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Araştırma Makalesi/ Research Article

Evaluation of Adaptation to Diseases and Healthy Lifestyle Behaviors of Individuals with Chronic Disease During the COVID-19 Pandemic

COVID-19 Pandemisi Sürecinde Kronik Hastalığı Olan Bireylerin Hastalıklara Uyumları ve Sağlıklı Yaşam Biçimi Davranışlarının Değerlendirilmesi

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ABSTRACT
Objective: This study evaluated the adaptation and healthy lifestyle behaviors of patients with a chronic disease during the COVID-19 pandemic.
Methods: It is a descriptive cross-sectional design. The research was conducted at the state hospital in Istanbul between February and May 2021. The research sample comprised 175 patients treated at internal medicine outpatient clinics and diagnosed with at least one chronic disease. Researchers collected the data from the Patient Information Survey, the Adaptation to Chronic Illness Scale, and the Healthy Lifestyle Behavior Scale-II tocollect the data.
Results: The mean age of the group was 54.45±17.15 and mostly women (65.7%) who graduated from primary school (48.6%). Around sixty percent of the research sample (56.6%) did not follow the health check-ups regularly. The patients consumed a higher number of daily meals (19.4%) and consumed more carbohydrates (21.7%). The lowest score was obtained from the Social Adaptation sub-dimension (22.27±5.18) and the Exercise sub-dimension (15.50 ± 6.21). There was a statistically significant relationship between scores of healthy lifestyle behaviors and the adaptation scale (r=0.70, $p < 0.05$). Less educated, older, unemployed patients and those with lower economic status needed more support to fulfill their daily activities.
Conclusions: Patients with chronic conditions face alternations in performing healthy lifestyle behaviors. The adaptation of patients with chronic diseases during the COVID-19 was negatively affected. Patients with chronic conditions need support for improving healthy lifestyle behaviors to manage the illness effectively.
Keywords: Chronic disease, COVID-19 pandemic, healthy lifestyle, quality of life, self-care

ÖZ
Amaç: Bu çalışmada, COVID-19 pandemisi sırasında kronik hastalığı olan bireylerde hastalığa uyum ve sağlıklı yaşam biçimi davranışları değerlendirildi.
Yöntem: Araştırma tanımlayıcı-kesitsel tasarımdadır. Çalışma, Şubat-Mayıs 2021 tarihleri arasında İstanbul'da bir devlet hastanesinde gerçekleştirildi. Araştırmanın örneklemini dahiliye polikliniğine başvuran ve en az bir kronik hastalık tanısı bulunan 175 hasta oluşturdu. Araştırmada veriler Hasta Bilgi Formu, Kronik Hastalıklara Uyum Ölçeği ve Sağlıklı Yaşam Biçimi Davranışları Ölçeği-II ile toplandı.
Bulgular: Örneklemin ortalama yaşı 54.45 ± 17.15 idi. Örneklem grubunun çoğunu kadınlar (%65.7) ve ilkokul mezunları (%48.6) oluşturdu. Örneklemin yarısından çoğunun (%56.6) düzenli olarak sağlık kontrollerine gitmedikleri belirlendi. COVID-19 salgını sırasında günlük öğün sayısının arttı (%19.4) ve hastalar daha fazla karbonhidrat tüketti (%21.7). Hastalar en düşük ortalama puanı sosyal uyum alt boyutu (22.27 ± 5.18) ve fiziksel aktivite alt boyutundan (15.50 ± 6.21) aldı. Sağlıklı yaşam biçimi davranışları ile kronik hastalıklara uyum puanları arasında istatistiksel olarak anlamlı ilişki belirlendi ($r = 0.70$, $p < 0.05$). Daha az eğitimli, daha yaşlı, işsiz ve düşük geliri olan hastaların günlük aktivitelerini gerçekleştirmek için daha fazla yardıma ihtiyaçları olduğu bulundu.
Sonuç: Kronik rahatsızlığı olan hastalar, sağlıklı yaşam biçimi davranışlarını gerçekleştirmede değişiklikler ile karşılaşmıştır. Kronik hastalıklara uyum düzeyi COVID-19 pandemisi sırasında etkilenmiştir. Hastaların hastalıklarını iyi yönetebilmeleri için sağlıklı yaşam biçimi davranışlarını yerine getirmeleri konusunda desteğe ihtiyaçları vardır.
Anahtar Kelimeler: Kronik hastalık, COVID-19 pandemisi, sağlıklı yaşam tarzı, yaşam kalitesi, öz- bakım

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Introduction

Chronic diseases are one of the main stressors that change the adaptive capacity of the individual and can alter their daily life activities, social identity, and self-image. They often cause financial problems due to their high cost, negative psycho-social impact on the individual due to the long treatment process, decrease in work/education success, and in some cases, decrease in support from family or social environment (Budak and Korkmaz, 2020; Erikmen and Keskin, 2022; Özdelikara et al., 2020). Compliance, which is defined as the patient's acceptance and implementation of the recommendations of health professionals, is an important concept for chronic diseases. Compliance with the disease includes not disrupting the patient's controls, complying with the treatment plan, using medication regularly, and implementing lifestyle changes. However, chronic diseases are difficult diseases to cope with and manage because they require long-term care and treatment, and it may be difficult for individuals to accept and adapt to the disease in this process (Bilgiç and Pehlivan, 2023).

