RESEARCH ARTICLE

Funda Gokgoz Durmaz[1]
Fatma Goksin Cihan[2]

[1] Konya City Hospital , Family Medicine, Karatay, Konya, Türkiye
[2] Necmettin Erbakan University Meram Medical Faculty Hospital, Family Medicine, Meram, Konya, Türkiye

Corresponding Author:
Funda Gokgoz Durmaz
mail: gokgozdurmaz@hotmail.com

Received: 10.08.2022
Acceptance: 05.10.2022
DOI: 10.18521/ktd.1160147

Konuralp Medical Journal
e-ISSN1309–3878
konuralptipdergi@duzce.edu.tr
konuralptipdergisi@gmail.com
www.konuralptipdergi.duzce.edu.tr

Evaluation of Health Promoting Lifestyle Habits during Pandemic Period, a Cross Sectional Study

ABSTRACT

Objective: The COVID-19 pandemic imposed lifestyle changes. The aim of this study was to evaluate the health-promoting lifestyle habits of individuals who applied to a primary care center during the pandemic period.

Methods: This descriptive and cross-sectional study was conducted with the voluntary participation of 524 individuals. The data was collected through a research questionnaire form and the Health Promoting Lifestyle Scale (HPLS).

Results: Women accounted for 58.2% (n=305) of all participants, 45.2% of them (n=237) had chronic disease and 32.1% (n=168) were smoking. Mean age was 41.26±14.28 (min:18, max:75) years old. Among these participants, %53.2 had equal income to their expenses (n=279), 52.3% experienced sleep pattern changes (n=274), 35.7% had COVID-19 disease and 66.6% vaccinated for COVID-19. The mean HPLS score was 162.75±8.10 points. Interpersonal relationships, stress management and total HPLS scores were higher in women ($p<0.05$). Physical activity, nutrition, stress management, total scores were higher in those without chronic diseases. Health responsibility scores of those vaccinated by COVID-19 vaccine, was higher ($p=0.04$). Stress management scores were lower in those with decreased sleep duration during the pandemic ($p=0.050$).

Conclusions: This study revealed that the participants' HPLS scores were low. It is necessary to continuously develop and support healthy lifestyle behaviors in areas such as physical activity, nutrition, spiritual development, and health responsibility. In the pandemic period, while we better understood the importance of protecting health, studies that will contribute the development of healthy lifestyle behaviors should be accelerated.

Keywords: Health Promotion, Physical Activity, Nutrition, Stress Management, COVID-19 Pandemic.

Pandemi Döneminde Sağlığı Geliştirici Yaşam Alışkanlıklarının Değerlendirilmesi: Kesitsel Bir Çalışma

ÖZET

Amaç: COVID-19 pandemisi bazı yaşam tarzı değişikliklerini zorunlu kıldı. Bu çalışmada, pandemi döneminde birinci basamak sağlık merkezine başvuran bireylerin sağlığı geliştirici yaşam tarzı alışkanlıklarının değerlendirilmesi amaçlandı.

Gereç ve Yöntem: Tanımlayıcı ve kesitsel tipteki bu araştırma 524 kişinin gönüllü katılımıyla gerçekleştirilmiştir. Veriler, sosyo-demografik özellikler anket formu ve Sağlığı Geliştirici Yaşam Tarzı Ölçeği aracılığıyla toplanmıştır.

Bulgular: Katılımcıların %58,2'sini (n=305) kadınlar oluşturuyordu, %45,2'sinin (n=237) kronik hastalığı vardı ve %32,1'i (n=168) sigara kullanıyordu. Ortalama yaş 41,26±14,28 olup, %53,2'sinin geliri giderlerine eşitti (n=279). Katılımcıların %52,3'ü pandemi döneminde uyku düzeninde değişiklik yaşadığını (n=274), %35,7'si COVID-19 hastalığı geçirdiğini ve %66,6'sı COVID-19 aşısı olduğunu belirtti. Sağlığı geliştirici yaşam tarzı ölçeğinden ortalama 162,75±8,10 puan alındı. Kişilerarası ilişkiler, stres yönetimi ve toplam puanlar kadınlarda daha yüksekti ($p<0.05$). Fiziksel aktivite, beslenme, stres yönetimi ve toplam puanlar kronik hastalığı olmayanlarda daha yüksekti. COVID-19 aşısı yaptıranların sağlık sorumluluğu alma puanları daha yüksekti ($p=0.04$). Pandemi sırasında uyku süresi azalmış olanlarda stres yönetimi skorları daha düşüktü ($p=0,050$).

