




Araştırma Makalesi/Research Article

## Attitudes and Concerns Towards the COVID-19 Vaccine: Nursing Students' Perspectives

### COVID-19 Aşısına Yönelik Tutumlar ve Çekinceler: Hemşirelik Öğrencilerinin Bakış Açısı

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#### ABSTRACT

**Objective:** The aim of this study is to determine the attitudes and concerns of nursing students towards the COVID-19 vaccine.

**Methods:** This descriptive study was conducted online between April-September 2021 with 238 nursing students. In the study, three data collection tools were used: the Introductory Information Form, the COVID-19 Personal Information and Experience Form, and Attitudes Towards the COVID-19 Vaccine Scale (ATV-COVID-19).

**Results:** In this study, 58.8% of the nursing students were aged 22 and under; 89.9% were women and 78.6% were undergraduate students, and 71.4% were willing to be vaccinated against COVID-19. Nursing students' ATV-COVID-19 positive attitude sub-dimension mean score was 3.90±0.94, and the negative attitude sub-dimension mean score was 3.45±0.73, and it was found that the attitudes towards the COVID-19 vaccines were positive. A statistically significant difference was found between nursing students' willingness to be vaccinated and vaccination according to the national immunization schedule, opinion on childhood vaccinations, and having sufficient and accurate information about vaccines against COVID-19 ( $p<0.05$ ).

**Conclusion:** Nursing students' attitudes towards the COVID-19 vaccine were positive, but there were concerns about various issues, such as the safety of the vaccines and the possibility of harmful/lethal effects or side effects. Having a positive attitude towards other vaccines and having sufficient and accurate information about vaccines against COVID-19 positively affected students' attitudes towards COVID-19 vaccines and the willingness to be vaccinated. It is recommended to carry out campaigns that support positive attitudes towards vaccines, conduct studies on vaccine safety and provide accurate information to promote immunization against epidemiological diseases.

**Keywords:** COVID-19 vaccines, immunization, nursing student, vaccine attitude

#### ÖZ

**Amaç:** Bu çalışmanın amacı hemşirelik öğrencilerinin COVID-19 aşısına yönelik tutum ve çekincelerini belirlemektir.

**Yöntem:** Tanımlayıcı nitelikteki bu çalışma, Nisan-Eylül 2021 tarihleri arasında 238 hemşirelik öğrencisi ile online olarak gerçekleştirildi. Araştırmada Tanıtıcı Bilgi Formu, COVID-19 Kişisel Bilgi ve Deneyim Formu ve COVID-19 Aşısına Yönelik Tutumlar Ölçeği (ATV-COVID-19) olmak üzere üç veri toplama aracı kullanıldı.

**Bulgular:** Bu çalışmada hemşirelik öğrencilerinin %58,8'i 22 yaş ve altında, %89,9'u kadın, %78,6'sı lisans öğrencisiydi ve %71,4'ü COVID-19'a karşı aşı olmayı istiyordu. Hemşirelik öğrencilerinin ATV-COVID-19 olumlu tutum alt boyutu puan ortalaması 3,90±0,94, olumsuz tutum alt boyutu puan ortalaması ise 3,45±0,73 olup, COVID-19 aşılara yönelik tutumlarının olumlu olduğu belirlendi. Hemşirelik öğrencilerinin COVID-19'a karşı aşı olma istekleri ile ulusal aşılamaya göre aşı yaptırılmaları, çocukluk çağı aşılara ilişkin görüşleri, COVID-19 aşılarda yeterli ve doğru bilgiye sahip olmaları arasında istatistiksel olarak anlamlı fark bulunmuştur ( $p<0,05$ ).

**Sonuç:** Hemşirelik öğrencilerinin COVID-19 aşısına yönelik tutumları olumluydu ancak aşılarda güvenliği, zararlı/öldürücü etki veya yan etki olasılığı gibi çeşitli konularda endişeler vardı. Diğer aşılara karşı olumlu tutuma sahip olmak ve COVID-19 aşılarda hakkında yeterli ve doğru bilgiye sahip olmak öğrencilerin COVID-19'a aşılarda karşı tutumunu ve aşı olma isteğini olumlu yönde etkiledi. Epidemiyolojik hastalıklara karşı bağışıklamayı teşvik etmek için aşılara yönelik olumlu tutumları destekleyen kampanyaların yürütülmesi, aşı güvenliği konusunda çalışmalar yapılması ve doğru bilgilerin sağlanması önerilmektedir.