Promoting compliance is a way to prevent worrying outcomes to improve patients' quality of life and at the same time reduce the costs of medical treatment. Quality of life can be improved by i increasing treatment adherence, controlling chronic diseases, and reducing disease-related symptoms (Erci et al., 2018). Therefore, the disease's prognosis and the individual's adaptation to treatment play an important role in treating chronic illnesses. Poor adaptation to treatment in patients with chronic conditions (such as DM, HT and cancer, chronic kidney diseases) results in longer hospital stays and costs, care burden, and side effects of chronic illnesses (Alammari et al., 2023; Altuntas et al., 2021; Çalikuşu et al., 2023).

Chronic diseases have become a major health concern for every healthcare system following the breakout of the Coronavirus Disease (COVID-19) pandemic. COVID-19 is a crucial public concern, and this pandemic can result in acute respiratory distress syndrome (Budak and Korkmaz, 2020). An individual with a chronic illness is considered within the high-risk group for COVID-19 infection. Risk factors identified for severe morbidity and mortality are advanced age and chronic diseases such as cardiovascular disease, diabetes, chronic respiratory disease, hypertension, and cancer. Protecting and monitoring patients with comorbidities is one of the main curative steps that can be taken to reduce the impact of COVID-19 (Legese et al., 2023; Okuyan and Karasu, 2021). Individuals with chronic illnesses are at risk for hospitalization and treatment failure due to COVID-19 infection. In addition, individuals with chronic conditions face higher risk for COVID-19 infection, and poor disease management (Chudasama et al., 2020; Liu et al., 2020; Wang et al., 2020). The COVID-19 pandemic has had direct and indirect impacts on people with chronic diseases. In addition to morbidity and mortality, the high rate of community spread and various mitigation efforts, including stay-at-home advisories, have upended lives and created social and economic challenges. This pandemic also raised concerns about safe access to health services reduced the ability to prevent or control chronic diseases, and changes in healthy behaviors (Hacker et al., 2021; Tengilimoğlu et al., 2022). In the management of chronic diseases, regular follow-up, treatment follow-up, control, and reduction of risk factors related to these diseases are important. Therefore, to protect individuals from the negative effects of COVID-19, assessment of their current health status and initiatives to maintain a healthy lifestyle became important (Kaya et al., 2022; Tengilimoğlu et al., 2022). National Centre for Chronic Disease Prevention and Health Promotion addressed major chronic diseases, such as cardiovascular diseases, cancer, and diabetes, and important risk factors, such as tobacco, inactivity, poor diet, and excessive drinking (Centers for Disease Control and Prevention [CDC], 2023).

Maintaining healthy lifestyle behaviors in managing chronic diseases is essential for reducing the number of visits to emergency units and hospitalization. Healthy lifestyle behaviors improve physiologic and psychological capacity, prevent unhealthy habits, and improve quality of life. The patients need to improve their coping skills and adapt to their chronic illnesses. The nurse, who is the closest health professional to the patient, has important duties to ensure compliance with drug treatment and appropriate lifestyle changes. The study aimed to evaluate the adaptation and healthy lifestyle behaviors of patients with a chronic condition during the COVID-19 pandemic.

Research Questions

1. Is the adaptation to illness of patients with chronic conditions affected during the COVID-19 pandemic?
2. Are the healthy lifestyle behaviors of patients with chronic conditions affected during the COVID-19 pandemic?

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3. Is there a difference between the adaptation to illness and lifestyle behaviors concerning personal features?

4. Is there a relationship between lifestyle behaviors and adaptations in individuals with chronic conditions?

Method

Design and Setting

It is a descriptive cross-sectional study. The investigation was performed at a state hospital in Istanbul between February and May 2021.

Population and Sample

The research population was made up of patients who were followed at the internal medicine outpatient clinics and were diagnosed with at least one chronic illness, such as hypertension, coronary artery diseases, chronic obstructive lung diseases, asthma, or diabetes. A mean of 225 patients was accepted as the research population. The sample size was measured as at least 169 patients with a 99% confidence interval and ± 5% margin of error. The study sample consisted of 175 patients. The response rate in the current research was 75.11%.

Data Collection Tools

Researchers used three tools: the Patient Information Survey, the Adaptation to Chronic Illness Scale, and the Healthy Lifestyle Behavior Scale-II.

Patient Information Survey: The survey included questions regarding personal features (marital status, age, gender, education, etc.) and individual perceptions about healthy lifestyle behaviors (need for support, health check-ups, nutrition, exercise, sleep, smoking-alcohol habits, etc.).

