı Y, Aydın C. (2017). Healthy Lifestyle Behaviours of Vocational School of Health Services Students and Influential Factors. *Dicle Medical Journal*, 44 (1) :1-11.
- Thwaite TL, Heidke P, Williams SL, Vandelanotte C, Rebar AL, Khalesi S. (2020). Barriers to healthy lifestyle behaviors in Australian nursing students: A qualitative study nursing & health sciences, 22(4): 921-928.
- Tuygar ŞF, Arslan M. (2015). An investigation about the healthy life style behaviours of vocational school of health services students. *Suleyman Demirel University The Journal of Health Science*, 6(2): 59-66.
- Türken M, Köse Ş. (2020). COVID-19 bulaş yolları ve önleme. *The Journal of Tepecik Education and Research Hospital*, 30: 36-42.
- Ünal E, Özdemir A, Yüksel Kaçan C. (2020). Covid-19 Pandemisinin Hemşirelik Öğrencilerinin Beslenme ve Hijyen Alışkanlıklarına Etkisi. *Uludağ Üniversitesi Tıp Fakültesi Dergisi*, 46 (3): 305-311, doi: <https://doi.org/10.32708/uutfd.791891>
- Velavan TP, Meyer, CG. (2020). The COVID-19 epidemic. *Tropical Medicine & International Health*, 25(3): 278-280.
- Walker SN, Sechrist KR, Pender NJ. (1987). The health-promoting lifestyle profile: Development and psychometric characteristics. *Nursing Research*, 36 (2):76-81.
- Walker SN, Sechrist KR, Pender NJ. (1995). Health promotion model-instruments to measure health promoting lifestyle: Health-promoting lifestyle profile [HPLP II] (Adult version). Accessed <http://hdl.handle.net/2027.42/85349>
- Whatnall MC, Patterson AJ, Brookman S, Convery P, Swan C, Pease S, Hutchesson MJ. (2020). Lifestyle behaviors and related health risk factors in a sample of Australian university students. *J Am Coll Health*. 68(7): 734-741. doi: 10.1080/07448481.2019.1611580.
- World Health Organisation. (2020). <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--11-march-2020>
- Yakar B, Öztürk Kaygusuz T, Pirincci E, Onalan E, Ertekin YH. (2020). Knowledge, attitude and anxiety of medical students about the current COVID-19 outbreak in Turkey. *Fam Pract Palliat Care*, 5(2): 36-44.