



# Life and Medical Sciences

## Analysis of COVID-19 Patient Follow-Ups

### COVID-19 Hasta Takiplerinin Analizi

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#### Abstract

In this study, it was aimed to examine the follow-ups of patients diagnosed with COVID-19 during the pandemic process and to evaluate the relationship between the symptoms/disease characteristics of the individuals and their prognosis. The study was completed by retrospectively accessing the patient data with a diagnosis of COVID-19 between 01.04.2020 and 01.02.2021 using the archive scanning method. A total of 438 COVID-19 patients were included in the study. The study was completed by reaching the information questioned in the follow-up of the patients during the COVID-19 disease processes, information on the symptoms/disease characteristics and disease prognoses. Of the patients diagnosed with COVID-19, 49.3% were female and 50.7% were male. The hospitalization rate of the patients was found to be 12.3%. Hospitalization times of patients with cardiovascular disease, diabetes mellitus and respiratory system disease were found to be statistically significantly longer ( $p<0.001$ ;  $p<0.001$ ;  $p=0.045$ , respectively). There is a difference between the length of hospital stay of those with and without other chronic diseases ( $p=0.043$ ). Hospitalization times were found to be significantly reduced in those using anticoagulants, steroids, and antibiotics. There was no difference between pneumococcal and influenza vaccination status and hospital stay. In this study, during the COVID-19 pandemic period, many parameters were examined in the follow-up of patients and conditions that could be related to the disease prognosis were evaluated. In the light of this information, it will be ensured that the prognosis of the people who will get COVID-19 disease will be predicted and the conditions that should be considered in the treatment and follow-up will be taken into consideration.

**Keywords:** COVID-19, Pandemic, Disease follow-up, Hospitalization time.

#### Özet

Bu çalışmada pandemi sürecinde COVID-19 tanısı almış hastaların takiplerinin incelenmesi ve kişilerin semptom/hastalık özellikleri ile prognozları arasındaki ilişkinin değerlendirilmesi amaçlanmıştır. Çalışma COVID-19 tanılı hasta bilgilerinin 01.04.2020 ile 01.02.2021 tarihleri arasındaki poliklinik verileri üzerinden arşiv tarama yöntemi kullanılarak retrospektif olarak incelenmesi ile tamamlandı. Çalışmaya 438 COVID-19 hastası dahil edildi. Hastaların COVID-19 hastalık süreçlerindeki takiplerinde sorgulanan bilgiler ve semptom/hastalık özelliklerine dair bilgiler incelenerek bu verilerin hastalık prognozları ile ilişkisi araştırıldı.

COVID-19 tanılı izlem hastalarının %49.3'ü kadın, %50.7'si erkek idi. Hastaların hastanede yatma oranı %12.3 olarak bulundu. Kalp damar hastalığı, diabetes mellitus ve kronik solunum sistemi hastalığı olan kişilerde hastanede yatış sürelerinin istatistiksel açıdan anlamlı olarak daha uzun olduğu bulundu (sırasıyla  $p<0.001$ ;  $p<0.001$ ;  $p=0.045$ ). Diğer kronik hastalığı olanlar ile olmayanların hastanede yatış süreleri arasında gözlemlenen farklılık da anlamlı idi ( $p=0.043$ ). Antikoagülan, steroid ve antibiyotik tedavisi alanlarda hastane yatış sürelerinin anlamlı olarak azalmış olduğu bulunurken, pnömokok ve influenza aşısı olma durumu ve hastanede yatış süreleri arasında bir farklılık bulunmamıştır. COVID-19 pandemi döneminde hastaların takiplerinde birçok parametrenin incelendiği bu çalışmada hastalık prognozu ile ilişkili olabilecek durumlar değerlendirildi. Bu bilgiler ışığında COVID-19 hastalığına yakalanacak kişilerin hastalık prognozları hakkında öngörüle bulunularak tedavi ve takipte dikkat edilmesi gereken durumların göz önünde bulundurulması sağlanacaktır.

**Anahtar Kelimeler:** COVID-19, Pandemi, Hastalık takibi, Hastanede yatış süresi.

## Introduction

The process, which started with the reporting of pneumonia cases detected in Wuhan, China, to the World Health Organization (WHO) on December 31, 2019, continued on January 7, 2020, with the detection of a new coronavirus that had not been reported in humans before [1]. This new virus, SARS-Cov-2 and the related disease, was named as COVID-19 (*coronavirus disease 2019*) [1,2]. Defining the epidemic as an "international public health emergency" on January 30, 2020, WHO declared a pandemic (global epidemic) on March 11, 2020 [1,3].