**Anahtar Kelimeler:** Aşılamaya, aşı tutumu, COVID-19 aşılarda, hemşirelik öğrencisi

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## Introduction

Vaccination is shown to be one of the essential achievements of public health and plays a critical role in the protection and maintenance of community health. In light of this, The World Health Organization (WHO) has determined that vaccination is the most appropriate approach to establishing community immunity against COVID-19, which affects the whole world and causes many people to die (Al-Zalfawi et al., 2021). Despite this, some of the individuals in society have concerns and negative attitudes towards vaccination programs. Sharing concerns and uncertainty about vaccines, especially in today's world where rapid communication can be achieved, increase the number of people who question vaccines, seek alternative vaccination programs, and sometimes delay or refuse vaccination (Larson et al., 2014). A study in Turkey showed that the majority of individuals had negative attitudes towards the COVID-19 vaccine (Yılmaz et al., 2021). Unfortunately, these negative attitudes pose a serious public health problem in preventing immunization.

It is important to learn the concerns and attitudes of nurses, who are both a risky group in terms of infectious diseases and an important power that can affect the decisions of individuals in the acceptance or rejection of vaccination by society in terms of protecting and maintaining public health and ensuring immunity against epidemic diseases (Güngör et al., 2022). In studies conducted in our country examining the attitudes of healthcare professionals towards vaccination, it was determined that nurses had less desire to be vaccinated compared to doctors, and the majority of nurses were undecided about or did not want to be vaccinated for COVID-19 (Çatıker et al., 2022; Güngör et al., 2022; Kader et al., 2022). Also, a study showed nursing student have five times more concerns about getting the COVID-19 vaccine than other healthcare students (Gautier et al., 2022).

Nursing students, who are future nurses, are a group with a high risk of encountering infectious diseases that cause COVID-19 and similar pandemics within the scope of clinical practice during their student years. Considering that national vaccination practices were continuing at the time of the research and that the effects of the epidemic still seriously affected society, determining students' attitudes and concerns towards the COVID-19 vaccine will be guiding in planning vaccination strategies against epidemics that may arise in the

future. In addition, the characteristics of nurses may affect their willingness to be vaccinated and thus their attitudes towards COVID-19 vaccines. In this context, the aim of this study is to determine the attitudes and concerns of nursing students towards the COVID-19 vaccine.

## The Study Questions

1. What are the attitudes of nursing students towards the COVID-19 vaccine?
2. What are nursing students' concerns about the COVID-19 vaccine?

## Methods

### Study Design

This descriptive study was planned and reported in accordance with the STROBE Statement.

### Sample

The sample size determined in the sample size analysis performed by assuming the medium effect size ( $d=0.5$ ) was calculated as 210 individuals. The study, whose population was determined as nursing students in Turkey, was carried out with 238 nursing students who could be reached by the snowball sampling method and who met the research criteria.

The inclusion criteria of the research were: (1) accepting to participate in the research; (2) being a nursing student, (3) being able to understand and speak Turkish, and (4) being able to use a smartphone and having an internet connection. The exclusion criteria of the research were: (1) being under the age of 18.

### Data Collection Tools

Three data collection tools were used in the study: the Introductory Information Form, the COVID-19 Personal Information and Experience Form, and the Attitudes Towards the COVID-19 Vaccine Scale (ATV-COVID-19).

*The Introductory Information Form*, which the researchers created by searching the literature, consists of a total of 6 questions containing demographic and personal information such as students' age, gender, educational status, etc (Lucia et al., 2021; Paul et al., 2021).

*The COVID-19 Personal Information and Experience Form* was created by researchers after searching the literature on the subject and consists of eight questions, including the diagnosis of COVID-19, vaccine information, vaccine preference and concerns about vaccines (Lucia et al., 2021; Paul et al., 2021; Yavuz, 2020).

