

**Knowledge Levels and Disease Preventive Behaviors of  
Individuals Aged 18-74 Living in Antalya About COVID-19: A  
Population-Based Sample \***

Antalya'da Yaşayan 18-74 Yaş Grubundaki Bireylerin COVID-19'a İlişkin  
Bilgi Düzeyleri ve Hastalığı Önleyici Davranışları: Topluma Dayalı Bir  
Örneklem

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**Abstract**

**Objective:** This study was conducted to determine knowledge and preventive behaviours of individuals aged 18-74 living in Antalya regarding the novel coronavirus disease (COVID-19).

**Methods:** This descriptive study was carried out in March 2021 with 1000 people aged 18-74 living in Antalya. The data were collected with the "Questionnaire on COVID-19 Disease" prepared by the researchers. In the study, ethical approval, institutional permission, and informed consent from participants were obtained for the study.

**Results:** The participants' mean scores for COVID-19 general knowledge (11.85±2.29), and for their knowledge of preventive practices (25.00±3.42) and behaviours (84.85±10.33) against COVID-19 were found to be at a good level. It was determined that the knowledge and behavior mean scores of the participants were affected by variables such as age, education status, working status, income level, perceived general physical health level, district of residence, COVID-19 status, drug use, smoking consumption and marital status (p<.05).

**Conclusion:** In this study, which was conducted in the central districts of Antalya, it was determined that although the participants had a good level of preventive knowledge and behaviours regarding COVID-19, they performed some practices that were not recommended by the health authorities. The fact that public health nurses play a more active role in such pandemic situations is a factor that facilitates the society's access to accurate and reliable information. A strong public health nursing infrastructure can be developed to plan future pandemics by learning from the experiences of public health nurses during the COVID-19 pandemic.

**Keywords:** Behaviour, COVID-19, knowledge, pandemic, public health nurse

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**Öz**

**Amaç:** Bu çalışma, Antalya'da yaşayan 18-74 yaş arası bireylerin yeni koronavirüs hastalığı (COVID-19) ile ilgili bilgilerini ve önleyici davranışlarını belirlemek amacıyla yapılmıştır.

**Yöntem:** Tanımlayıcı tipteki bu çalışma, Mart 2021'de Antalya'da yaşayan 18-74 yaş arası 1000 kişi ile gerçekleştirilmiştir. Veriler, araştırmacılar tarafından hazırlanan "COVID-19 Soru Formu" ile toplanmıştır. Çalışmada, çalışma için etik onay, kurum izni ve katılımcılardan bilgilendirilmiş onam alınmıştır.

**Bulgular:** Katılımcıların COVID-19 genel bilgi ortalaması ( $11.85 \pm 2.29$ ) ile COVID-19'u önleyici uygulamalara ilişkin bilgi ( $25.00 \pm 3.42$ ) ve davranış ( $84.85 \pm 10.33$ ) puan ortalamaları iyi düzeyde bulundu. Katılımcıların bilgi ve davranış puan ortalamalarının yaş, eğitim durumu, medeni durum, çalışma durumu, gelir düzeyi, algılanan genel fiziksel sağlık düzeyi, yaşanılan semt, COVID-19 geçirme durumu, ilaç kullanımı, sigara tüketimi gibi değişkenlerden etkilendiği belirlendi ( $p < .05$ ).

**Sonuç:** Antalya ili merkez ilçelerinde gerçekleştirilen bu çalışmada, katılımcıların COVID-19'u önleyici bilgi ve davranışları iyi düzeyde olmasına rağmen, sağlık otoriteleri tarafından önerilmeyen bazı uygulamaları yaptıkları belirlendi. Halk sağlığı hemşirelerinin bu tür pandemi durumlarında daha aktif rol oynaması, toplumun doğru ve güvenilir bilgiye erişimini kolaylaştıran bir faktör olarak düşünülmektedir. Halk sağlığı hemşirelerinin Covid-19 pandemisi sırasında karşılaştıkları deneyimlerinden ders alarak gelecekteki pandemileri planlanması güçlü bir halk sağlığı hemşireliği altyapısını geliştirilebilir.

