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The Symptoms Experienced by COVID-19 Patients Following the Recovery

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ABSTRACT

Purpose: Patients discharged after recovering from COVID-19 continue to experience symptoms. To determine and treat the symptoms experienced after COVID-19 disease, the studies should also focus on the post-recovery period. So, this study aims to determine the experienced symptoms by COVID-19 patients after recovery.
Method: This cross-sectional study was conducted with patients who were diagnosed with COVID-19 and recovered in a province in Turkey between April and June 2021. While a total of 1940 people participated in the study by using the random sampling method, which is one of the improbable sampling methods, 1443 people who met the criteria were included. Data were collected with a questionnaire and symptom analysis form prepared by the researchers.
Results: Our analysis showed that 97.7% of people with COVID-19 had experienced at least one symptom. The most common symptoms were fatigue/weakness, bone or joint pain, headache, feeling anxious, forgetfulness, and back pain, Furthermore, it was found that the symptom experienced by individuals after recovery was associated with the number of chronic diseases they had.
Conclusion and Suggestions: It is important to follow up people who have potential risk factors, especially chronic diseases and obesity, in the early period after COVID-19. Also, it is recommended to inform clinician nurses about these symptoms to be able to early diagnosis and manage them.

COVID 19 Tanısı Almış Bireylerin İyileşme Sonrası Yaşadıkları Semptomlar

Makale Bilgileri

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ÖZ

Amaç: COVID-19'dan iyileşen ve taburcu edilen hastalarda semptomlar devam etmektedir. Bu nedenle COVID-19 hastalığı sonrası yaşanan semptomların belirlenmesi ve tedavisine yönelik yeterli çalışmaların yapılabilmesi için çalışmaların iyileşme sonrası döneme de odaklanması gereklidir. Bu araştırma, COVID-19 teşhisi konan bireylerin iyileştikten sonra yaşadıkları semptomları belirlenmesi amacıyla yapılmıştır.
Yöntem: Bu kesitsel çalışma, Nisan-Haziran 2021 tarihleri arasında Türkiye'nin bir ilinde COVID-19 tanısı konan ve iyileşen hastalarla yapılmıştır. Araştırmaya olasılıksız örnekleme yöntemlerinden birisi olan gelişigüzel örnekleme yöntemi kullanılarak toplam 1940 kişi katılırken, kriterleri karşılayan 1443 kişi dahil edilmiştir. Veriler, araştırmacılar tarafından hazırlanan anket formu ve semptom analiz formu ile toplanmıştır.
Bulgular: COVID-19'lu kişilerin %97,7'si en az bir semptom yaşamaktadır. En sık görülen semptomlar sırasıyla yorgunluk/güçsüzlük, kemik veya eklem ağrısı, baş ağrısı, endişeli hissetme, unutkanlık ve sırt ağrısıdır. Ayrıca bireylerin iyileştikten sonra yaşadıkları semptom yükünün de sahip oldukları kronik hastalık sayısı ile ilişkili olduğu saptanmıştır.
Sonuç ve Öneriler: COVID-19 sonrası erken dönemde iyileşen ve başta kronik hastalıklar ve obezite olmak üzere potansiyel risk faktörlerine sahip kişilerin takibi önemlidir.

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INTRODUCTION

Coronaviruses (CoV) are a group of viruses that range from strains that cause the common cold and flu-like symptoms (HcoV-229E, HcoV-OC43, HKU1, Haven coronavirus) to strains that could cause severe respiratory failure and could be lethal (SARS-CoV and MERS-CoV) (Kim et al., 2020). The World Health Organization (WHO) temporarily named this new virus as the 2019 novel coronavirus (2019-nCoV) on January 12, 2020 and officially named the disease caused by 2019-nCoV as coronavirus disease (COVID-19) on February 11, 2020 (Sun et al., 2020). The worldwide outbreak of the COVID-19 disease, which emerged in China, attracted global attention, and was declared a pandemic by the WHO on March 11, 2020 (Jin et al., 2020). Coronavirus disease, which leads to severe respiratory diseases such as pneumonia and respiratory failure, has claimed human life dramatically.

COVID-19 disease is classified into four levels mild, moderate, severe, and critical in the COVID-19 diagnosis and treatment guidelines published by the National Health Commission of China. Mildly patients expereince only mild symptoms without radiographic findings. Moderately patients may have a fever, respiratory symptoms, and radiographic findings. Severe patients may have respiratory rate >30, dyspnea, and SpO2 <90 mmHg. In critical patients, there is respiratory failure, septic shock, and multi-organ failure (National Health Commission of China, 2020).