*ATV-COVID-19* was developed by Geniş et al. (2020) and its Turkish validity and reliability study was conducted. ATV-COVID-19 is a five-point

Likert-type scale includes nine items in total and has two sub-dimensions (positive attitude and negative attitude). Items in the sub-dimensions of negative attitude are evaluated inversely. By dividing the total score acquired by adding the item scores in the scale sub-dimension by the total number of items in that sub-dimension, one can arrive at a number between 1 and 5. Positive attitudes about the vaccine are indicated by high positive attitude sub-dimension scores. The high scores obtained from the negative attitude sub-dimension indicate that the negative attitude towards the vaccine is lower. In the study of Geniş et al. (2020), the Cronbach alpha internal consistency coefficient of the scale was found to be high (Cronbach's alpha = 0.80). In this study, Cronbach's alpha coefficient was found to be 0.89, and the scale was determined to be highly reliable.

#### Data Collection

The data of the study was collected online due to COVID-19 pandemic precautions between April and September 2021. While the data was being collected, the link to the data collection forms was sent via Whatsapp® to the nursing students in the researchers' social circle and they were asked to share it with other nursing students in their social circle. The study data were collected from nursing students in Turkey, who could be reached through the snowball method, via online surveys based on self-report were filled out. Participants were informed in writing by adding voluntary informed consent to the front of the data collection forms. After being informed, participants could view the data collection forms by selecting the option indicating that they participated voluntarily.

#### Statistical Analysis

The IBM Statistical Package for Social Sciences (SPSS) 25.0 statistical analysis program was used to analyze the research data. Descriptive analyses (number, percentage, mean, standard deviation, and median), Shaphiro Wilk normality test, nonparametric tests (Mann-Whitney U Test, Kruskal Wallis), Chi-square test were used to evaluate the data, and the Bonferroni test was used for comparison of more than two groups. The statistical significance value was accepted as  $p < 0.05$ .

#### Ethical Considerations

This study was conducted in accordance with the Declaration of Helsinki of the World Medical Association. For the ethical compliance of the study, ethics committee approval (date: 25/03/2021, number:54) from the non-interventional clinical

research ethics committee of a the Haliç University and voluntary informed consent was obtained from each participant as an online form before data collection

#### Results

In this study, 58.8% of nursing students were aged 22 and under, 89.9% were women, and 78.6% were undergraduate students. Only 33.6% of the participants stated they had sufficient and accurate information about vaccines against COVID-19. In this study, 71.4% of nursing students were willing to be vaccinated against COVID-19. The vaccines preferred by those who were willing to be vaccinated were Pfizer/BioNTech 68.2% (n:131), Sinovac 29.2% (n:56), and Sputnik V 2.6% (n:5), respectively. It was determined that 35.5% of the participants who were not willing to have a vaccine against COVID-19 were concerned about the safety of the vaccines, and 22.6% thought that the vaccines had or may have harmful or lethal effects or side effects (Table 1).

**Table 1.** Nursing students' descriptive characteristics and personal knowledge and experiences of COVID-19

Characteristics	n	%
<b>Age</b>		
≤22	140	58.8
>22	98	41.2
<b>Sex</b>		
Female	214	89.9
Male	24	10.1
<b>Educational status</b>		
Undergraduate	187	78.6
Postgraduate	51	21.4
<b>Accommodation</b>		
With family	190	79.8
With friends or in a shared dorm	28	11.8
Alone	20	8.4
<b>Employment status in a healthcare facility</b>		
Intern	31	13
Employed	51	21.5
Unemployed	156	65.5
<b>Vaccination according to national immunization schedule</b>		
Postponed or not had one or more of the vaccinations	30	12.6
Had all the vaccinations fully completed	208	87.4
<b>Opinion on the administration of childhood vaccinations</b>		
It should be left to the parent's decision	47	19.7
It should not be left to the parents' decision	191	80.3