**Anahtar kelimeler:** Bilgi, COVID-19, davranış, halk sağlığı hemşiresi, pandemi

## INTRODUCTION

Novel coronavirus disease is an infectious disease that causes serious respiratory diseases such as pneumonia and pulmonary failure (Ahn et al., 2020). This disease began as an epidemic and became a pandemic within a short time. As of May 2023, more than 765 million confirmed cases and close to 7 million deaths due to COVID-19 have been reported worldwide (WHO, 2023). It is known that almost 100,000 people have died in our country (Worldometer, 2023).

Due to the uncertainties experienced during this pandemic period, during which so many precautions were taken for the first time in the world, and to the emergence of new variants, the high risk of infection, and the poor clinical prognosis, countries have been forced to take drastic measures such as border closures, travel bans, and curfews (Bong et al., 2020; Üstün & Özçiftçi, 2020). With the discovery of COVID-19 vaccines, restrictions have been lifted in many countries due to the increase in vaccination rates, and life has returned to the way it was before the pandemic. COVID-19, which was first declared a public health emergency of international importance on January 30, 2020, by the World Health Organization (WHO), was no longer a public health emergency as of May 05, 2023. However, it has been reported that this does not mean that the disease is no longer a global threat, and that thousands of people around the world continue to struggle for their lives in intensive care. It is emphasized that lessons should be learned from the many mistakes made, including the lack of coordination, equality, and solidarity in the pandemic, where there has been so much loss and damage. Therefore, sharing experiences will guide the planning of measures to be taken in similar situations in the future (UN, 2023).

The measures taken throughout the country during the pandemic process and practices other than vaccination mostly required individual effort and changed according to the awareness of the public about the disease. The high awareness and knowledge of individuals about COVID-19 has emerged as an important factor affecting the society's readiness to accept or implement the measures determined by the health authorities and their determination to guide themselves in the pandemic (Jahan, 2021). For this reason, it is thought that determining the knowledge and preventive behaviors of individuals about the disease will play an important role in achieving the desired success in the fight against similar diseases in the future (Kulbok et al., 2012). This research was conducted by a public health nurse to determine the knowledge of individuals living in Antalya about COVID-19 and their practices to prevent the disease.

## METHODS

**Study Design:** This descriptive study was conducted to determine knowledge and preventive behaviours of individuals aged 18-74 living in Antalya regarding the novel coronavirus disease (COVID-19).

### Research Questions:

1. What level of knowledge do the participants have regarding COVID-19?
2. What is the level of the participants' behaviors to prevent COVID-19?
3. What are the factors affecting the COVID-19 knowledge and preventive behavior levels of the participants?

**Variables of the Study:** Dependent variable; Participants' COVID-19 knowledge mean score and COVID-19 preventive behavior mean score. Independent variable; Participants' age, education status, employment status, employment status during the pandemic, district they live in, income status, presence of diagnosed chronic disease, drug use, smoking status, general

physical health perception, COVID-19 status of themselves or someone around them, perception of risk of transmission of COVID-19.

**Settings of the Study:** The research was carried out in five central districts of Antalya Province (Aksu, Döşemealtı, Kepez, Konyaaltı, Muratpaşa).

**Population of the Study:** The population of the research consisted of a total of 1.005.490 people aged 18-74 living in the central districts of Antalya Province. The sample size of the study was determined as 1000 people to represent age, gender, and regions, as suggested in the WHO's COVID-19 Survey Tool and Guidance (WHO, 2020a). A two-stage stratified sampling method was used to select the individuals to be sampled from the districts proportionally according to population, gender, and age. Firstly, the population to be sampled from the districts was determined by stratification based on district population, and then the sample was determined proportionally by stratifying the districts within themselves based on gender and age group. To reach this determined sample, one Family Health Centre (FHC) was selected from each district. Individuals aged 18-74, living in the central districts of Antalya, registered at the designated FHCs, volunteering to participate in the research and able to speak Turkish were included in this study.