Based on the studies conducted in China, common symptoms of hospitalized patients diagnosed with COVID-19 include fever (98.6%), fatigue (69.6%), dry cough, and diarrhea. While less common symptoms are muscle pain, confusion, headache, sore throat, nasal draining, chest pain, nausea, and vomiting. Severe complications are Acute Respiratory Distress Syndrome, acute cardiac injury, and multi-organ failure (Wang D. et al., 2020; Chen et al., 2020; Huang et al., 2020). The WHO specified the most common symptoms like fever, dry cough, and fatigue, less common symptoms as aches, pains, sore throat, diarrhea, conjunctivitis, loss of taste or smell, and serious symptoms as difficulty breathing, dyspnea, chest pain or pressure in the chest, and the inability of speech and movement (World Health Organization, 2021).

Although symptoms may last about 5-6 days in individuals infected with the virus, this period may take up to 14 days (World Health Organization, 2021). Isolation and protective measures (mask, hand hygiene, social distancing) are still the most effective way to fight against COVID-19 disease. Effective surveillance has been determined as a prerequisite to wiping off the source of infections, and patients infected with COVID-19 are followed up in the hospital/home by applying isolation (Zhou & Chi, 2020). Treatment primarily involves symptomatic and antiviral therapies. In addition, early intervention, nutritional supplements, oxygen therapy, and antibacterial therapy are of critical importance for patients (Wang M. et al., 2020). Studies on the treatment process of COVID-19 have been increasing recently (Wiersinga et al., 2020). However, studies investigating the persistence of symptoms after recovery or prospective assessment of long-term COVID are limited (Cascella et al., 2020; Vittori et al., 2020). In a study evaluating the symptoms of patients discharged from the hospital after recovering from COVID-19, it was revealed that 87.4% of individuals experienced at least one symptom, and this rate is remarkably high (Carfì et al., 2020). For this reason, to determine and treat the symptoms experienced after COVID-19 disease, the studies should also focus on the post-recovery period. It is thought that the results obtained will help nurses in the early diagnosis and management of these symptoms. So, this study aims to determine the experienced symptoms of COVID-19 patients after recovery.

Research Questions

- Do COVID-19 patients experience any symptoms after recovery?
- Which symptoms do COVID-19 patients experience after recovery?

• Is there a relationship between the socio-demographic characteristics and the experienced symptoms in COVID-19 patients after recovery?

METHOD

Research Design

This cross-sectional study was conducted from April 3 to June 29, 2021, in a province located in the Central Anatolia region of Turkey. The data of the research were collected via "Google Forms". The form was shared in many places through many social media accounts in the province where the research was conducted, and volunteers were asked to fill out the form. To prevent duplication in the data, one response per IP address was allowed to ensure reliability.

Participants

The population of the research consisted of people being diagnosed with COVID-19 until June 2021 in the province. The research sample population was determined by the unknown sample calculation method, since data on COVID-19 were not shared on a provincial basis in Turkey at the time the study data were collected. As a result of the calculation made with reference to the prevalence value specified for Turkey on January 26, 2021 (t: 1.96, p: 0.038, q:1-0.038, d: 0.01), the sample size was determined as 1418 individuals (Our Word in Data, 2021). The individuals who aged ≥18 years, diagnosed with COVID-19, hading a negative polymerase chain reaction (PCR) at least one month ago, recovered, were literate and agreed to participate in the study were included in the study. Those who filled out the questionnaire incompletely and participated from outside the province were excluded from the study. In the study, 1940 people participated by using the random sampling method, which is one of the improbable sampling methods. The data of 1443 people by excluding 497 people who did not meet the inclusion criteria (who were from the outside of the province (n=428) and answered the questionnaire incompletely (n=69)) were analyzed.

Research Instruments and Processes

The data were collected by a questionnaire form and a symptom analysis form prepared by the researchers. The questionnaire form consisted of socio-demographic characteristics of individuals as age, gender, profession, marital status, educational status, chronic disease status, family type, etc. The symptom analysis form comprised of 27 questions concerning the systems such as dyspnea, back pain, loss of taste and smell, etc. (Carfì et al., 2020; Petersen et al., 2020). The research sample was reached via social media (facebook, instagram) and whatsapp, and the data were collected through "Google Forms".