With the start of the pandemic process, the COVID-19 Science Board was established by the Ministry of Health in Turkey and some arrangements were made in the social life and health system in line with the recommendations of the scientific committee. Establishment of filiation teams and pandemic hospitals and postponing elective procedures are some of these regulations. In order to control the pandemic and prevent the spread of the disease, the public was directed primarily to the Primary Health Care Services and thus to the family physicians for triage through the Corona Hotlines and the Emergency Line. Family physicians contributed to the process by following up patients diagnosed with COVID-19 and their contacts during the quarantine period and by providing health services when necessary [4,5].

In addition to continuing without any restrictions in family medicine centers during the pandemic process, their contribution to filiation procedures drew attention to the contribution of strengthening the primary care system to the

health system. In the literature, there are studies emphasizing the importance of including primary health care services in risk management, action and planning stages in the health system in emergencies [6,7].

In the light of all this information, in our study, it is aimed to examine the studies on the follow-up of patients diagnosed with COVID-19 during the pandemic process, to compare the effects of the immunization status against pneumococcal diseases and flu, the diagnosis of chronic diseases and the drugs they use on the clinical processes of patients diagnosed with COVID-19.

## Material and Method

Our study was completed by retrospectively accessing the outpatient data between 01 April 2020 and 01 February 2021 using the archive scanning method via the electronic medical record system. Before starting the study, it was obtained from the Republic of Turkey Ministry of Health, General Directorate of Health Services Scientific Research Platform with the form number 2021-02-17T15\_00\_07 and then from the Hacettepe University Non-Interventional Clinical Research Ethics Committee with the project number GO 21/372 and decision number 2021/06-42 consent was obtained.

Patients with complete and error-free data, who were followed up by us for all age groups diagnosed with COVID-19, were included in our study. Persons who were not officially diagnosed with COVID-19 and who had any missing/error in the data forms were not included in our study.

The health status of patients diagnosed with COVID-19 during the period of COVID-19 disease, the clinical prognosis of the disease as well as the answers to the questions including immunization status for various diseases were completed by reaching retrospectively. Only patients aged 18 and over were included in the study because symptomatic treatment is applied to the age group under 18 years of age and the study was based on drug use.

#### Statistical method

Data were analyzed with IBM SPSS V23. Conformity to normal distribution was evaluated with Kolmogorov-Smirnov Test and Shapiro Wilk Test. The Mann Whitney U Test was used when comparing two independent groups, and the Kruskal Wallis Test was used when comparing groups of 3 or more. Significance level was presented as  $p < 0.05$ .

#### Results

Of the follow-up patients diagnosed with COVID-19, 49.3% (216/438) are female and

50.7% (222/438) are male. Among the follow-up patients, 98.9% constituted those who had the COVID-19 disease once, and 1.1% had it twice. While the rate of COVID-19 deaths is 1.8%, the rate of non-death is 98.2%. 8% of the patients had pneumococcal vaccine, and 92% did not. 2.3% of the patients had influenza vaccination, 97.7% did not. The hospitalization rate of the patients was found to be 12.3%. The rate of patients with positive PCR test results is 98.2%. The rate of patients with positive CT results was 22.6%; the rate of patients with negative results was 14.2% and the rate of patients without CT was found to be 63.2%. It was determined that 43.8% of the patients had a chronic disease, and the health characteristics of the patients are shown in [Table 1](#).

When the immunization status of the patients is questioned; Pneumococcal vaccination status and length of hospital stay did not differ ( $p=0.389$ ). Influenza vaccination status and length of hospital stay did not differ ( $p=0.394$ ) ([Table 2](#)).

**Table 1.** Frequencies of characteristics of follow-up patients.

Characteristic		n	%	Symptoms		n	%
Gender	Female	216	49.3	Fever	Yes	72	16.4
	Male	222	50.7		No	366	83.6
Number of being sick with COVID-19	1 time	433	98.9	Joint pain	Yes	103	23.5
	2 times	5	1.1		No	335	76.5
Death due to COVID-19 infection	Yes	8	1.8	Headache	Yes	80	18.3
	No	430	98.2		No	358	81.7
Pneumococcal vaccination status	Yes	35	8	Weakness	Yes	99	22.6
	No	403	92		No	339	77.4
Influenza vaccination status	Yes	10	2.3	Muscle-bone pain	Yes	135	30.8
	No	428	97.7		No	303	69.2
Hospitalization	Yes	54	12.3	Cough	Yes	131	29.9
	No	384	87.7		No	307	70.1
PCR test result	Positive	430	98.2	Nausea-vomiting	Yes	20	4.6
	Negative	8	1.8		No	418	95.4
CT result	Positive	99	22.6	Diarrhea	Yes	24	5.5
	Negative	62	14.2		No	414	94.5
	None	277	63.2	Other symptoms	Yes	5	1.1
Smoking status	Ex-smoker	52	11.9		No	433	98.9
	Never smoked	329	75.1	Chronic diseases	Yes	192	43.8
	Smoker	57	13		No	246	56.2

CT, computed tomography; n, number; PCR, polymerase chain reaction.