**Data Collection:** The data of the study were collected from the participants through face-to-face interviews. The data were collected by the researcher and interviewers who had received training about the questionnaire, by observing the mask use and social distance rules. Since the WHO recommends that data be collected in a short time on the grounds that information about the disease can change within a short period (WHO, 2020a), the data of the study were collected simultaneously between 15-19 March 2021 in all FHCs. It took approximately 15-20 minutes to complete the questionnaire. After the data were collected, the participants were informed about the disease, including the information and practices given incorrectly in the questionnaires, and informative brochures were distributed.

**Data Collection Tools:** In this study, the data were collected with the "Questionnaire on COVID-19 Disease" prepared by the researchers used the WHO's "COVID-19 Survey Tool and Guidance" (WHO, 2020a) and the Turkish Ministry of Health's "COVID-19 Guidelines" (Ministry of Health, 2020). The opinions of 10 experts were obtained for this questionnaire, and because of the statistical analysis of the scores given by the experts, it was concluded that the content validity index values of the question forms were above .80 and that the experts had reached a consensus. The questionnaire consists of the following parts:

**General Descriptive Form:** There are 14 questions in this section, including questions about general socio-demographic information, presence of chronic disease, medication use, smoking status, perception of general physical health, COVID-19 transmission status, and risk perception regarding COVID-19.

**COVID-19 Information Form:** In this section, there are a total of 15 questions consisting of correct and incorrect information about the cause, transmission route, incubation period, symptoms, and treatment of COVID-19. Among these questions, ten contain correct statements and five contain incorrect statements, and there are three Likert-type answer options, namely "True", "False" and "I don't know". In the evaluation, a correct response is scored as "1", while an incorrect or "I do not know" response is scored as "0" (dichotomous scale), and a total score ranging between 0-15 points can be obtained from the questionnaire. High scores obtained from forms indicate that individuals' general knowledge about COVID-19 is good. The internal consistency coefficient for this questionnaire was found to be Kuder- Richardson 20 (KR-20) = .62.

**COVID-19 Preventive Practices Behaviour Form:** This form constitutes the second part of the COVID-19 Preventive Practices Knowledge Form. In this form, participants are asked to respond to a 5-point Likert-type scale about the frequency of performing the 30 preventive practices against COVID-19 explained above. Evaluation is rated as “Never” =0, “Rarely” =1, “Sometimes” =2, “Frequently” =3, and “Always” =4. In the form, items with correct statements are positively scored, while items with incorrect statements are reverse scored. Scores obtained from the questionnaire range between 0 and 120. A high score indicates that individuals’ behaviours towards protection from COVID-19 are at a good level. The Cronbach alpha value for this questionnaire was found to be .66.

**Ethical Considerations:** This study was performed in line with the principles of the Declaration of Helsinki. Approval was granted by the University Clinical Research Ethics Committee of the Faculty of Medicine (Decision No: KAEK-588, Date: 22.07.2020). Permission was obtained from the Ministry of Health and Antalya Provincial Health Directorate to conduct the research. Permission has been obtained from WHO for the use of the COVID-19 Questionnaire and Guidelines via e-mail. At the same time, the participants were informed about the research and their written consent was obtained.