**Table 1.** (Continue) Nursing students' descriptive characteristics and personal knowledge and experiences of COVID-19

Characteristics	n	%
<b>COVID-19 diagnosis</b>		
Diagnosed	43	18.1
Not diagnosed	195	81.9
<b>Vaccinated against COVID-19</b>		
Yes	92	38.7
No	146	61.3
<b>Having sufficient and accurate information about vaccines against COVID-19</b>		
Yes	80	33.6
No	61	25.6
Not sure	97	40.8
<b>Information resources on vaccines against COVID-19<sup>¶</sup></b>		
Television	178	20.1
Social media	174	19.7
Internet	209	23.6
Newspapers	40	4.5
Articles and scientific journals	153	17.3
Social environment and relatives	125	14.1
Other resources	6	0.7
<b>Willing to be vaccinated against COVID-19<sup>§</sup></b>		
Yes	170	71.4
No	25	10.5
Not sure	43	18.1
<b>Vaccine preference against COVID-19<sup>¶</sup></b>		
Pfizer/BioNTech	131	68.2
Sputnik V	5	2.6
Sinovac	56	29.2
<b>Reason for not being willing to have a vaccine against COVID-19 and concerns about vaccines<sup>¶</sup></b>		
Does not have sufficient information about vaccines	12	19.4
Concerned about the safety of vaccines	22	35.5
Does not believe in the protection of vaccines	5	8.0
Thinks that vaccines have/may have harmful/lethal effects or side effects	14	22.6
Thinks his/her own immunity against COVID-19 is sufficient	4	6.5
Other (using protective equipment, not believing in the pandemic, waiting for the national vaccine to be released, and being indecisive)	5	8.0

<sup>¶</sup>Multiple choices can be selected  
<sup>§</sup>Those who had previously been vaccinated were considered "yes"

The findings of the nursing students' ATV-COVID-19 scores were evaluated. Nursing students' ATV-COVID-19 positive attitude sub-dimension mean score was  $3.90 \pm 0.94$ , and the negative attitude sub-dimension mean score was  $3.45 \pm 0.73$ . It was determined that the scores of both sub-dimensions were higher than the average score (2.5) obtained from the sub-dimensions and that the nursing students had positive attitudes towards the COVID-19 vaccine. It was determined that nursing students who had all the vaccinations fully completed according to the national immunization schedule had less negative attitudes towards the COVID-19 vaccine ( $p < 0.05$ ). In this study, it was found that nursing students, those who have the opinion that childhood vaccines should not be left to the parent's decision, those who were vaccinated against COVID-19, those who had sufficient and accurate information about vaccines against COVID-19, those who were willing to be vaccinated against COVID-19, and those who preferred Pfizer/BioNTech and/or Sinovac vaccines against COVID-19 had more positive attitudes and less negative attitudes towards the COVID-19 vaccine (Table 2;  $p < 0.05$ ). There was no significant relationship between ATV-COVID-19 scores and age, sex, educational status, accommodation, employment status and COVID-19 diagnosis ( $p > 0.05$ ).

In this study, a statistically significant difference was found between nursing students' willingness to be vaccinated, accommodation, vaccination according to the national immunization schedule, opinion on childhood vaccinations, and having sufficient and accurate information about vaccines against COVID-19 ( $p < 0.05$ ). It was observed that those who live with their families or alone, had all the vaccinations fully completed, think that childhood vaccinations should not be left to the parents' decision, and have sufficient and accurate information about vaccines against COVID-19 were more willing to be vaccinated against COVID-19 (Table 3).