Data Analysis

The data were analyzed with IBM SPSS Statistics Standard Concurrent User V 25 (IBM Corp., Armonk, New York, USA) statistical software. Descriptive statistics used were as number (n), percentage (%), mean±standard deviation ($\bar{x}$±sd), median (M), 25th percentile (Q_1), 75th percentile (Q_3), minimum (min), and maximum (max). The normal distribution of the data related to numeric variables was assessed with the Shapiro Wilk test for normality and Q-Q plots. In the variables that were not normally distributed, the Mann-Whitney U test was used to compare two groups, and to Kruskal Wallis test to compare the means of three or more groups. Also, the difference within-group values were done with the Bonferroni-corrected multiple comparison test. Chi-square test was used in the analysis of categorical variables. Moreover, correlations were assessed using the Spearman's correlation analysis test. The statistical significance level was considered at $p<0.05$ level.

Ethic

Ethics Committee (2020/14) and institutional permission were obtained to carry out the research. Before the study, the purpose of the study was explained to all the individuals participating in the study. In addition, it was stated that the data obtained from the research will be kept confidential and will only be used for scientific purposes. Consent was obtained from the individuals participating in the study. The ethical principles of the Declaration of Helsinki were complied with at all stages of the study.

RESULTS

Socio-Demographic Characteristics of Participants

The analysis showed that 67.5% of the participants were female, 40.0% were aged between 18 and 28 years, and 41.3% had a body mass index (BMI) of 19-24.99. Of the participants; 37.9% were clerks, 59.8% were married, 70.0% had undergraduate or higher education, and 83.0% had a nuclear family type. It was found that 18.0% of the participants had at least one chronic disease, and the most common chronic diseases were lung disease (34.5%), hypertension (21.5%), and diabetes mellitus (19.2%). In addition, 97.7% of the participants had experienced at least one symptom after recovery (Table 1).

Table 1. *Distribution of the Participants by Socio-Demographic Characteristics (n=1443)*

Characteristics	n (%)	Characteristics	n (%)
Sex		**Education status**	
Female	975 (67.5)	Primary education	86 (6.0)
Male	468 (32.5)	Secondary education	346 (24.0)
Age group		Bachelor and above	1011 (70.0)
18-28	577 (40.0)	**Family type**	
29-39	547 (37.9)	Nuclear family	1198 (83.1)
40-50	242 (16.8)	Extended family	166 (11.5)
51>	77 (5.3)	Broken family	31 (2.1)
BMI		Lives alone	48 (3.3)
<18.99	84 (5.9)	**Presence of chronic disease**	
19-24.99	596 (41.3)	There is	260 (18.1)
25-29.99	523 (36.2)	No	1183 (81.9)
30-34.99	176 (12.2)	**Chronic disease***	
35>	64 (4.4)	Hypertension	56 (21.5)
Job		Diabetes mellitus	50 (19.2)
Clerk	547 (37.9)	Chronic renal failure	6 (2.3)
Worker	292 (20.3)	Liver disease	5 (1.9)
Retired	36 (2.5)	Lung disease	90 (34.5)
Student	251 (17.4)	Heart disease	27 (10.3)
Not working	317 (21.9)	Thyroid disease	28 (10.7)
Marital status		Neurology disease	13 (4.9)
Married	864 (59.8)	Musculoskeletal disease	22 (8.4)
Single	579 (40.2)	Dermatology disease	14 (5.3)
		Cancer	8 (3.1)
		Presence of symptoms after recovery	
		There is	1410 (97.7)
		No	33 (2.3)

* Responses were received from those with chronic diseases. A person may have more than one chronic disease.

According to the results of the analysis, it was determined that COVID-19 patients experienced at least ten symptoms after recovery. The most common symptoms experienced by participants were fatigue or decrease in energy (80.8%), bone or joint pain (55.1%), headache (55.0%), anxiety (54.0%), forgetfulness (53.7%) and back pain (51.9%) (Table 2).