Sonuç: Bu çalışma, katılımcıların sağlığı geliştirici yaşam tarzı ölçeği puanlarının düşük olduğunu ortaya koydu. Fiziksel aktivite, beslenme, ruhsal gelişim, sağlık sorumluluğu alma gibi alanlarda sağlıklı yaşam biçimi davranışlarının sürekli geliştirilmesi ve desteklenmesi gerekmektedir. Pandemi döneminde sağlığı korumanın önemi daha iyi anlaşılmışken sağlıklı yaşam biçimi davranışlarının geliştirilmesine katkı sağlayacak çalışmalara hız verilmelidir.

Anahtar Kelimeler: Sağlığı Geliştirme, Fiziksel Aktivite, Beslenme, Stres Yönetimi, COVID-19 Pandemisi.

INTRODUCTION

The current pandemic period has hampered progress towards a healthy lifestyle by necessitating social isolation measures (1). Social distancing, self-isolation, and quarantine posed the mental health threat (2).

Changeable lifestyle behaviors as an unhealthy diet, physical inactivity, cigarette, alcohol, and substance use increase the incidence of non-communicable diseases and cause worsening and progression of existing diseases (3). These are simultaneously accepted as risk factors besides chronic disease and its uncontrolled course for negative consequences of COVID-19 disease (4).

Since the pandemic struggle has occupied health institutions for two years, there have been inevitable disruptions in the follow-up of chronic diseases and delays in new diagnoses. Ultimately, the pandemic has increased the global disease burden of non-communicable diseases (5).

The quarantine process has also been associated with many adverse psychological effects. Fear of infection, frustration, boredom, obsessive-compulsive symptoms, insufficient information, fear of stigmatization, and financial losses are factors that negatively affect mental health (6).

There are also studies reporting that the quarantine process by reducing outdoor activities enables the development of healthier habits to benefit more from the various social support systems. As a result of education and advanced level of health literacy in developed countries, adaptation to the quarantine process has been easier, and stress management has progressed more successfully (7).

Healthy lifestyle behaviors include nutrition, physical activity, regular sleep, stress management, avoidance of risky behaviors, and quality social relationships. This well-rounded approach will increase disease-free lifespan and improve quality of life in all aspects (8). In this regard, health-promoting behaviors should be expanded while the pandemic is still ongoing.

Health-promoting behaviors require a comprehensive and holistic approach (9). The process begins when individuals realize that they can increase their control over health-determining factors. It should be aimed to make these behavior patterns a habit (9). Lifestyle affects health significantly, and morbidity and mortality of chronic diseases can be reduced with healthy lifestyle changes (10).

In this study we aimed to evaluate the health-promoting lifestyle habits of people who applied to a primary care center and investigate how these habits were affected by the changing living conditions during the pandemic.

MATERIAL AND METHODS

Study Design and Sampling: This cross-sectional study included the individuals applying to a primary care unit and agreed to participate the study between 1 March and 1 June 2021. Based on the number of the registered population served in the Primary Care Unit, the sample size was calculated with the OpenEpi v3.01 program and was found to be 351 at a 5% significance level, 95% confidence interval, and 95% power. 524 participants were included in the study. Written informed consents of the participants were obtained after informing about the purpose of the study. Those with any psychiatric disease were excluded from the study.

Socio-demographic data were collected and Health Promoting LifeStyle Scale (HPLS) were used. The questionnaires were applied by face-to-face interview method. Subdimensional and total HPLS scores were calculated.

Ethical Approval: This study received approval from the Necmettin Erbakan University Non-Invasive Resarch Ethics Committee (2021/3240-5598). The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Socio-Demographic Characteristics Questionnaire: Participants were asked to report their age, gender, marital status, education level, economic situation, chronic illness, change in their sleeping habits, coronavirus vaccination status and COVID-19 diagnosis. They were also asked whether they have a health care worker relative and whether they had any acquaintances diagnosed with COVID-19 infection or died due to COVID-19.