There is a difference between the length of hospital stay of those with and without cardiovascular disease ( $p < 0.001$ ). There is a difference between the hospitalization times of those with and without diabetes mellitus ( $p < 0.001$ ). There is a difference between the hospitalization times of those with and without respiratory system disease ( $p = 0.045$ ) (Table 3).

There was no difference between the length of hospital stay of those with and without thyroid disease ( $p = 0.549$ ). There was no difference between the length of hospital stay of those with and without cancer ( $p = 0.585$ ). There is a difference between the length of hospital stay of those with and without other chronic diseases ( $p = 0.043$ ) (Table 3). The duration of hospitalization did not differ between those who used favipravir and those who did not ( $p = 0.070$ ). The hospitalization times of chloroquine users and non-users did not differ ( $p = 0.749$ ). There is a difference between the hospitalization times of

those who use acetyl salicylic acid and those who do not ( $p < 0.001$ ). There is a difference between the hospitalization times of those who use enoxaparin and those who do not ( $p < 0.001$ ). There is a difference between the hospitalization times of those who use steroids and those who do not ( $p < 0.001$ ). There is a difference between the length of hospital stay of those who use colchicine and those who do not ( $p = 0.008$ ) (Table 4). There is a difference between the duration of hospitalization between those who use antibiotics and those who do not ( $p < 0.001$ ). There is no difference between the duration of hospitalization in patients with and without symptomatic treatment ( $p = 0.468$ ). There was no difference between the duration of hospitalization between those who received supportive treatment and those who did not ( $p = 0.319$ ) (Table 4).

There was no difference between blood groups in terms of length of hospital stay ( $p = 0.447$ ) (Table 5).

**Table 2.** The effect of immunization against pneumococcal diseases and flu on clinical processes.

Chronic Diseases		Hospitalization time		Test statistic	P*
		Mean $\pm$ standard deviation	Median (min-max)		
Pneumococcal vaccination status	Yes	2.06 $\pm$ 5.24	0 (0 - 20)	6691	0.389
	No	1.18 $\pm$ 3.79	0 (0 - 30)		
Influenza vaccination status	Yes	3.5 $\pm$ 7.47	0 (0 - 20)	1943	0.394
	No	1.2 $\pm$ 3.81	0 (0 - 30)		

\*Mann Whitney U Test. max, maximum; min, minimum.

**Table 3.** The effect of chronic disease diagnoses on clinical processes.

Chronic Diseases		Hospitalization time		Test statistic	P*
		Mean $\pm$ standard deviation	Median (min-max)		
Cardiovascular disease	Yes	3.39 $\pm$ 6.4	0 (0 - 30)	14.053,50	<0.001
	No	0.49 $\pm$ 2.05	0 (0 - 18)		
Diabetes mellitus	Yes	5.21 $\pm$ 6.61	0 (0 - 20)	3.601,50	<0.001
	No	0.98 $\pm$ 3.53	0 (0 - 30)		
Respiratory system disease	Yes	2.63 $\pm$ 5.86	0 (0 - 20)	8.064,50	0.045
	No	1.09 $\pm$ 3.61	0 (0 - 30)		
Thyroid disease	Yes	1.3 $\pm$ 2.75	0 (0 - 7)	2.001,50	0.549
	No	1.25 $\pm$ 3.95	0 (0 - 30)		
Cancer	Yes	0 $\pm$ 0	0 (0 - 0)	493,00	0.585
	No	1.26 $\pm$ 3.94	0 (0 - 30)		
Other chronic diseases	Yes	2.18 $\pm$ 5.62	0 (0 - 30)	8.544,50	0.043
	No	1.13 $\pm$ 3.65	0 (0 - 30)		

\*Mann Whitney U Test. max, maximum; min, minimum.