**Table 2.** Nursing students' characteristics and ATV-COVID-19 scores

ATV-COVID-19 Characteristics	Positive attitude sub-dimension		Negative attitude sub-dimension	
	Mean ± SD	Min-Max	Mean ± SD	Min-Max
	3.90±0.94	1-5	3.45±0.73	1-5
	Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)
<b>Age</b>				
≤22	3.95 ± 0.93	4.00 (1.00)	3.49 ± 0.70	3.60 (0.80)
>22	3.84 ± 0.96	3.87 (1.50)	3.38 ± 0.77	3.40 (0.80)
Z; p	Z= -0.993; p= 0.321		Z= -1.550; p= 0.121	
<b>Sex</b>				
Female	3.91 ± 0.93	4.00 (1.25)	3.46 ± 0.73	3.40 (0.80)
Male	3.86 ± 1.03	4.00 (1.75)	3.35 ± 0.77	3.60 (0.80)
Z; p	Z= -0.027; p=0.079		Z= -0.129; p=0.897	
<b>Educational status</b>				
Undergraduate	3.88 ± 0.71	4.00 (1.25)	3.43 ± 0.73	3.60 (0.80)
Postgraduate	3.98 ± 0.11	4.25 (1.25)	3.50 ± 0.76	3.40 (1.20)
Z; p	Z= -0.251; p=0.802		Z= -0.250; p=0.802	
<b>Accommodation</b>				
With family	3.93 ± 0.96	4.00 (1.25)	3.48 ± 0.76	3.60 (1.00)
With friends or in a shared dorm	3.67 ± 1.01	3.75 (1.50)	3.30 ± 0.60	3.40 (1.00)
Alone	3.96 ± 0.60	3.75 (0.94)	3.30 ± 0.53	3.20 (0.50)
KW; p	KW= 2.253; p=0.324		KW= 4.936; p=0.085	
<b>Employment status in a healthcare facility</b>				
Intern	3.86 ± 1.05	4.00 (1.25)	3.52 ± 0.72	3.60 (0.80)
Employed	4.07 ± 0.89	4.50 (1.25)	3.54 ± 0.82	3.40 (1.20)
Unemployed	3.85 ± 0.94	4.00 (1.00)	3.40 ± 0.70	3.40 (0.70)
KW; p	KW= 0.765; p= 0.682		KW= 2.387; p= 0.303	
<b>Vaccination according to national immunization schedule</b>				
Postponed or not had one or more of the vaccinations	3.59 ± 1.38	3.87 (2.00)	3.12 ± 0.76	3.40 (0.65)
Had all the vaccinations fully completed	3.95 ± 0.86	4.00 (1.25)	3.49 ± 0.72	3.60 (0.80)
Z; p	Z= -0.627; p=0.531		Z= -2.005; p=0.045	
<b>Opinion on the administration of childhood vaccinations</b>				
It should be left to the parent's decision	3.31 ± 1.30	3.50 (2.50)	3.10 ± 0.99	3.00 (1.00)
It should not be left to the parents' decision	4.04 ± 0.05	4.00 (1.00)	3.53 ± 0.63	3.60 (0.60)
Z; p	Z= -3.224; p=0.001		Z= -3.344; p=0.001	
<b>COVID-19 diagnosis</b>				
Diagnosed	3.75 ± 0.92	3.75 (1.50)	3.30 ± 0.54	3.20 (0.80)
Not diagnosed	3.93 ± 0.95	4.00 (1.25)	3.48 ± 0.77	3.60 (0.80)
Z; p	Z= -1.492; p=0.136		Z= -1.704; p=0.088	
<b>Vaccinated against COVID-19</b>				
Yes	4.13 ± 0.77	4.50 (1.00)	3.62 ± 0.62	3.60 (0.80)
No	3.76 ± 1.01	3.75 (1.01)	3.34 ± 0.78	3.40 (0.80)
Z; p	Z= -2.757; p=0.006		Z= -2.429; p=0.015	
<b>Having sufficient and accurate information about vaccines against COVID-19</b>				
Yes <sup>a</sup>	4.14 ± 1.09	4.50 (1.00)	3.53 ± 0.96	3.60 (0.95)
No <sup>b</sup>	3.8 ± 0.73	3.75 (1.13)	3.28 ± 0.51	3.40 (0.60)
Not sure <sup>c</sup>	3.76 ± 0.90	3.75 (1.38)	3.49 ± 0.61	3.60 (0.80)
KW; p	KW= 20.523; p=0.000		KW= 8.790; p=0.012	
Bonferroni	a>b, a>c		a>b	