The Health-Promoting Lifestyle Scale-II (HPLS): Health-Promoting Lifestyle Scale-II, which was developed by Walker and Hill-Polerecky, and validated into Turkish by Pınar et al, was used in the study (11). The scale measures the health-promoting lifestyle behaviors by fifty-two items and six sub-dimensions. These sub-dimensions are; health responsibility, physical activity, nutrition, spiritual development (self-actualization), interpersonal support, and stress management. The scale is graded in a 4-point Likert type as Never=1, Sometimes=2, Often=3, and Regularly=4. It does not contain any reverse expression. The total scores can range between 52 and 208 points. Sub-dimension scores are obtained by the total score of the answers given to the items in that sub-dimension; the sum of the subdimension scores obtains the total score. The higher scores indicate having better healthy lifestyle behaviors (11).

Statistical Analysis: Statistical analysis was performed using the Statistical Package for Social Sciences version 24 (IBM, Armonk, NY) software. Participants with missing values in an outcome variable were excluded from any analysis on that variable. Descriptive statistics were expressed as mean, standard deviation, minimum-maximum values, frequency, and percentile. Kolmogorow-smirnow test was used to determine the normal

distribution of the data set. Mann Whitney- U test, Kruskal Wallis tests were used to evaluate the relations between scores and socio-demographic characteristics of the participants. A p-value less than 0.05 was considered statistically significant with a 95% confidence level. Pearson correlation and Logistic regression analysis were used.

RESULTS

Of 524 participants, 305 (58.2%) were women. The mean age was 41.26±14.28 (min:18, max:75) years old. Of the participants, 45.2% had chronic disease, 32.1% were still smoking. The mean quantity of cigarettes smoked by 307 smokers and ex-smokers was calculated as 14.55±10.36 (min:1, max:50) pack/year. **Table 1** shows the socio-demographic characteristics of the participants.

Chronic diseases and tobacco use did not differ in both genders (p=0.859, p=0.266, respectively). Also, no difference was found between being diagnosed with COVID-19 and vaccinated against COVID-19 according to gender (p=0.854, p=0.261, respectively). Men's education level was higher **(p=0.027).** Marital status, income level, and changes in sleep patterns did not differ in both genders (p=0.311, p=127, p=0.877, respectively).

Table 1. The socio-demographic characteristics of the participants

	Number	**%**
Sex		
Female	305	58.2
Male	219	41.8
Marital Status		
Married	389	74.2
Single	135	25.8
Had a chronic disease		
Yes	237	45.2
No	287	54.8
Tobacco use		
Smoking	168	32.1
Not smoking	217	41.4
Quitted before the pandemic	91	17.4
Quitted during the pandemic	48	9.1
Education level		
Illiterate	20	3.8
Primary school	113	21.6
High school	183	34.9
University	183	34.9
Master degree	25	4.8
Economic status		
Income less than expenses	119	22.7
Income equal to expenses	279	53.3
Income more than expenses	126	24.0
Sleep changes		
Same sleep pattern	250	47.7
Increased sleep time	103	19.7
Decreased sleep time	94	17.9
Difficulty in falling asleep	77	14.7
Having a healthcare worker relative		
Yes	215	41.0
No	309	59.0
Having a relative who died due to COVID-19		
Yes	203	38.7
No	321	61.3
Infected with COVID-19		
Yes	187	35.7
No	337	64.3
COVID-19 vaccination status		
Vaccinated	349	66.6
Unvaccinated	175	33.4

Participants with chronic diseases significantly had more changes in their sleep pattern **(p=0.001).** While previous COVID-19 diagnosis had no significant impact on sleep pattern, those who had the COVID-19 vaccine had fewer sleep problems (p=0.882, **p=0.001).** Smoking, economic level, marital status did not affect sleep pattern (p=0.336, p=0.268, p=0.114). Those with higher educational status experienced fewer sleep pattern changes **(p=0.001).**

The mean total HPLS score was 162.75±8.10 points while the mean scores of the sub-dimensions were as follows: Taking responsibility for health: 29.38 ± 3.41, Physical activity: 20.05 ± 3.20, Nutrition: 28.94 ± 3.65, Spiritual development: 28.97 ± 3.64, Interpersonal relations: 30.37 ± 3.32, Stress management: 25.02 ± 3.95 points.