Adaptation to Chronic Illness Scale: The tool assesses the adaptation to illness in patients with a chronic illness (cardiac, lung, kidney, etc.). The scale comprises three sub-dimensions and 25 items. The scale is made of three subdimensions (social adaptation, 7 items; physical adaptation, 11 items; psychological adaptation, 7 items). There were eight negative items (items 5, 6, 12, 17, 19, 20, 24, and 25). It is a 5-point Likert scale. The scores range from 25 to 125. Higher scale scores indicate better adaptation to illness. Cronbach's alpha coefficients were good (above 0.70) (Atik and Karatepe, 2016). Cronbach's alpha coefficient in the current study was 0.80.

Healthy Lifestyle Behavior Scale-II: The scale **measures** the behaviors that improve health associated with a healthy lifestyle. The scale was developed by Walker et al. (1987) and revised in 1996. The reliability of the Turkish version of the scale was tested by Bahar et al. (2008). The scale comprised 52 items and six sub-dimensions. These subdimensions are self-actualization, health responsibility (9 items), physical activity, nutrition, interpersonal support, and stress management. Scale scores range from 52 to 208. Each item on the scale is positive. It is a 4-item Likert scale. Bahar et al., (2008) reported Cronbach's alpha coefficient to be 0.92. In the current study, Cronbach's alpha internal consistency coefficient was 0.97.

Data Collection

The patients were interviewed in one separate room. The questionnaire was self-administered. Filling out the surveys took about 15-20 minutes.

Ethics Approval

Ethical approval was obtained from the Health Sciences University, Zeynep Kâmil Women and Children Diseases Training and Research Hospital Clinical Research Ethics Committee (Decision number: 12/20.01.2021). The hospital administration approved the research to be conducted at the clinic. The researchers obtained written consent to use both scales in the study. Researchers obtained verbal and written informed consent from participants. The study procedure performed in this research was compatible with1964 Helsinki Declaration

Statistical Analyses

Statisticians analyzed using a statistical program for Windows 22.0. Data were computed using descriptive methods (percentage, mean, and standard deviation). The scores of the two variables were compared using independent groups' t-tests. A one-way ANOVA test was used for comparison of scores of three or more groups. For the analysis to identify differences between groups, the Scheffe test is a post hoc test. The linear association between two continuous variables was analyzed using. Pearson's correlation test.

Results

The mean age of patients was 54.45±17.15. Most of the sample was females (65.7%) and graduated from primary school graduates (48.6%). Most patients were treated for hypertension (53.1%) and did not need help from others to perform daily life activities (85.7%) (Table 1). The patients did not follow their health check-ups regularly for their chronic diseases (56.6%). One-fifth of the group (19.4%) indicated daily meals increased during the pandemic. However, about half of the group (46.3%) stated they only went out to meet their needs during their free hours. Individuals with a

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chronic illness (44.6%) their social life was restricted during the pandemic (Table 2).

The sample obtained a score of 84.94±13.13 from the Adaptation to Chronic Illness Scale. The patients obtained the lowest score from the social adaptation sub-dimension (22.27±5.18) and the highest from the physical adaptation sub-dimension (38.75±6.64).

Table 1. Personal characteristics of patients (n=175)

		(n)	(%)
Age (years)	**mean /SD**	54.45 ± 17.15 (23-91)	
Age groups			
40 and below		42	24.0
41-50		34	19.4
51-60		34	19.4
61-70		29	16.6
70 and above		36	20.6
Gender			
Female		115	65.7
Male		60	34.3
Marital status			
Single		30	17.1
Married		145	82.9
Educational status			
Primary school graduate		85	48.6
Secondary school/high school		27	15.4
College/university graduate or higher		63	36.0
Perception of monthly income status			
Income less than expenses		87	49.7
Income equal to expenses		88	50.3
Employment status			
Yes		73	41.7
No		102	58.3
Profession			
Not working		3	4.1
Officer		46	63.0
Worker		13	17.8
Self-employment		11	15.1
Chronic illness			
Hypertension		93	53.1
Diabetes		69	39.4
Thyroid diseases		36	20.6
Asthma		32	18.3
Heart failure		21	12.0
Other (kidney failure, multiple sclerosis, cancer, epilepsy)		34	19.5
Need for help from others in daily activities			
"I do not need the help of my family to carry out my daily activities."		25	14.3
"I do not need the help of someone to carry out my daily activities."		150	85.7

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Table 2. Lifestyle habits during the COVID-19 pandemic (n=175)

	(n)	(%)
Regular health follow-ups related to disease during the pandemic		
Yes	76	43.4
No	99	56.6
Use of medications related to chronic illness during the pandemic		
Yes	159	90.9
No	16	9.1
Eating habits during the pandemic process†		
“I was eating healthy and regularly”	119	68.0
“I was not eating healthy and regularly”	39	22.3
"There was an increase in the number of meals"	34	19.4
“I started to consume more carbohydrate-containing products”	38	21.7
"I started to consume more fast foods"	27	15.4
"I got weight"	55	31.4
"I lost weight"	41	23.4
Average weight gained during the pandemic process: 4.84 ± 3.39 (0-20)		
Average weight lost during the pandemic process:5.88 ± 3.99 (1-18)		
Activity level during the pandemic process†		
“No change”	58	33.1
"I go out during non-prohibited hours"	64	36.6
"I go out for a few hours during non-prohibited hours"	46	26.3
"I only go out to meet my needs during non-prohibited hours"	81	46.3
"I never go out"	29	16.6
Social life during the pandemic process†		
"My social life has been completely isolated"	78	44.6
"I can only meet with my family and close friends"	141	80.6
"I constantly feel tired and sluggish"	84	48.0
“My sleep pattern has been disturbed”	51	29.1
Smoking habit during the pandemic		
"Yes, smokes more"	6	3.4
"No, continues to smoke in the same way"	17	9.7
"Does not smoke"	152	86.9
The habit of using alcohol during the pandemic		
"Yes, drinks more alcohol"	2	1.1
"No, consumes alcohol in the same way"	9	5.1
"Does not drink alcohol"	164	93.7
Assessment of health status during the pandemic		
Good	77	44.0
Moderate	66	37.7
Bad	32	18.3