**Data Analysis:** The Statistical Analysis Software (SAS) package version 9.4 was used for the statistical analyses of the data obtained in the study. Content Validity Index (CVI), Kuder-Richardson (KR-20) coefficient and Cronbach alpha coefficient were used for the validity and reliability of the questionnaires. T-test and one-way analysis of variance (ANOVA) were applied to compare the participants’ knowledge and behavior scores according to the independent variables, and post-hoc analyses were performed with the Bonferroni test. Multiple regression analysis was used to identify predictors of participants' scores on knowledge of COVID-19 and preventive practices. For this, two separate multiple regression models (backward elimination method) were created. CKS and CPPBS scores were determined as the dependent variable. To estimate these dependent variables, a model including all independent variables was established. If the significance level of each independent variable was higher than that determined for the model (.05), this independent variable was removed from the model and the analysis was repeated. In case of more than one large variable, the p-value was excluded from the model with the largest one. The model is complete when all p values are less than .05.

## RESULTS

Among the participants, 36.2% (n=362) were under the age of 35, 51.1% (n=511) were women, 75.9% (n=759) were married, and 66.4% (n=664) had graduated from high school or above. While 58.3% (n=583) of the participants were working, 9.7% (n=97) did not work or were dismissed during the pandemic period, and 41.7% (n=417) had enough income to meet their most basic needs. Moreover, it was determined that 49.9% (n=499) of participants perceived their general health status as very good, while 23.2% (n=232) of them had had COVID-19 themselves, 29% (n=290) had a family member who had had COVID-19, and 77.3% (n=773) had someone in their immediate circle (relatives, neighbors, etc.) who had had COVID-19 (Tables 1-3).

**Table 1.** Comparison of mean scores for knowledge and behaviour regarding COVID-19 and preventive practices according to participants' socio-demographic characteristics

Variables	n	%	CKS		CPPBS	
			Mean	SD	Mean	SD
All Participants	1000	100.0	11.85	2.29	84.58	10.33
Age						
18-24 <sup>1</sup>	141	14.1	12.28	2.11	87.94	9.94
25-34 <sup>2</sup>	221	22.1	12.42	1.88	85.90	7.62
35-44 <sup>3</sup>	242	24.2	11.78	2.53	83.50	9.03
45-54 <sup>4</sup>	188	18.8	11.73	2.47	84.65	11.38
55-64 <sup>5</sup>	136	13.6	11.46	2.05	82.72	11.16
65-74 <sup>6</sup>	72	7.2	10.56	2.19	80.94	14.82
F / p			9.74	<b>.000</b>	7.13	<b>.000</b>
Post-hoc			2>1,3>4,5,6		1>2,3>4>5,6	
Gender						
Male	489	48.9	11.83	2.20	82.20	10.21
Female	511	51.1	11.87	2.37	86.86	9.93
t / p			-0.28	.78	-7.32	<b>.000</b>
Marital Status						
Married	759	75.9	11.80	2.31	84.07	10.15
Single	241	24.1	12.02	2.22	86.19	10.74
t / p			-1.32	.19	-2.78	<b>.006</b>
Education Level						
Non-literate <sup>1</sup>	19	1.9	9.58	2.93	76.84	11.95
Primary school <sup>2</sup>	82	8.2	10.62	1.88	80.15	12.17
Secondary school <sup>3</sup>	235	23.5	11.15	2.31	83.57	10.91
High school <sup>4</sup>	440	44.0	12.06	2.16	85.06	9.49
University and above <sup>5</sup>	224	22.4	12.81	2.05	87.00	9.53
F / p			30.12	<b>.000</b>	10.71	<b>.000</b>
Post-hoc			5>4>3,2>1		5,4>3,2>1	
Employment Status						
Working	583	58.3	12.03	2.18	84.39	10.11
Not working	417	41.7	11.60	2.41	84.85	10.63
t / p			2.98	<b>.003</b>	-0.69	.490

Abbreviations: CKS= COVID-19 Knowledge Score, CPPBS= COVID-19 Preventive Practices Behaviour Score, F=Analysis of Variance, t=Independent t Test, Post-hoc=Bonferroni Correction Test, Bold= p<.05.