Interpersonal relationships, stress management, and total HPLS scores were higher in women **(p=0.030, p=0.001, p=0.005,** respectively**).** Stress management scores of singles were found to be statistically significantly higher **(p=0.001).** Physical activity, nutrition, stress management, and total scores were significantly higher in those without chronic diseases **(p=0.010, p=0.05, p=0.001, p=0.050,** respectively**).** The sub-dimensional scores of taking health responsibility were found to be higher in participants with chronic diseases **(p=0.003) (Table 2).**

Table 2. Health-promoting lifestyle scale (HPLS) scores of participants according to having at least one chronic disease

	Had Chronic Disease			
HPLS sub-dimensions	**Yes (Mean±SD)**	**No (Mean±SD)**	**Z**	**p**
Taking responsibility for health	29.89±3.44	28.97±3.33	-2.980	**0.003**
Physical activity	19.68±3.28	20.35±3.10	-2.563	**0.010**
Nutrition	28.63±3.58	29.20±3.70	-1.927	**0.050**
Spiritual development	28.79±3.61	29.11±3.67	-1.300	0.194
Interpersonal relations	30.59±3.22	30.18±3.40	-0.780	0.435
Stress management	24.35±3.94	25.58±3.88	-3.419	**0.001**
Total score	161.94±7.85	163.41±8.25	-1.904	**0.050**

SD: Standard Deviation

Participants who did not have COVID-19 disease diagnosis, had higher health responsibility and nutrition sub-dimensional scores **(p=0.001, p=0.008,** respectively**).** The interpersonal relations and stress management scores of the participants who recovered from COVID-19 disease were higher than those who never had the disease **(p=0.004, p=0.050,** respectively**) (Table 3).**

Table 3. Health-promoting lifestyle scale scores (HPLS) according to having COVID-19 diagnose

	Had the COVID-19 Disease?			
HPLS sub-dimensions	**Yes (Mean±SD)**	**No (Mean±SD)**	**Z**	**p**
Taking responsibility for health	28.54±3.50	29.85±3.27	-4.030	**0.001**
Physical activity	20.27±3.34	19.92±3.11	-1.708	0.088
Nutrition	28.37±3.72	29.26±3.58	-2.666	**0.008**
Spiritual development	28.96±3.29	28.97±3.83	-0.635	0.525
Interpersonal relations	30.95±3.04	30.04±3.43	-2.861	**0.004**
Stress management	25.45±4.07	24.78±3.87	-1.928	**0.050**
Total score	162.57±7.85	162.85±8.25	-0.358	0.720

SD: Standard Deviation

The sub-dimensional scores of health responsibility in those who had the COVID-19 vaccine were higher **(p=0.04)** while stress management scores were found to be higher in the unvaccinated ones **(p=0.020).** Having a healthcare worker relative had no effect on the total HPLS scores (p=0.833). Interpersonal relations scores of those who did not have a relative died because of COVID-19 disease were found higher **(p=0.004).** Health responsibility sub-dimensional scores of those who quitted smoking in the pandemic period were significantly higher **(p=0.001).** Physical activity scores of current smokers were lower **(p=0.008).** Nutrition and spiritual development (self-actualization) scores were higher in those who quitted smoking before the pandemic period **(p=0.050, p=0.001,** respectively**) (Table 4).**

Table 4. Comparison of tobacco use and the health-promoting lifestyle scale scores

	Tobacco use (mean±SD)					
HPLS sub-dimensions	**Smoking**	**Not smoking**	**Quitted before the pandemic**	**Quitted during the pandemic**	**χ^2**	**p**
Taking responsibility for health	29.13±3.44	29.26±3.44	29.24±3.22	31.10±3.08	16.185	**0.001**
Physical activity	19.51±2.86	20.53±3.38	19.62±3.05	20.56±3.41	11.787	**0.008**
Nutrition	28.86±3.84	29.16±3.32	29.35±3.59	27.45±4.21	7.548	**0.050**
Spiritual development	29.20±2.77	28.67±3.92	30.32±3.78	26.91±3.76	38.896	**0.001**
Interpersonal relations	30.37±3.46	30.62±3.32	29.75±3.27	30.37±2.84	5.114	0.164
Stress management	25.13±4.24	25.13±3.89	24.85±3.62	24.47±3.84	1.339	0.720
Total score	162.22±7.81	163.40±8.40	163.16±8.08	160.89±7.59	4.202	0.240