†*Multiple options ticked*

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The participants' mean score from the Healthy Lifestyle Behavior Scale-II was 125.10±29.13. The patients obtained the lowest score from the exercise sub-dimension (15.50±6.21) and the highest mean score from the self-actualization sub-dimension (24.33±5.78) from the Healthy Lifestyle Behavior Scale-II (Table 3).

Table 3. Mean scores of the adaptation to chronic illness scale and the healthy lifestyle behavior scale (n=175)

Scales and subscales	Mean±SD	Min-Max
Adaptation to Chronic Illness Scale	84.94±13.13	44-125
Physical Adaptation	38.75±6.64	15- 55
Social Adaptation	22.27±5.18	7-35
Psychological Adaptation	23.91±3.93	11-35
Healthy Lifestyle Behavior Scale	125.10±29.13	52-197
Health Responsibility	22.22±6.36	9-36
Exercise	15.50±6.21	8-32
Nutrition	20.46±4.68	9-31
Self-Actualization	24.33±5.78	9-36
Interpersonal Support	23.82±5.55	9-36
Stress Management	18.77±5.03	8-32

In Table 4, the comparison of the mean scale scores with the patients' characteristics is given. Analyses revealed a statistically significant difference between the scores of the physical adaptation, and social adaptation sub-dimensions, and total scale scores in terms of age group. Physical adaptation, social adaptation sub-dimensions, and total scale scores were lower in patients aged 61 and 70 than those younger than 61 ($p<0.05$).

Analyses revealed a statistically significant difference between the physical adaptation and social adaptation sub-dimensions and total scale scores in terms of education level. Primary school graduates obtained lower scores from physical adaptation and social adaptation sub-dimensions and total scale scores than higher school graduates ($p<0.05$).

Individuals with lower perceived income levels obtained lower scores from physical adaptation, social adaptation sub-dimensions, and adaptation to chronic illness scale total scores compared to the individuals with moderate perceived income status ($p<0.05$). Patients not working at a job obtained lower scores from physical adaptation, social adaptation sub-dimensions, and adaptation to chronic illness scale scores than those who had a job ($p<0.05$). Individuals who needed help from others for performing daily activities obtained lower adaptation scores than those who did not need help for performing daily activities ($p<0.05$).

Analyses revealed significant differences between the Healthy Lifestyle Behavior Scale-II total scores and the sub-dimensions in terms of age. Individuals aged 70 and above had lower total scores on the Healthy Lifestyle Behavior Scale-II than those under 70 ($p<0.05$). Married patients had lower scores in the health responsibility, exercise, nutrition, interpersonal support, and stress management sub-dimensions and Healthy Lifestyle Behavior Scale-II total scores compared to single patients ($p<0.05$).

Comparisons revealed a significant difference between the health responsibility, exercise, nutrition, and stress management sub-dimension scores, and the healthy lifestyle behavior scale total scores in terms of educational status. Primary school graduates obtained lower scores from the health responsibility, exercise, nutrition, and stress management sub-dimensions, and the Healthy Lifestyle Behavior Scale-II total scores than individuals with a higher educational level ($p<0.05$).

The patients with lower economic status obtained lower scores from the exercise and nutrition sub-dimensions than those with moderate perceived income status ($p<0.05$). In addition, individuals not working obtained lower scores from the health responsibility, exercise, nutrition, stress management subscales, and the Healthy Lifestyle Behavior Scale-II total scores than those who were currently working ($p<0.05$).

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Table 4. Comparison of adaptation to chronic illness scale and healthy lifestyle behavior scale scores according to personal characteristics (n=175)