**Table 2.** (Continue) Nursing students' characteristics and ATV-COVID-19 scores

ATV-COVID-19 Characteristics	Positive attitude sub-dimension		Negative attitude sub-dimension	
	Mean ± SD	Median (IQR)	Mean ± SD	Median (IQR)
<b>Willing to be vaccinated against COVID-19</b>				
Yes <sup>a</sup>	4.15 ± 0.70	4.25 (1.00)	3.61 ± 0.64	3.60 (0.80)
No <sup>b</sup>	2.19 ± 0.96	2.00 (1.50)	2.33 ± 0.63	2.60 (1.10)
Not sure <sup>c</sup>	3.92 ± 0.70	4.00 (1.25)	3.43 ± 0.54	3.40 (0.80)
KW; p	KW= 53.603; p=0.000		KW= 56.335; p=0.000	
Bonferroni	a>b, c>b		a>b, c>b	
<b>Vaccine preference against COVID-19</b>				
<b>Pfizer/BioNTech</b>				
Yes	4.18 ± 0.71	4.25 (1.00)	3.62 ± 0.63	3.60 (0.40)
No	3.56 ± 1.08	3.75 (1.50)	3.24 ± 0.79	3.20 (1.00)
Z; p	Z= -4.567; p=0.000		Z= -3.943; p=0.000	
<b>Sinovac</b>				
Yes	4.17 ± 0.73	4.50 (1.00)	3.71 ± 0.63	3.80 (1.00)
No	3.82 ± 0.99	4.00 (1.31)	3.36 ± 0.74	3.40 (0.80)
Z; p	Z= -2.191; p=0.028		Z= -3.102; p=0.002	

SD: Standard deviation, Z: Mann Whitney U test, KW: Kruskal Wallis-H test  
a,b,c,d: Represents the groups when determining the difference between groups

**Table 3.** The relationship between some characteristics of nursing students and their willingness to be vaccinated against COVID-19

Characteristics	Willing to be vaccinated against COVID-19						Statistic
	Yes		No		Not sure		
	n	% <sup>¶</sup>	n	% <sup>¶</sup>	n	% <sup>¶</sup>	
<b>Age</b>							
≤22	96	68.6	12	8.6	32	22.9	x <sup>2</sup> = 5.915 <sup>†</sup>
>22	74	75.5	13	13.3	11	11.2	p= 0.052
<b>Sex</b>							
Female	154	72.0	20	9.3	40	18.7	x <sup>2</sup> = 3.034 <sup>‡</sup>
Male	16	66.7	5	20.8	3	12.5	p= 0.217
<b>Educational status</b>							
Undergraduate	129	69.0	23	12.3	35	18.7	x <sup>2</sup> = 3.611 <sup>†</sup>
Postgraduate	41	80.4	2	3.9	8	15.7	p= 0.164
<b>Accommodation</b>							
With family	138	72.6	15	7.9	37	19.5	x <sup>2</sup> = 12.834 <sup>‡</sup>
With friends or in a shared dorm	17	60.7	9	32.1	2	7.1	p= 0.008
Alone	15	75.0	1	5.0	4	20.0	
<b>Employment status in a healthcare facility</b>							
Intern	23	74.2	5	16.1	3	9.7	x <sup>2</sup> = 3.958 <sup>†</sup>
Employed	39	76.5	5	9.8	7	13.7	p= 0.412
Unemployed	108	69.2	15	9.6	33	21.2	
<b>Vaccination according to national immunization schedule</b>							
Postponed or not had one or more of the vaccinations	16	53.3	8	26.7	6	20.0	x <sup>2</sup> = 10.181 <sup>†</sup>
Had all the vaccinations fully completed	154	74.0	17	8.2	37	17.8	p= 0.006
<b>Opinion on the administration of childhood vaccinations</b>							
It should be left to the parent's decision	26	55.3	16	34.0	5	10.6	x <sup>2</sup> = 34.808 <sup>†</sup>
It should not be left to the parents' decision	144	75.4	9	4.7	38	19.9	p= 0.000

**Table 3.** (Continue) The relationship between some characteristics of nursing students and their willingness to be vaccinated against COVID-19