Table 2. *Distribution of the Symptoms Experienced by the Participants After Recovery (n=1443)*

Symptoms	n	%
Shortness of breath	472	32.7
Cough	486	33.6
Stinging in the chest	325	22.5
Chest pain	396	27.4
Back pain	750	51.9
Palpitation	508	35.2
Edema	267	18.5
Constipation	322	22.3
Nausea-vomiting	196	13.5
Diarrhea	233	16.1
Decreased appetite	469	32.5
Feeling angry	630	43.6
Feeling anxious	780	54.0
Forgetfulness	776	53.7
Muscle cramps	522	36.2
Bone or joint pain	796	55.1
Headache	794	55.0
Feeling tired or decreased energy	1167	80.8
Drowsiness/dizziness	565	39.1
Difficulty concentrating	685	47.4
Difficulty falling asleep	575	39.8
Difficulty maintaining sleep	504	34.9
Hair loss	540	37.4
Tinnitus	217	15.0
Loss of taste and smell	608	42.1
Burning eyes and visual impairment	329	22.7
Excessive sweating	365	25.2
Other symptoms	41	2.8
Total number of symptoms experienced	M (Q_1 – Q_3)	10 (6 - 15)

* Participants may experience more than one symptom.

It was found that female participants experienced more symptoms compared to men ($p<0.001$). The participants with a BMI of ≥ 35 experienced more symptoms compared to the other participants ($p<0.001$). Also, it was determined that unemployed participants experienced more symptoms than others ($p<0.001$). According to the educational status of the participants, it was identified that primary and secondary school graduates experienced more symptoms than undergraduate and higher graduates, and the difference was significant ($p<0.001$). Moreover, it was determined that participants with chronic disease experienced more symptoms ($p<0.001$; Table 3).

Table 3. *Distribution of the Participants Regarding Their Socio-Demographic Characteristics and the Number of Symptoms They Experienced (n=1443)*

Characteristics	Total Number of Symptoms M (Q_1 – Q_3)	Test *p*
Sex		
Female	15.0 (12.0-18.0)	**-8.995*** **<0.001**
Male	10.0 (5.5-14.0)	
Age group		
18-28	11.0 (6.0-15.0)	3.710** 0.295
29-39	10.0 (6.0-15.0)	
40-50	10.0 (5.0-14.0)	
51>	9.0 (5.0-14.0)	
BMI		
<18.99	12.0 (6.0-16.0)[abc]	**21.314**** **<0.001**
19-24.99	10.0 (6.0-14.0)[ab]	
25-29.99	9.0 (6.0-14.0)[a]	

30-34.99	12.0 (7.0-16.0)[bc]	
35>	14.0 (9.0-17.0)[c]	
Job		
Officer	9.0 (5.0-13.0)[a]	
Worker	10.0 (6.0-14.0)[ab]	**43.177****
Retired	8.0 (5.0-14.5)[ab]	**<0.001**
Student	11.0 (6.0-15.0)[b]	
Not working	13.0 (8.16.5)[c]	
Marital status		
Married	14.0 (10.0-16.0)	-0.542*
Single	15.0 (15.0-20.0)	0.588
Education status		
Primary education	11.0 (6.75-15.0)[ab]	**14.056****
Secondary education	11.0 (7.0-16.0)[a]	**<0.001**
Bachelor and above	10.0 (5.0-14.0)[b]	
Family type		
Nuclear family	10.0 (6.0-15.0)	0.240**
Extended family	10.0 (5.0-15.0)	0.887
Broken family	11.0 (7.0-16.0)	
Lives alone	9.5 (4.0-14.5)	
Presence of chronic disease		
There is	16.0 (9.75-18.0)	**-4.571***
No	14.0 (10.0-15.0)	**<0.001**

*Mann-Whitney U-test; **Kruskal Wallis; Bonferroni: superscripts of a, b, c, and d show differences within the group in each group, and the measurements with the same letters are similar.

Looking closely at the symptoms in different gender (Table 4), we found that females experienced 12 symptoms, while the males had 8 symptoms and this difference was statistically significant (p<0.001). The most common symptoms among females were fatigue/ decreased energy (83.8%), bone or joint pain (59.7%), anxiety (58.9%), and headache (58.6%). Similarly, the most common symptoms among males were fatigue/decrease energy (74.8%), headache (47.6%), bone or joint pain (45.7%), and anxiety (44.0%).