		Adaptation to Chronic Illness Scale				Healthy Lifestyle Behavior Scale II						
Characteristics	**n**	**Physical Adaptation**	**Social Adaptation**	**Psychological Adaptation**	**Total Scale**	**Health Responsibility**	**Exercise**	**Nutrition**	**Spiritual Development**	**Interpersonal Support**	**Stress Management**	**Total Scale**
		Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Age groups												
40 and below[1]	42	39.79 ± 7.32	23.71 ± 3.32	24.17 ± 3.08	87.67 ± 10.59	23.86 ± 5.39	18.71 ± 5.09	22.33 ± 4.22	24.74 ± 5.94	24.31 ± 5.27	21.02 ± 5.08	134.98 ± 27.41
41-50[2]	34	41.12 ± 6.83	24.41 ± 5.18	24.15 ± 4.29	89.68 ± 14.28	23.53 ± 5.43	17.82 ± 6.68	21.03 ± 4.13	26.15 ± 5.43	25.94 ± 4.87	20.15 ± 5.24	134.62 ± 27.70
51-60[3]	34	39.27 ± 6.24	22.82 ± 4.76	25.00 ± 3.66	87.09 ± 12.66	21.38 ± 7.03	14.88 ± 6.65	19.97 ± 4.46	24.35 ± 5.96	23.41 ± 5.85	17.56 ± 5.08	121.56 ± 30.35
61-70[4]	29	37.38 ± 5.14	21.69 ± 5.52	23.90 ± 4.17	82.97 ± 12.06	23.69 ± 7.23	14.28 ± 5.37	20.35 ± 5.00	24.97 ± 5.86	24.17 ± 5.43	19.10 ± 4.59	126.55 ± 29.42
Above 70[5]	36	35.92 ± 6.17	18.53 ± 5.26	22.39 ± 4.25	76.83 ± 12.63	18.69 ± 5.56	11.14 ± 4.02	18.31 ± 4.86	21.58 ± 4.97	21.36 ± 5.59	15.69 ± 3.02	106.78 ± 22.13
F		3.526	8.349	2.133	6.003	4.728	10.770	4.087	3.158	3.334	7.659	6.563
p		**0.009***	**<0.001***	0.08	**<0.001***	**0.001***	**<0.001***	**0.003***	**0.016***	**0.012***	**<0.001***	**<0.001***
Post Hoc test		2>4, 1>5, 2>5, 3>5 (p < 0.05)	2> 4, 1>5, 2> 5, 3>5, 4>5 (p < 0.05)		2>4, 1>5, 2>5, 3>5, 4>5 (p < 0.05)	1>5, 2>5, 4>5 (p < 0.05)	1>3, 2>3, 1>4, 2>4, 1>5, 2>5, 3>5, 45 (p < 0.05)	1>3, 1>5, 2>5 (p < 0.05)	1>5, 2>5, 3>5, 4>5 (p < 0.05)	1>5, 2>5, 4>5 (p < 0.05)	1>3. 2>3. 1> 5.2>5. 4>5 (p < 0.05)	1>3. 1>5. 2>5. 3>5. 4>5 (p < 0.05)
Marital status												
Single	30	39.30 ± 7.55	23.80 ± 3.45	23.20 ± 3.15	86.30 ± 10.70	24.50 ± 5.78	18.10 ± 5.96	22.40 ± 4.48	25.50 ± 6.41	26.23 ± 5.43	21.07 ± 5.48	137.80 ± 28.68
Married	145	38.64 ± 6.46	21.96 ± 5.43	24.06 ± 4.07	84.66 ± 13.59	21.75 ± 6.39	14.97 ± 6.15	20.06 ± 4.63	24.08 ± 5.64	23.32 ± 5.46	18.29 ± 4.81	122.48 ± 28.62
t		0.498	1.782	-1.095	0.624	2.177	2.554	2.530	1.223	2.658	2.808	2.669
p		0.62	0.08	0.20	0.47	**0.031***	**0.012***	**0.012***	0.22	**0.009***	**0.006***	**0.008***
Educational status												
Primary Education	85	37.19 ± 6.73	20.65 ± 5.90	23.62 ± 4.35	81.46 ± 14.33	20.68 ± 6.85	13.08 ± 5.99	18.66 ± 4.64	23.64 ± 5.86	22.93 ± 5.90	17.35 ± 4.76	116.34 ± 29.31
Secondary Education	27	40.70 ± 5.27	24.48 ± 4.59	24.96 ± 3.08	90.15 ± 9.87	24.56 ± 6.73	18.22 ± 7.11	22.63 ± 4.70	25.89 ± 6.55	25.00 ± 5.70	20.70 ± 6.08	137.00 ± 32.30
Associate's degree and above	63	40.02 ± 6.65	23.52 ± 3.48	23.86 ± 3.63	87.40 ± 11.41	23.30 ± 4.91	17.60 ± 4.77	21.97 ± 3.76	24.59 ± 5.26	24.52 ± 4.84	19.84 ± 4.38	131.83 ± 23.81
F		4.869	9.268	1.204	6.619	5.483	14.606	14.402	1.669	2.242	7.297	8.440
p		**0.009***	**<0.001***	0.30	**0.002***	**0.005***	**<0.001***	**<0.001***	0.19	0.11	**0.001***	**<0.001***
		2>1. 3>1 (p < 0.05)	2>1. 3>1 (p < 0.05)		2>1. 3>1 (p < 0.05)	2>1. 3>1 (p < 0.05)	2>1. 3>1 (p < 0.05)	2>1. 3>1 (p < 0.05)			2>1. 3>1 (p < 0.05)	2>1. 3>1 (p < 0.05)

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Table 4. (Continued) Comparison of adaptation to chronic illness scale and healthy lifestyle behavior scale scores according to personal characteristics (n=175)