The distribution of the participants' means scores for knowledge and behavior related to COVID-19 and preventive practices against the disease is given in Table 1. Accordingly, the participants' mean CKS was 11.85±2.29 and their mean CPPBS was 84.85±10.33. The comparison of the participants' means CKS and CPPBS scores according to the independent variables is given in Tables 1-3. It was determined that the participants' mean CKS scores decreased with advancing age, whereas they increased as education level, income level and perceived general physical health scores increased. In addition, it was found that the mean CKS scores were higher in employees, those living in Aksu and Konyaaltı districts, those who worked during the pandemic period, those who had had COVID-19 themselves, and those with someone in their immediate circle who had had COVID-19. However, the mean scores of medication users were lower than those of non-users (p<.05).

**Table 2.** Comparison of mean scores for knowledge and behaviour regarding COVID-19 and preventive practices according to some descriptive characteristics of participants

Variables	n	%	CKS		CPPBS	
			Mean	SD	Mean	SD
<b>Employment Status During Pandemic</b>						
Flexible work at home <sup>1</sup>	90	9.0	12.68	1.95	87.57	10.64
Rotational work <sup>2</sup>	153	15.3	12.10	2.39	85.10	9.11
Continuous work as before pandemic <sup>3</sup>	297	29.7	11.80	2.15	83.12	9.60
Dismissed during pandemic <sup>4</sup>	97	9.7	11.91	2.28	83.97	10.12
Not working <sup>5</sup>	363	36.3	11.56	2.39	84.99	11.18
F / p			4.93	<b>.001</b>	3.73	<b>.005</b>
Post-hoc			1>2>3,4,5		1>2,5,4,3	
<b>Districts</b>						
Aksu <sup>1</sup>	50	5.0	13.56	1.53	83.20	6.97
Döşemealtı <sup>2</sup>	46	4.6	12.54	2.09	77.43	8.94
Konyaaltı <sup>3</sup>	142	14.2	13.61	1.71	88.27	6.44
Kepez <sup>4</sup>	386	38.6	11.88	2.19	80.92	9.41
Muratpaşa <sup>5</sup>	376	37.6	10.85	2.11	88.01	11.16
F / p			57.78	<b>.000</b>	37.51	<b>.000</b>
Post-hoc			3,1>2>4>5		3,5>1,4>2	
<b>Income Status</b>						
Income does not meet basic needs <sup>1</sup>	69	6.9	11.32	1.92	80.77	8.53
Income only meets basic needs <sup>2</sup>	417	41.7	11.62	2.20	85.53	11.61
Income is slightly above basic needs <sup>3</sup>	413	41.3	12.03	2.33	84.08	9.18
Lives comfortably <sup>4</sup>	101	10.1	12.44	2.54	85.34	9.62
F / p			5.71	<b>.001</b>	4.88	<b>.002</b>
Post-hoc			4>3,2>1		2,4,3>1	

Abbreviations: CKS= COVID-19 Knowledge Score, CPPBS= COVID-19 Preventive Practices Behaviour Score, F=Analysis of Variance, Post-hoc=Bonferroni Correction Test, Bold= p<.05.

It was found that the participants' mean CPPBS scores also decreased with advancing age and increased as their education level increased. In addition, the mean scores were found to be significantly higher in singles, those who worked during the pandemic period, and those living in Muratpaşa and Konyaaltı districts. However, the mean CPPBS scores were found to be significantly lower in those whose income did not meet their basic needs, those who used medication and those who smoked. Moreover, the mean CPPBS scores were higher among participants who had not had COVID-19 themselves or with nobody in their immediate circle who had had COVID-19 (p<.05).

As a result of multiple regression analysis, "education level", "districts" and "perception of infection risk" was found to be the predictor variable on two scale scores. On the other hand, "perception of general physical health" was found to be a risk factor for CKS (p<0.001). In addition, "age group", "gender", "smoking status", "COVID-19 status (family and milieu)" and "CKS" were associated with CPPBS (p<.05) (Table 4).