Table 4. *Distribution of the Symptoms Experienced by the Participants by Sex (n=1443)*

Symptoms	Sex				Test* p
	Female		Male		
	There is n (%)	No n (%)	There is n (%)	No n (%)	
Shortness of breath	344 (35.3)	631 (64.7)	128 (27.4)	340 (72.6)	**9.038 0.003**
Cough	329 (33.7)	646 (66.3)	157 (33.5)	311 (66.5)	0.005 0.941
Stinging in the chest	237 (24.3)	738 (75.7)	88 (18.8)	380 (81.2)	**5.490 0.019**
Chest pain	282 (28.9)	693 (71.1)	114 (24.4)	354 (75.6)	3.308 0.069
Back pain	562 (57.6)	413 (42.4)	188 (40.2)	280 (59.8)	**38.664 <0.001**
Palpitation	396 (40.6)	579 (59.4)	112 (23.9)	356 (76.1)	**38.586 <0.001**
Edema	226 (23.2)	749 (76.8)	41 (8.8)	427 (91.2)	**43.597 <0.001**
Constipation	262 (26.9)	713 (73.1)	60 (12.8)	408 (87.2)	36.015 <0.001
Nausea-vomiting	153 (15.7)	822 (84.3)	43 (9.2)	425 (90.8)	**11.397 <0.001**
Diarrhea	146 (15.0)	829 (85.0)	87 (18.6)	381 (81.4)	3.053 0.081
Decreased appetite	335 (34.4)	640 (65.6)	134 (28.6)	334 (71.4)	**4.727 0.030**

Feeling angry	466 (47.8)	509 (52.2)	164 (35.0)	304 (65.0)	**20.905** **<0.001**
Feeling anxious	574 (58.9)	401 (41.1)	206 (44.0)	262 (56.0)	**28.095** **<0.001**
Forgetfulness	586 (60.1)	389 (39.9)	190 (40.6)	278 (59.4)	**48.394** **<0.001**
Muscle cramps	396 (40.6)	579 (59.4)	126 (26.9)	342 (73.1)	**25.677** **<0.001**
Bone or joint pain	582 (59.7)	393 (40.3)	214 (45.7)	254 (54.3)	**24.936** **<0.001**
Headache	571 (58.6)	404 (41.4)	223 (47.6)	245 (52.4)	**15.222** **<0.001**
Feeling tired or decreased energy	817 (83.8)	158 (16.2)	350 (74.8)	118 (25.2)	**16.590** **<0.001**
Drowsiness/dizziness	443 (45.4)	532 (54.6)	122 (26.1)	346 (73.9)	**49.788** **<0.001**
Difficulty concentrating	506 (51.9)	469 (48.1)	179 (38.2)	289 (61.8)	**23.626** **<0.001**
Difficulty falling asleep	426 (43.7)	549 (56.3)	149 (31.8)	319 (68.2)	**18.540** **<0.001**
Difficulty maintaining sleep	378 (38.8)	597 (61.2)	126 (26.9)	342 (73.1)	**19.524** **<0.001**
Hair loss	418 (42.9)	557 (57.1)	122 (26.1)	346 (73.9)	**38.127** **<0.001**
Tinnitus	163 (16.7)	812 (83.3)	54 (11.5)	414 (88.5)	**6.640** **0.010**
Loss of taste and smell	424 (43.5)	551 (56.5)	184 (39.3)	284 (60.7)	2.256 0.133
Burning eyes and visual impairment	240 (24.6)	735 (75.4)	89 (19.0)	379 (81.0)	**5.630** **0.018**
Excessive sweating	247 (25.3)	728 (74.7)	118 (25.2)	350 (74.8)	0.002 0.961
		M ($Q_1 - Q_3$)			
Total number of symptoms experienced	12 (7-16)		8 (5-12)		9.112 <0.001

* Chi-square test

Also, it was found that there was a weak positive correlation between the number of chronic diseases and the number of symptoms (p<0.001; Table 5).

Table 5. *The Correlation Between the Number of Chronic Diseases of the Participants and the Number of Symptoms (n=1443)*

	Number of chronic diseases	**Number of symptoms**
Number of chronic diseases		0.127
Rho	1	<0.001
p		
Number of symptoms	0.127	
Rho	<0.001	1
p		

*Spearman correlation

DISCUSSION

This study aims to determine the symptoms of COVID-19 patients after recovery and to compare their experienced symptoms according to their socio-demographic characteristics. This study results showed confirmed that although the PCR test of these patients became negative in a short time, some people have continued to experience symptoms after recovery. A review of the literature showed a similar result and confirmed that even if patients go through the disease process as asymptomatic or with mild symptoms, most of the individuals have complained of post-COVID-19 symptoms after recovery (CDC, 2021; World Health Organization, 2021).