SD: Standard Deviation

The physical activity scores of those who did not have any changes in their sleep patterns were significantly higher **(p=0.007).** Spiritual development score was lower in those with increased sleep time during the pandemic period **(p=0.036).** Stress management score was found to be lower in those with decreased sleep duration during the pandemic period **(p=0.05) (Table 5).**

Table 5. Comparison of sleep pattern changes and the health-promoting lifestyle scale scores

	Sleep Pattern Changes (Mean±SD)					
HPLS sub-dimensions	**Same sleep pattern**	**Increased sleep time**	**Decreased sleep time**	**Difficulty falling asleep**	**χ^2**	**p**
Taking responsibility for health	29.38±3.30	29.05±3.47	29.87±3.27	29.25±3.83	2.370	0.499
Physical activity	20.51±3.30	19.75±2.77	19.46±3.43	19.66±2.93	12.000	**0.007**
Nutrition	28.84±3.73	29.33±3.10	28.81±3.98	29.20±3.55	0.602	0.896
Spiritual development	29.30±3.48	28.17±4.02	28.77±3.62	30.62±3.14	8.540	**0.036**
Interpersonal relations	30.19±3.36	30.68±3.53	30.28±3.16	25.79±4.35	2.438	0.487
Stress management	25.00±3.73	25.35±4.01	24.07±3.98	25.79±4.35	7.496	**0.050**
Total score	163.28±7.77	162.36±7.87	161.29±9.03	163.33±8.16	2.954	0.399

SD: Standard Deviation

Physical activity, mental development, and total scores were significantly higher in those with higher educated participants **(p=0.005, p=0.045, p=0.013,** respectively**).** Illiterate participants had higher interpersonal relations scores **(p=0.009).** Physical activity sub-dimension scores of those whose income was more than their expenses, were higher **(p=0.049).** Stress management and total scores of the participants whose income was less than their expenses during the pandemic period, were lower **(p=0.047, p=0.033,** respectively**).**

A weak positive correlation was found between the age of the participants and the sub-dimension scores of health responsibility **(r=0.133, p=0.003).** A weak negative correlation was found between age and physical activity sub-dimension scores **(r=-0.211, p=0.001).** In addition, a negative correlation was found between age and stress management sub-dimension score **(r=-0.125, p=0.004,).** Age did not correlate with other sub-dimensional scores and total scale score (p=0.396, p=0.589, p=0.080, p=0.057, respectively).

Logistic regression analysis was performed between age and health responsibility score **(R^2=0,018, p=0.002),** stress management score **(R^2=0,016, p=0.004),** and physical activity sub-dimension score **(R^2=0,045, p<0.001).** In the linear regression analysis, 4,5% of the decrease in the physical activity score is attributed to the increase in the age (R2 = 0.045) **(Fig1).**