**Table 4.** Effects of drugs used on clinical processes.

Drug name/group		Hospitalization time		Test statistic	P*
		Mean ± standard deviation	Median (min-max)		
Favipiravir	Yes	1.6 ± 4.57	0 (0 - 30)	20.268,00	0.070
	No	0.59 ± 2.08	0 (0 - 11)		
Chloroquine	Yes	1.29 ± 4.02	0 (0 - 30)	22.387,50	0.749
	No	1.23 ± 3.88	0 (0 - 30)		
Acetyl salicylic acid	Yes	6.65 ± 8.85	0 (0 - 30)	2.209,50	<0.001
	No	1.03 ± 3.44	0 (0 - 30)		
Enoxaparin	Yes	5.66 ± 7.31	2 (0 - 30)	5.166,00	<0.001
	No	0.72 ± 2.89	0 (0 - 30)		
Steroid	Yes	8.33 ± 10.11	5 (0 - 30)	852,50	<0.001
	No	1.1 ± 3.57	0 (0 - 30)		
Colchicine	Yes	4.33 ± 6.66	1 (0 - 12)	314,50	0.008
	No	1.23 ± 3.91	0 (0 - 30)		
Antibiotic	Yes	6.22 ± 7.34	5 (0 - 30)	5.566,50	<0.001
	No	0.4 ± 2.01	0 (0 - 20)		
Symptomatic treatment	Yes	1.98 ± 5.45	0 (0 - 30)	16.072,00	0.468
	No	1.04 ± 3.35	0 (0 - 30)		
Supportive treatment	Yes	0.83 ± 3.2	0 (0 - 14)	6.509,50	0.319
	No	1.28 ± 3.98	0 (0 - 30)		

\*Mann Whitney U Test. max, maximum; min, minimum.

**Table 5.** The effect of blood groups on clinical processes.

Blood group	n (%)	Hospitalization time		Test statistic	P*
		Mean ± standard deviation	Median (min-max)		
A rh +	176 (40.2)	1.44 ± 4.54	0 (0 - 30)	6.831	0.447
A rh -	26 (5.9)	1.58 ± 4.26	0 (0 - 20)		
B rh +	57 (13.0)	1.35 ± 3.44	0 (0 - 14)		
B rh -	9 (2.1)	3.33 ± 6.78	0 (0 - 18)		
AB rh +	52 (11.9)	0.58 ± 2.36	0 (0 - 15)		
AB rh -	8 (1.8)	2.13 ± 4.02	0 (0 - 10)		
0 rh +	97 (22.1)	0.77 ± 3.04	0 (0 - 20)		
0 rh -	13 (3.0)	1.92 ± 4.73	0 (0 - 14)		

\*Kruskal Wallis H Test. max, maximum; min, minimum; n, number.

## Discussion

With the onset of the COVID-19 pandemic period, studies have been started for the symptoms and treatment methods of patients, and these studies are progressing rapidly with the experience gained.

We also analyzed the COVID-19 patients we followed from the data we could access retrospectively, especially the symptoms and treatment methods during the disease periods. During the COVID-19 disease period, many symptoms were seen and associated with the

disease [8-10]; In our study, when we looked at the frequency of symptoms, we found from our data that fever, headache, joint pain, weakness, muscle-bone pain, cough, nausea-vomiting, and diarrhea symptoms were not observed frequently, contrary to the literature. When we look at the smoking status, it is believed that COVID-19 patients have a worse prognosis in smokers [11-14]. We determined that the majority of the patients (75.1%) never smoked. When we look at the literature for the chronic disease COVID-19

prognosis relationship, the general view is the same; especially for certain chronic diseases, the information that COVID-19 disease worsens the prognosis and causes death was more common [15,16]. Hospitalization times of patients with diabetes mellitus and respiratory system disease were found to be statistically significantly longer. There is a difference between the duration of hospitalization of those with and without other chronic diseases.

In the COVID-19 pandemic process, influenza and pneumococcal vaccines are recommended in order not to add viral infection and not to worsen the prognosis of the disease, although it is not in terms of the risk of COVID-19 transmission [17-21]. In our study, the percentages of influenza and pneumococcal vaccination were extremely low; There was no significant difference with the length of hospital stay.

In the study of Gür et al., it was seen that there was no increase in the risk of contracting COVID-19 in the presence of certain blood groups. It has been shown that A Rh - and A Rh +, 0 Rh - and AB Rh - blood groups have a high risk of contracting COVID-19, while 0 Rh + blood groups have a lower risk of developing the disease [22]. Although there are different studies on the risk and prognosis of catching COVID-19 disease with

blood group in many studies [23-25]; In our study, when the blood groups of COVID-19 patients were examined, the most common blood group was A Rh+ (40.2%); In the study, no relationship was found between hospitalization and blood groups.

Due to the retrospective nature of our study, patients with missing data could not be included in the study, so the outpatient clinic could not include all COVID-19 patients. Since the COVID-19 vaccine studies were not completed and most of them covered the Phase-3 study period, the vaccination status of the participants in our study could not be questioned, and all participants were considered unvaccinated.

## Conclusion

Our information about the COVID-19 pandemic is still not clear, and thanks to the data obtained in the disease follow-ups, it allows us to predict the treatment and prognosis status of people who will get COVID-19 disease. For this reason, the follow-ups during the period of COVID-19 disease are of great importance and thanks to the experience gained, the approaches change with the situation that needs to be treated more carefully and it will be possible to prevent the worsening of the patient's prognosis.

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