In this study, it was determined that almost all of the 1443 participants (97.7%) experienced at least one symptom. Similarly, in the studies of Carfi et a. (2020) and Petersen et al. (2020), it was found that at least one symptom persisted in the majority of patients discharged after COVID-19(Carfi et al., 2020; Petersen et al., 2020). Moreover, in the study conducted by the Patient-Led Research Group in which long-term symptoms of COVID-19 were determined, it was identified that 87.4% of the patients still experienced at least one symptom until an average of 60 days from the onset of their disease (Patient-led Research for COVID-19: Report, 2020). So, it is clear that the rate of symptoms after recovery is remarkably high though the continuation of symptoms after recovery varies.

In this study, the most common symptoms after recovery were fatigue/decrease energy (80.8%), bone or joint pain (55.1%), headache (55.0%), and anxiety (54.0%). These symptoms were similar to other studies (Stavem et al., 2021; Tran et al., 2021; Garrigues et al., 2020; Sudre et al., 2020; Carfi et al., 2020). SARS-CoV-2 could cause permanent damage to many organs or systems of patients, including the lung, heart, brain, kidney, neurological and vascular systems (Jaffri & Jaffri, 2020; World Health Organization, 2021). This damage to organs or systems reveals many symptoms in individuals and it is thought that these symptoms may continue for a long time after recovery. So, these symptoms should be evaluated and followed-up in patients with COVID-19.

Although studies to determine the factors associated with prolonged symptoms in COVID-19 disease are limited. In this study, it was determined that females, a BMI of 35 and above, being unemployed, having primary and secondary graduates, and people with chronic diseases experienced more symptoms. Other studies showed that female gender, high BMI, older age, asthma and chronic disease were effective in increasing the number of symptoms (Sudre et al., 2020; King's College London, 2020; Tenforde et al., 2020).

In this study, it was found that female experienced 21 of 27 symptoms after recovery. The most common symptoms in females were fatigue/decrease in energy, bone or joint pain, anxiety and headache, respectively. Female gender becomes prominent as an important risk factor for experienced symptoms after recovery (King's College London, 2020; Sudre et al., 2020; Tenforde et al., 2020). Skyles et al. (2021) also reported that females experienced anxiety, fatigue, and myalgia symptoms more (Sykes et al., 2021). In another similare study, where the majority of the participants (77%) were females, the most common symptoms were dyspnea, tightness in the chest, fatigue, chills or sweating, body aches, dry cough, high fever, headache, and difficulty concentrating (Patient-led Research for COVID-19: Report).

In this study, it was determined that there was a positive relationship between the number of chronic diseases and the number of experienced symptoms after recovery, and the most common chronic diseases were lung disease (34.5%), hypertension (21.5%) and DM (19.2%). Chronic diseases could increase the effects of the epidemic together with the COVID-19 epidemic (Organization WH). (Organization WH, 2021). In individuals with chronic disease, COVID-19 is more common and has a more severe course (Zhou et al., 2020). In a similar study, it was stated that the burden of symptoms experienced by individuals after recovery was also correlated to the number of chronic diseases, and the most common chronic diseases were hypertension (19%), arthrosis (13%) and asthma (12%) respectively (Stavem et al., 2021).

CONCLUSION AND SUGGESTIONS

This study showed that almost all had experienced at least one symptom after recovery. The most commonly experienced symptoms were fatigue/decreased in energy, bone or joint pain, headache, anxiety, forgetfulness, and back pain. Females, BMI ≥35, unemployed, primary and secondary education graduates, individuals with chronic diseases experienced more symptoms. Furthermore, it was identified that the symptom experienced by individuals after recovery was also associated with a number of chronic diseases. So, it is important to follow up patients who have potential risk factors, especially chronic diseases and obesity, in the early period after COVID-19. It is recommended to inform clinician

nurses who have the most contact with the patient about these symptoms to be able to early diagnose and manage these symptoms. Also, more follow –up studies on the experienced symptoms in COVID-19 patients are needed to understand the long-term effects.

LIMITATIONS

This study has some limitations such as using google forms and not interviewing the patients face-to-face as well as not evaluating the severity of symptoms objectively and done with only those who can read and write.

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Conflict of Interest

No conflict of interest.

Author Contributions

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