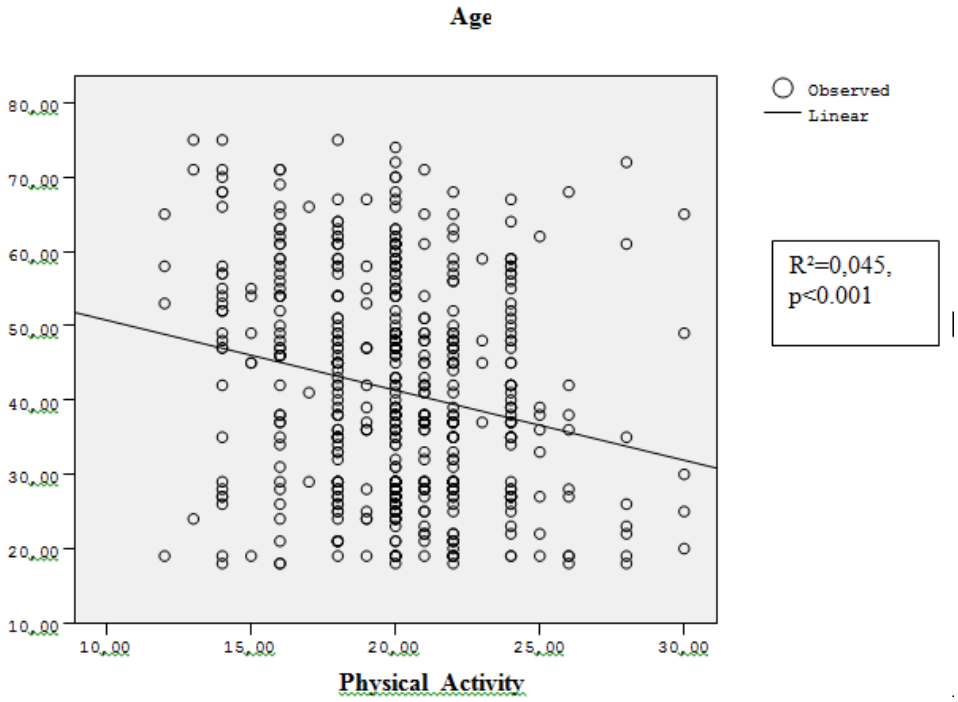

Figure 1. In the linear regression analysis between age and physical activity sub-dimension scores 4.5% of the decrease in the physical activity score is attributed to the increase in the age (R2 = 0.045).

DISCUSSION

In this study, health-promoting behaviors during the pandemic period were evaluated. The scores of women and those without chronic diseases were higher. Those who were infected with COVID-19 disease and those who had the COVID-19 vaccine had higher health responsibility sub-dimensional scores. Smokers' health responsibility and physical activity scores were low. Physical activity, mental development, and total scores of higher educated participants, were significantly higher.

It has been observed that most healthy behaviors are negatively affected during the pandemic period. It was stated that the participants were more stressed during their stay at home, they stayed away from social support, their sleep quality was impaired, and there was no difference in physical activity (12). Our study resulted in lower physical activity, interpersonal relationships, stress management sub-dimensional scores, and total HPLS scores. Physical activity scores were expected to be low since the prolongation of the closure period reduces outdoor activities. In addition, fighting an unexpected epidemic which has fatal consequences, can lead to uncertainty that negatively affects interpersonal relationships and difficulties in stress management.

In Spain, a study of 1254 adults proved that individuals with higher levels of social support, success in stress management, and more outdoor activities had higher healthy life behavior scores (7). In our study, interpersonal relationships, stress management scores and total HPLS scores were significantly higher in women than in men. In another study, women scored higher than men in terms of nutrition and anxiety levels while sleep quality satisfaction was higher in men (13). During the pandemic period, it was demonstrated that physical activity decreased, sedentary life increased, and the time spent in front of social media and television was prolonged (14). A decrease in average sleep duration and an increase in body weight were detected. Also, there was a decrease in fast-food consumption and an increase in the use of dietary supplement such as vitamin C, vitamin D, and zinc, during the social closure process. These nutrition changes were more pronounced in those who have had COVID-19 disease than others (14). In current study, nutrition scores were lower in those who had COVID-19 disease. Interpersonal relations scores of those who had a relative died from COVID-19 disease were low.

To protect and improve health during the pandemic period, the concept of health literacy should be well understood, and individuals should perceive the protection of their health as their own duty (15). In our study, the sub-dimensional scores of taking responsibility for health were higher in women, those with chronic diseases, those who quitted smoking in the pandemic period, and those who had COVID-19 vaccination and were not infected by COVID-19.

While no significant change was reported in participants' sleep habits during the pandemic, especially the sleep duration (13). According to another study the COVID-19 pandemic increased the prevalence of poor sleep quality in the population (16). Nearly half of the participants had disturbed sleep patterns and falling asleep problems in our study.

In a study, a significant percentage of participants reported that they were eating more frequently, larger amounts, and not making careful food choices (13). The low nutritional scores in our study indicate changing eating habits. These results support studies suggesting that overly stressed and anxious people tend to regulate their emotions through food (17).