Monthly income status												
Income less than expenses	87	37.48 ± 7.14	21.23 ± 5.61	23.60 ± 4.26	82.31 ± 13.90	21.64 ± 6.57	14.16 ± 6.18	19.30 ± 4.42	24.25 ± 5.78	23.70 ± 5.61	18.20 ± 4.95	121.25 ± 28.44
Income equal to expenses	88	40.00 ± 5.89	23.31 ± 4.53	24.23 ± 3.57	87.53 ± 11.83	22.80 ± 6.14	16.83 ± 5.99	21.61 ± 4.67	24.40 ± 5.82	23.94 ± 5.52	19.33 ± 5.07	128.91 ± 29.47
t		-2.546	-2.697	-1.060	-2.678	-1.199	-2.900	-3.369	-0.165	-0.288	-1.498	-1.749
p		**0.012***	**0.008***	0.29	**0.008***	0.23	**0.004***	**0.001***	0.87	0.77	0.14	0.08
Employment status												
Yes	73	40.12 ± 6.88	24.08 ± 4.10	23.95 ± 3.59	88.15 ± 12.19	23.36 ± 5.50	17.96 ± 5.22	21.92 ± 3.98	24.86 ± 5.45	24.67 ± 5.17	20.06 ± 4.77	132.82 ± 26.40
No	102	37.77 ± 6.32	20.98 ± 5.50	23.89 ± 4.17	82.64 ± 13.34	21.41 ± 6.83	13.75 ± 6.29	19.42 ± 4.88	23.94 ± 6.01	23.22 ± 5.76	17.84 ± 5.03	119.58 ± 29.85
t		2.346	4.074	0.088	2.793	2.011	4.681	3.598	1.040	1.720	2.932	3.035
p		**0.020***	**<0.001***	0.93	**0.006***	**0.039***	**<0.001***	**<0.001***	0.30	0.09	**0.004***	**0.003***
Need for support in daily activities												
Yes	25	33.80 ± 5.25	15.72 ± 5.13	19.68 ± 2.97	69.20 ± 11.31	18.68 ± 5.27	10.40 ± 4.20	18.44 ± 5.19	21.00 ± 4.93	21.48 ± 5.01	15.96 ± 3.30	105.96 ± 21.92
No	150	39.57 ± 6.50	23.37 ± 4.33	24.62 ± 3.62	87.56 ± 11.50	22.81 ± 6.35	16.35 ± 6.10	20.80 ± 4.52	24.88 ± 5.74	24.21 ± 5.56	19.23 ± 5.12	128.29 ± 29.01
t		-4.213	-7.957	-6.468	-7.410	-3.080	-4.695	-2.366	-3.186	-2.308	-3.087	-3.674
p		**<0.001***	**<0.001***	**<0.001***	**<0.001***	**0.002***	**<0.001***	**0.019***	**0.002***	**0.022***	**<0.001***	**<0.001***

** p < 0.05; t=t-test in independent groups; F=One-way ANOVA test*

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Comparisons revealed a statistically significant correlation between the Adaptation to Chronic Illness Scale and the Healthy Lifestyle Behavior Scale-II scores (Table 5). The lowest correlation between the two-scale scores was found between the psychological adaptation and nutrition sub-dimension scores (r=0.18; p<0.05). Analyses revealed the highest correlation (r=0.70) between total scores of the Adaptation to Chronic Illness Scale and the Healthy Lifestyle Behavior Scale-II (p<0.001).

Table 5. Findings related to the correlation of scale scores (n=175)

			Adaptation to Chronic Illness Scale				Healthy Lifestyle Behavior Scale-II						
			Physical Adaptation	Social Adaptation	Psychological Adaptation	Total	Health Responsibility	Exercise	Nutrition	Self-Actualization	Interpersonal Support	Stress Management	Total
Adaptation to Chronic Illness Scale	Physical Adaptation	r	1.000										
		p	0.001										
	Social Adaptation	r	0.46**	1.000									
		p	0.001	0.001									
	Psychological Adaptation	r	0.56**	0.60**	1.000								
		p	0.001	0.001	0.001								
	Total	r	0.86**	0.81**	0.82**	1.000							
		p	0.001	0.001	0.001	0.001							
Healthy Lifestyle Behavior Scale-II	Health Responsibility	r	0.64**	0.46**	0.43**	0.63**	1.000						
		p	0.001	0.001	0.001	0.001	0.001						
	Exercise	r	0.61**	0.56**	0.51**	0.68**	0.69**	1.000					
		p	0.001	0.001	0.001	0.001	0.001	0.001					
	Nutrition	r	0.42**	0.27**	0.179*	0.38**	0.59**	0.61**	1.000				
		p	0.001	0.001	0.017	0.001	0.001	0.001	0.001				
	Self-Actualization	r	0.64**	0.41**	0.57**	0.66**	0.74**	0.68**	0.50**	1.000			
		p	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001			
	Interpersonal Support	r	0.65**	0.46**	0.51**	0.66**	0.80**	0.66**	0.53**	0.83**	1.000		
		p	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001		
	Stress Management	r	0.58**	0.44**	0.44**	0.60**	0.78**	0.85**	0.62**	0.80**	0.75**	1.000	
		p	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	
	Total	r	0.69**	0.51**	0.52**	0.704**	0.89**	0.87**	0.73**	0.88**	0.89**	0.93**	1.000
		p	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001

**p<0.05; ** p<0.001*

Discussion

Chronic illnesses require close monitoring and supportive care to cope with the severity of the illness and maximize the person's functionality and responsibility for performing self-care (Çalikusu et al., 2023). The current research found a decrease in healthy lifestyle habits and poorer adaptation to illness during the pandemic. The patients with chronic health problems experienced problems with continuing health check-ups for their chronic illnesses, taking their medication regularly, consuming healthy food, exercising regularly, and maintaining an active lifestyle.