**Table 3.** Comparison of mean scores for knowledge and behaviour regarding COVID-19 and preventive practices according to some health-related characteristics of participants

Variables	n	%	CKS		CPPBS	
			Mean	SD	Mean	SD
<b>Disease Status</b>						
Present	328	32.8	11.34	2.39	83.09	11.05
Absent	672	67.2	12.10	2.19	85.31	9.89
t / p			4.95	<b>.000</b>	3.21	<b>.001</b>
<b>Drug Use</b>						
Present	296	29.6	11.40	2.49	83.42	11.14
Absent	704	70.4	12.04	2.17	85.07	9.93
t / p			-4.12	<b>.000</b>	-2.31	<b>.020</b>
<b>Smoking Status</b>						
Smoker	444	44.4	11.92	2.29	83.68	10.30
Non-smoker	556	55.6	11.80	2.29	85.31	10.30
t / p			0.84	.400	-2.48	<b>.010</b>
<b>Perception of General Physical Health</b>						
Poor <sup>1</sup>	38	3.8	10.68	2.21	82.50	12.17
Moderate <sup>2</sup>	100	10.0	11.30	2.06	83.57	13.64
Good <sup>3</sup>	363	36.3	11.75	2.22	85.33	11.37
Very good <sup>4</sup>	499	49.9	12.12	2.34	84.40	8.43
F / p			7.91	<b>.000</b>	1.52	.210
Post-hoc			4>3,2>1			
<b>COVID-19 Status (self)</b>						
Has had the disease (test+) <sup>1</sup>	232	23.2	12.03	2.33	84.53	8.62
Suspected case (unconfirmed) <sup>2</sup>	225	22.5	11.70	2.37	82.48	8.62
Has not had the disease (test-) <sup>3</sup>	445	44.5	12.07	2.14	87.09	11.37
Not known <sup>4</sup>	98	9.8	10.79	2.34	78.13	8.76
F / p			9.48	<b>.000</b>	26.51	<b>.000</b>
Post-hoc			3,1,2>4		3>1>2>4	
<b>COVID-19 Status (family)</b>						
Has had the disease (test+) <sup>1</sup>	290	29.0	12.02	2.31	87.71	8.44
Suspected case (unconfirmed) <sup>2</sup>	231	23.1	11.91	2.28	82.08	9.11
Has not had the disease (test-) <sup>3</sup>	386	38.6	11.93	2.23	88.03	11.47
Not known <sup>4</sup>	93	9.3	10.85	2.26	79.23	8.92
F / p			6.79	<b>.000</b>	30.39	<b>.000</b>
Post-hoc			1,3,2>4		3>1,2>4	
<b>COVID-19 Status (milieu)</b>						
Has had the disease (test+) <sup>1</sup>	773	77.3	11.97	2.34	83.29	8.79
Suspected case (unconfirmed) <sup>2</sup>	37	3.7	11.30	2.30	84.92	12.15
Has not had the disease (test-) <sup>3</sup>	126	12.6	11.48	1.94	95.10	12.10
Not known <sup>4</sup>	64	6.4	11.50	2.20	79.34	9.99
F / p			2.98	<b>.030</b>	63.03	<b>.000</b>
Post-hoc			1>4,3,2		3>2,1>4	

Abbreviations: CKS= COVID-19 Knowledge Score, CPPBS= COVID-19 Preventive Practices Behaviour Score, F=Analysis of Variance, t=Independent t Test, Post-hoc=Bonferroni Correction Test, Bold= p<.05.

The main sources of information used by the participants during the COVID-19 pandemic were the mass media (96.4%, n=964) and the statements made by the Ministry of Health (verbal/web page) (95.8%, n=958). Social media was the least used source of information (53.9%, n=539) by the participants. The sources of information that the participants trusted most were healthcare professionals (6.13±1.11) and Ministry of Health statements (5.84±1.27), while the least trusted information sources were the internet (3.71±1.58) and social media (3.18±1.73) (Appendix).