Nursing students obtained the highest scores from the interpersonal relations and the lowest scores from the physical activity sub-dimensions. The vast majority of the participants got low scores in taking responsibility for health (18). In our study, taking health responsibility and interpersonal relationships scores were high, the physical activity score was similarly the lowest. In another study with healthcare professionals, the lowest score was found as physical activity (19).

We evaluated that the self-actualization scores were higher in those with a good education level. However, the interpersonal relations scores of the illiterate participants were higher. It can be interpreted as the lower educated participants were successful in keeping their relationships strong and healthy.

In previous studies, chronic kidney disease patients had the highest interpersonal relations scores and the lowest physical activity scores. The mean scores of male and married participants were found to be higher (20). The stress levels of diabetic patients increased, and their physical activities decreased during the pandemic period. A negative correlation was found between stress management and exercise scores (21). In the present study, while the health responsibility sub-dimensional scores of those with any chronic disease were higher, their nutrition scores and total HPLS scores were lower. Especially people over 65 years old and risky groups in oncology and cardiovascular diseases should be encouraged in healthy lifestyle behaviors (22).

Healthy lifestyle scores were lower among those who stated that they were in poor health, those who had a positive screening result for depression and anxiety, and those who had changes in nutrition and sleep (7). We found that the stress management scores of the participants who had the COVID-19 disease were high. Stress management must be successful for sustainable healthy living behaviors. Sleep quality and regular exercise can be

adversely affected by increased stress (23). In this study, the stress management scores of the participants who stated they had difficulty in falling asleep during the pandemic, were higher. Also, those with reduced sleep duration were more inactive in physical activities.

It was determined that non-smokers and those who quitted smoking had higher health responsibility, nutrition, interpersonal relations, and total scores than smokers. They were also able to implement healthy lifestyle behaviors better (24). In this study, those who quit smoking during the pandemic period had higher health responsibility scores. While the physical activity scores of active smokers were low, those who quitted smoking before the pandemic had higher spiritual development (self-actualization) scores. For people who cannot find the motivation to quit smoking, health concerns created by the pandemic period may have been the impetus to quit smoking. In addition, the high self-actualization scores of those who quitted smoking before the pandemic support the knowledge that self-control and stability are important in quitting smoking.

Our study has some limitations. The fact that the participation was voluntary may have resulted in more participation of those interested in healthy living. This may prevent generalizations from being made. In addition, since a self-evaluation scale used in the study, it is unknown whether the answers given are actual behaviors or socially desirable behaviors. However, the low scores obtained eliminate these possibilities. The fact that the study was conducted during the pandemic may have led to a decrease in the importance of healthy living behaviors because of other problems caused by the pandemic. Further studies conducted after the pandemic may yield beneficial results in evaluating the changes.

CONCLUSION

In conclusion, the scores obtained from the Healthy Lifestyle Behaviors Scale and its sub-dimensions were found to be low. Since health protection becomes essential in the pandemic period, studies that will contribute to the development of healthy lifestyle behaviors should be accelerated.