Adaptation can be defined as the patient's fulfilling clinic recommendations such as taking medication, being on a diet, or making other lifestyle changes (Demirtaş and Akbayrak, 2017; Mete and Özdil, 2023). Physiologic, psychological, and technological factors either positively or negatively affect the prognosis of the disease (Atik and Karatepe, 2016). Most patients reported irregularly following their health check-ups during the

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pandemic and did not take their medication regularly during the pandemic. The patients consumed high-calorie food and gained weight. The COVID-19 pandemic highly affected the patients' healthy lifestyles and adaptation to chronic condition (Mete and Özdil, 2023; Sofulu et al., 2020). Comprehensive and continuous assessments will help develop an individualized treatment plan.

COVID-19 infection negatively influences the progression of chronic disease and increases the mortality rate. For this reason, individuals with a chronic disease are recommended to fulfill the recommendations and measures for supporting disease management during the pandemic. The psychological effects of social restrictions and not fulfilling the recommendations for effective disease management affect adaptation to treatment (Sofulu et al., 2020). Armitage and Nellums (2020) state that necessary measures must be taken in elderly patients with different chronic illnesses to prevent isolation from causing psychological issues and worsening the disease (Armitage and Nellums, 2020). About half of the group in the current study only went out for basic needs during unrestricted hours. Four-fifths of the sample could only contact their close family and friends. Epidemiologic studies demonstrated a strong relationship between chronic illnesses and the severity and prognosis of COVID-19. The social restrictions and lockdown-challenged access to medication, lack of routine health check-ups, unhealthy nutrition, physical inactivity, stress and anxiety, smoking, and alcohol can cause problems in managing behavioral risk factors (Ajebli et al., 2021; Kalaycı et al., 2023).

Adaptation to illness requires regular health check-ups, complying with and maintaining treatment, regular intake of medication, the ability to make changes in the lifestyle, and fulfilling recommended behavioral changes (Yüce and Muz, 2023). Individuals with a chronic illness experience various psychological concerns such as fear of COVID-19 infection, loss of self-control, disturbances in social roles in the family, disrupted social relations, loss of sexual ability, concern for the future, loss of meaning, and purpose of life, fear of death and other worries and problems (Kalaycı et al., 2023; Mete and Özdil, 2023). Therefore, patients with chronic conditions need to use telehealth services, improve their self-management skills, receive proactive care, develop practical coping skills, and easily access community support resources to adapt to the illness (Kalaycı et al., 2023; Parkinson et al., 2022).

Better management skills for chronic diseases support the development of healthy lifestyle behaviors. Healthy lifestyle behaviors require a sense of responsibility, nutrition, exercise, and stress management. The current study found that individuals with a chronic disease obtained poorer adaptation to chronic illness and healthy lifestyle behaviors. Their social adaptation was low, and thus, may cause the patients to lead a more sedentary life. The results of the current study are consistent with the literature.

Individuals with poorer adaptation to chronic illness face challenges in performing self-care and misinterpret the obstacles to adaptation that might diminish their self-confidence. For this reason, healthcare professionals should support and evaluate their patients in terms of adaptation to treatment (Demirtaş and Akbayrak, 2017; Bilgiç and Pehlivan, 2023). The current study found that better healthy lifestyle behaviors improve adaptation to chronic conditions.

Management of chronic illnesses is influenced by age, gender, profession, educational level, marital status, physical condition social relationship, and economic factors (Yüce and Muz, 2023). Age primarily negatively affected disease management during the COVID-19 pandemic. Individuals with chronic illness are mostly aged between 61 and 75 (Kalaycı et al., 2023; Mete and Özdil, 2023; Sogut and Dalyan, 2023). The results about the effects of socio-demographic findings on adaptation to chronic conditions are consistent with the literature. Physical adaptation, social adaptation, and general adaptation to illness were more negatively affected in elderly patients than in young patients. The older age is found to affect negatively the adaptation to illness a chronic disease (Jopp et al., 2008; Kalaycı et al., 2023). Şişman and Kutlu (2016) reported that adaptation to chronic illness was disrupted with aging. Elderly patients may face more challenges with adapting to illness; expectations from younger patients' lives may negatively influence the adaptation.