**Table 4.** Results of multiple regression analyses for participants

Model		R <sup>2</sup>	Unstandard coefficients		Beta	t	p	95% Confidence Interval for B		VIF
			B	SE				Lower Bound	Upper Bound	
CKS	(Constant)	0.253	10.44	0.501		20.83	<b>.000</b>	9.46	11.43	
	Education level		0.61	0.07	0.26	8.78	<b>.000</b>	0.48	0.75	1.12
	Perception of general physical health		0.40	0.09	0.14	4.65	<b>.000</b>	0.23	0.56	1.20
	Perception of infection risk		0.15	0.04	0.10	3.50	<b>.000</b>	0.07	0.23	1.08
CPPBS	Districts	0.318	-0.82	0.06	-0.39	-13.73	<b>.000</b>	-0.94	-0.71	1.05
	(Constant)		37.67	3.05		12.36	<b>.000</b>	31.69	43.64	
	Perception of infection risk		1.91	0.19	0.28	10.25	<b>.000</b>	1.55	2.28	1.11
	Age group		-0.94	0.22	-0.13	-4.30	<b>.000</b>	-1.37	-0.51	1.39
	Gender		4.11	0.56	0.20	7.35	<b>.000</b>	3.01	5.21	1.07
	Education level		1.28	0.34	0.12	3.71	<b>.000</b>	0.60	1.95	1.46
	Districts		2.11	0.28	0.22	7.59	<b>.000</b>	1.57	2.66	1.22
	Smoking Status		1.28	0.57	0.06	2.24	<b>.026</b>	0.16	2.40	1.09
	COVID-19 status (family)		0.73	0.29	0.07	2.51	<b>.012</b>	0.16	1.31	1.13
	COVID-19 status (milieu)		1.51	0.31	0.14	4.90	<b>.000</b>	0.90	2.11	1.14
CKS	1.35	0.14	0.30	9.88	<b>.000</b>	1.08	1.61	1.32		

Abbreviations: CKS= COVID-19 Knowledge Score, CPPBS= COVID-19 Preventive Practices Behaviour Score, R<sup>2</sup>= R Squared; SE= Standard Error, VIF= Variance Inflation Factors, Bold= p<.05

## DISCUSSION

Starting in the city of Wuhan in China, the COVID-19 pandemic, which has become a global threat over time, and the subsequent developments have deeply shaken the whole world, not only in terms of health, but in many other respects as well. In our country, too, the effects of the COVID-19 pandemic have been felt in every region and in all human groups (Güreşçi, 2020). This study was conducted to determine the general knowledge of individuals living in Antalya about COVID-19, and their knowledge and practices regarding preventive practices against COVID-19.

In this study, it was determined that the participants' general knowledge about COVID-19, and their knowledge and behaviour levels regarding preventive practices were good. In other studies, it was reported that individuals' knowledge and awareness of the disease was high (Al-Hanawi et al., 2020; Fukuda et al., 2021). The fact that the participants mostly benefitted from the statements by the Ministry of Health and healthcare professionals as sources of information about COVID-19 may have been effective in giving them good general disease information. Public health nurses working on the frontlines in the fight against pandemics in primary care also played an important role in informing the public by providing education about the disease, isolation and quarantine through hotlines and home visits (Edmonds et al., 2020). Therefore, it is the responsibility of both universities and the Ministry of Health to develop and maintain a strong public health nursing infrastructure necessary to provide basic public health services in crises such as the future pandemic.

The age of the participants was determined to be an important variable affecting their levels of knowledge and behaviour regarding COVID-19. It was found that as the participants' age increased, their knowledge and practice levels decreased. This may be due to the decrease in access to information sources and technology use associated with increasing age, as well as to the restrictions preventing the elderly from going out during the pandemic (Abdelhafiz et al., 2020; Karabela et al., 2021). Furthermore, COVID-19 preventive knowledge and behaviour scores were higher in singles, while behaviour scores were higher in women. Since women generally take primary responsibility for meeting their family members' hygiene and healthcare needs, it is an expected result that their knowledge of preventive practices was higher (Alahdal et al., 2020). In another study carried out in our country, it was determined that single participants had more prevention knowledge than married participants, but that their compliance level was lower (Karabela et al., 2021).