REFERENCES

1. Giustino V, Parroco AM, Gennaro A, Musumeci G, Palma A, Battaglia G, et al. Physical activity levels and related energy expenditure during COVID-19 quarantine among the Sicilian active population: a cross-sectional online survey study. Sustainability. 2020;12(11):4356.
2. Scarmozzino F, Visioli F. COVID-19 and the subsequent lockdown modified dietary habits of almost half the population in an Italian sample. Foods. 2020;9(5):675.
3. Nyberg ST, Singh-Manoux A, Pentti J, Madsen I, Sabia S, Alfredsson L, et al. Association of Healthy Lifestyle with years Lived without Major Chronic Diseases. JAMA Intern Med. 2020;180(5):760–8.
4. Hamer M, Kivimäki M, Gale CR, Batty GD. Lifestyle risk factors, inflammatory mechanisms, and COVID-19 hospitalization: a community-based cohort study of 387,109 adults in the UK. Brain Behav Immun. 2020;87:184–7.
5. Kumaresan J, Bolaji B, Kingsley JP, Sathiakumar N. Is the COVID-19 pandemic an opportunity to advance the global non-communicable disease agenda? Int J Noncommun Dis. 2020;5(2):43.
6. Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S, Greenberg N, et al. The psychological impact of quarantine and how to reduce it: rapid review of the evidence. Lancet. 2020;395(10227):912–20.
7. Balanzá-Martínez V, Kapczinski F, de Azevedo CT, Atienza-Carbonell B, Rosa AR, Mota JC, et al. The assessment of lifestyle changes during the COVID-19 pandemic using a multidimensional scale. Rev Psiquiatr Salud Ment. 2021;14(1):16–26
8. Loef M, Walach H. The combined effects of healthy lifestyle behaviors on all cause mortality: a systematic review and meta-analysis. Prev Med. 2012;55(3):163–70.
9. Kuan G, Kueh YC, Abdullah N, Tai E. Psychometric properties of the health-promoting lifestyle profile II: cross-cultural validation of the Malay language version. BMC Public Health. 2019;19:751:2-10.
10. Bodai BI, Nakata TE, Wong WT, Clark DR, Lawenda S, Tsou C, et al. Lifestyle Medicine: A Brief Review of Its Dramatic Impact on Health and Survival. Perm J. 2018;22:17-25.
11. Pınar R, Çelik R, Bahçecik N. Reliability and construct validity of the health-promoting lifestyle profile II in an adult Turkish population. Nursing Research. 2009;58(3):184-93.
12. Kolokotroni O, Mosquera MC, Quattrocchi A, Heraclides A, Demetriou C, Philippou E. Lifestyle habits of adults during the COVID-19 pandemic lockdown in Cyprus: evidence from a cross-sectional study. BMC Public Health. 2021;23;21(1):786.
13. Antunes R, Frontini R, Amaro N, Salvador R, Matos R, Morouço P et al. Exploring Lifestyle Habits, Physical Activity, Anxiety and Basic Psychological Needs in a Sample of Portuguese Adults during COVID-19. Int J Environ Res Public Health 2020;18;17(12):4360.
14. Abouzid M, El-Sherif DM, Eltewacy NK, Dahman N, Okasha SA, Ghozy S, et al. Influence of COVID-19 on lifestyle behaviors in the Middle East and North Africa Region: a survey of 5896 individuals. J Transl Med 2021; 30;19(1):129.
15. Spring H. Health literacy and COVID-19. Health Info Libr J 2020; 37(3):171-2.

16. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. Psychiatr Res 2020;288:1–18.
17. Braden A, Musher-eizenman D, Watford T, Emley E. Eating when depressed, anxious, bored, or happy: Are emotional eating types associated with unique psychological and physical health correlates? Appetite 2018; (1):125:410-7.
18. Mak YW, Kao AHF, Tam LWY, Tse V, Tse D, Leung D. Health-promoting lifestyle and quality of life among Chinese nursing students. Prim Health Care Res Dev. 2018;19(6):629-36.
19. Jonsdottir IH, Börjesson M, Ahlborg G Healthcare workers' participation in a healthy-lifestyle-promotion project in western Sweden. BMC Public Health. 2011;11:448.
20. Özkaraman A, Alparslan G, Babadağ B, Gölgeli H, Derin Ö, Bilgin M. The Evaluatıon Behavıours For Healthy Lıfe Style In Hemodıalysıs Patıents Wıth Chronıc Kıdney Dısease. Osmangazi Tıp Dergisi. 2016;38(2):51-61.
21. Munekawa C, Hosomi Y, Hashimoto Y, Okamura T, Takahashi F, Kawano R, et al. Effect of coronavirus disease 2019 pandemic on the lifestyle and glycemic control in patients with type 2 diabetes: a cross-section and retrospective cohort study. Endocr J. 2021;28;68(2):201-10.
22. Spring B, King AC, Pagoto SL, Van Horn L, Fisher JD. Fostering multiple healthy lifestyle behaviors for primary prevention of cancer. Am Psychol. 2015;70(2):75-90.
23. Braun C, Foreyt JP, Johnston CA. Stress: a core lifestyle issue. Am J Lifestyle Med. 2016;10:235--8
24. Hacıhasanoğlu R, Yıldırım A, Karakurt P, Çelebi F. Healthy Lifestyle Behaviors and Affecting Factors in University Staff. Turkish Journal of Family Medicine and Primary Care. 2020;14(1):72-81.