Adaptation to chronic illness increases with higher levels of education. There are different results about adaptation to chronic illness in terms of educational levels. Self-care ability in chronic illness increased with higher levels of education (Bilgiç and Pehlivan, 2023; Yüce and Muz, 2023). The current study found that patients with higher degrees obtained higher scores from physical adaptation, social adaptation, and total scale than those with primary school degrees.

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An individual's actively working at a job may positively affect adaptation to chronic illness. Working at a job supports physical functioning while also improving feeling in psychological and social relationships. In the current study, individuals who continued to work obtained higher physical and social adaptation scores than those not working. The results of the current study are consistent with the available literature. Çalikusu et al. (2023) found that psychosocial adaptation was better in patients who work than those who did not work. Another research reported that adaptation to illness was better in patients with better socioeconomic status (Ye et al., 2023). Adaptation to treatment was better in patients with better social and economic status (Güney and Basit, 2023). Individuals who work have better financial capabilities, and they are supposed to use healthcare services more and adopt a more active lifestyle.

Individuals with a chronic illness have different needs in terms of care and support from others (Çalikusu et al., 2023). The current study found that individuals who needed help from others obtained lower adaptation scores compared to those who did not need help from others. These results support the literature. Accordingly, it can be suggested that patients who need help from others in meeting their physical needs can have challenges in adaptation to illness as they feel incompetent in physiologic, psychological, and social terms.

Individual behaviors cause a higher risk of illness; healthy lifestyle behaviors have been considered important in treating many diseases. There are many studies on healthy lifestyle behaviors today. In chronic illnesses that require lifelong treatment and care, lifestyle factors such as exercise, diet, smoking, stress, etc., affect prognosis. The subcomponents of healthy lifestyle behaviors differ by some socio-demographics (Zehirlioglu and Mert, 2019). The healthy lifestyle behaviors were compared in terms of socio-demographic characteristics. In the current study, patients aged 70 and higher obtained lower total scores on the Healthy Lifestyle Behavior Scale than those under 70. The elderly population tries to adopt healthy lifestyle behaviors during the COVID-19 pandemic. Reasons for this might include longer lockdowns for this age group than other age groups, longer time spent in front of the TV, using a mobile phone and computer, and thus, sedentary behaviors becoming common (Özkan, 2021).

Reduced physical movement, irregular nutrition, and other unwanted factors negatively affected the treatment process of chronic illnesses (Özkan, 2021). The current study found that married patients with chronic illnesses needed more support in maintaining healthy lifestyle behaviors than single patients. Furthermore, it demonstrates that exercise programs planned for married individuals from all age groups locked down at their homes for months during the COVID-19 pandemic will support the immune system and ease negative impacts on physical, mental, psychological, and spiritual health.

Educational status has become a parameter affecting healthy lifestyle behaviors during the pandemic. Healthy lifestyle behaviors improve with higher levels of education (Ciddi and Yazgan, 2020). In the current study, healthy lifestyle behaviors were disrupted more negatively in patients with lower education than in individuals with higher education.

Exercise and nutrition have known effects on the immune system. Koç and Bayar (2020) emphasized in their study that regular exercise or physical activity and balanced nutrition are required to prevent COVID-19 infections. Individuals with a low income may develop more negative nutritional habits; and may face obesity. In the current study, patients with less income than expenditure obtained lower scores from exercise and nutrition subdimensions than patients with income equal to expenditure.

Limitations of the study

The study results represent the chronic patients who were treated at the current medical center.

Conclusion and Recommendations

The patients' healthy lifestyle behaviors and adaptation to chronic illness were below average. The study determined that individuals above 60, who had low educational and income levels and needed help from others in daily activities, had poor adaptation to chronic illness. During the pandemic, there were changes in patients' nutritional habits and activity levels, and the proportion of patients who defined their health as good decreased compared to before the pandemic. Healthy lifestyle behaviors positively affect the level of adaptation to chronic diseases. If patients improve their sense of responsibility, adopt physical activity, healthy nutrition habits, and positive social relationships, they may improve their skills for coping with chronic disease and adapt to the disease successfully.

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Patients' responsibility for self-care management should be improved for symptom management and prevention of complications. Elderly individuals with low education or income should be aware of health behaviors essential in chronic illness management. Individuals should be given recommendations in line with their physical, mental, and socioeconomic needs and assisted in maintaining a healthy life. The COVID-19 process caused an increase in individuals' needs for access to health services and difficulties in the provision and access of health services.

Patients can be provided with the opportunity to detect and follow up on their health problems, ask questions about the management of the medications they use, vaccination, nutrition, and activities, receive psychological support, and receive health education on the subjects they need.

Ethics Committee Approval: Ethical approval was obtained from the Health Sciences University, Zeynep Kâmil Women and Children Diseases Training and Research Hospital Clinical Research Ethics Committee (Decision number: 12/20.01.2021).
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What did the study add to the literature?

- Patients with chronic conditions faced physical and social problems and caused lifestyle changes during the COVID-19 pandemic.
- Healthy lifestyle behaviors and adaptation were influenced negatively in patients with chronic conditions.
- Individuals with chronic diseases mostly experienced changes in exercise levels and social adaptation.
- Patients with chronic conditions need support for adopting healthy lifestyles during the COVID-19 pandemic.

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