Education level also emerged as an important variable that affected individuals' knowledge and practices regarding COVID-19. As their level of education increases, individuals become more skilled in accessing reliable sources of information, synthesising this information, and transforming it into practice (Abdelhafiz et al., 2020; Fukuda et al., 2021). In addition, it was determined that knowledge and preventive practices regarding COVID-19 were better in individuals who worked, continued to work during the pandemic, and had a good income level. It is an expected result that the mean scores were higher, as the fact that individuals are working obliges them to implement preventive measures. At the same time, since individuals' education level and employment status determine their economic conditions and socio-cultural environment, they also affect individuals' access to various information, technology, and hygiene resources (Nakhostin-Ansari et al., 2021).

In a systematic review study to determine how individuals' risk awareness for COVID-19 predicts people's preventive behavior, it has been reported that high risk perception for COVID-

19 predicts compliance with preventive behaviors and social distancing measures (Cipoletta et al., 2022). Similarly, in this study, it was determined that the perception of risk to the disease affects the knowledge and preventive behaviors of individuals. On the other hand, the increase in the participants' knowledge scores as their perceived general physical health scores increased suggests that individuals who care about their health also follow up-to-date disease information (Saeed et al., 2021). Furthermore, the lower preventive behaviors in smokers in this study may be due to the more negative general attitudes of smokers towards health (Sallam et al., 2020). It is known that behaviors such as smoking, unhealthy food intake, alcohol consumption and physical inactivity generally occur together (Meader et al., 2016), and that individuals with these unhealthy behaviors tend to take more health risks. Indeed, it has been reported that these individuals show less compliance with preventive behaviors during the pandemic (Muto et al., 2020; Uddin et al., 2021). Moreover, in this study, it was found that participants' general knowledge scores were higher if they had had COVID-19 themselves, or if someone from their immediate circle had had the disease. This suggests that after the disease, individuals were informed about the disease by healthcare professionals or that they themselves obtained information from various sources.

**Strengths and Limitations of the Study:** In this study, the fact that data were obtained from a large sample group, and that the sample was determined proportionally according to districts, age and gender with the stratified sampling method, is important in terms of representing the population of the sample. However, the inclusion of individuals who presented to FHCs and volunteered to participate in the study limits the generalization of the results to the population. Information on COVID-19 has changed rapidly during the pandemic process. For this reason, it was important for the data of this study to be obtained simultaneously and in a short time by trained healthcare professionals to increase the reliability of the data and to prevent bias. However, since the research was conducted as a master's thesis, the reporting process was prolonged despite the data being collected in a short time. During this period, vaccines have become widespread in our country as well as all over the world, and some measures taken during the pandemic have been lifted or relaxed. Accordingly, the fact that some research results are out of date is also considered as a limitation.

## CONCLUSION

With this study, the importance of providing accurate and up-to-date information about the disease by the health authorities in crisis situations that cause anxiety, fear and panic in the society, such as the COVID-19 pandemic, has been demonstrated once again. The fact that public health nurses who provide health services to individuals, regardless of where they live, play a more active role in this information should be considered as a factor that facilitates the access of the society to accurate information. Therefore, the new roles, increased workload, lack of coordination and equipment, unclear infection control guidelines and conflicting information faced by public health nurses during the Covid-19 pandemic must be considered in structuring a successful organization in future pandemics. Thus, a strong public health nursing infrastructure necessary to provide basic public health services in such crisis situations can be developed.

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**Author Contributions:**

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Design of the study: AA, AM

Acquisition of data for the study: AA

Analysis of data for the study: AA, AM

Drafting the manuscript: AA, AM

Revising it critically for important intellectual content: AA, AM

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