Characteristics	Willing to be vaccinated against COVID-19						Statistic
	Yes		No		Not sure		
	<i>n</i>	% <sup>¶</sup>	<i>n</i>	% <sup>¶</sup>	<i>n</i>	% <sup>¶</sup>	
<b>COVID-19 diagnosis</b>							
Diagnosed	30	69.8	7	16.3	6	14.0	$\chi^2= 2.178^\dagger$ $p= 0.337$
Not diagnosed	140	71.8	18	9.2	37	19.0	
<b>Having sufficient and accurate information about vaccines against COVID-19</b>							
Yes	66	82.5	8	10.0	6	7.5	$\chi^2= 12.037^\ddagger$ $p= 0.017$
No	37	60.7	6	9.8	18	29.5	
Not sure	67	69.1	11	11.3	19	19.6	

<sup>¶</sup>Row percentage

<sup>†</sup>Pearson's chi-square test

<sup>‡</sup>Fisher's exact test

### Discussion

Nurses who are at the forefront of the fight against COVID-19 are in the risky group in terms of transmission, but despite this, nurses have more concerns about getting the COVID-19 vaccine than other health professionals (Browne ve diğ, 2021). This situation is similar between nursing students and health students (Gautier et al., 2022). This study sheds light on the attitudes and concerns of student nurses, who are future nurses, towards the COVID-19 vaccine.

In this study, nursing students' ATV-COVID-19 positive attitude sub-dimension mean score was  $3.90 \pm 0.94$ , and the negative attitude sub-dimension mean score was  $3.45 \pm 0.73$ , and it was found that the attitudes towards the COVID-19 vaccines were positive. Similar to the results of this study, in Oruç and Öztürk's (2021) study, where the majority of the sample consisted of nurses, the ATV-COVID-19 positive attitude sub-dimension mean score was 3.54 and the negative attitude sub-dimension mean score was 3.42. Accordingly, it is seen in the literature that nurses' attitudes towards COVID-19 vaccination are positive. No study has been found involving nursing students.

In this study, students who are not sure about having sufficient and accurate information about vaccines against COVID-19 are in the majority. The most common sources for nursing students to learn about vaccines against COVID-19 are the internet, television, and social media, respectively. In a study covering seven countries: Greece, Spain, Cyprus, the Czech Republic, Italy, Albania, and Kosovo, it was found that only 9.5% of nursing students had good knowledge of vaccines against COVID-19 (Patelarou et al., 2021). Alshehry et al. (2022) reported that 52.5% of nursing students had access

to information about vaccines against COVID-19 through social media. In studies in Turkey, it was determined that 56.7% of nursing students had insufficient information about vaccines against COVID-19; 79.2% obtained information from the Ministry of Health of the Republic of Turkey; 68.8% from television; and 55.2% from social media (Köse et al., 2022; Yılmaz et al., 2021). The fact that the students participating in this research have insufficient information about vaccines may be related to the fact that information about vaccines against COVID-19 is mostly obtained from non-scientific sources.

In this study, it was seen that most of the students were willing to be vaccinated against COVID-19, and their vaccine preference against COVID-19 was mostly the Pfizer/BioNTech. The reason for this may be related to the increase in confidence in the Pfizer/BioNTech vaccine due to frequent information about the Pfizer/BioNTech vaccine on the internet and television. This situation is thought to contribute to the increase in the preference rate for the Pfizer/BioNTech vaccine. Köse et al. (2022) reported that there is a relationship between having sufficient knowledge about COVID-19 and COVID-19 vaccines and being vaccinated against COVID-19. In this context, considering that those who have sufficient and accurate information about COVID-19 vaccines have a more positive attitude towards the COVID-19 vaccine, it is noteworthy to provide accurate information with scientific content often broadcast on the internet and television, to control pandemics such as COVID-19.

In the results of this study and the literature, it is seen that the majority of nursing students were willing to be vaccinated against COVID-19, but there are also nursing students who were not

(Alshehry et al., 2022; Köse et al., 2022). The common reasons why the nursing students in this study were not willing to be vaccinated were concerns about the safety of COVID-19 vaccines, thinking that vaccines have or may have harmful or lethal effects or side effects, and not having sufficient knowledge about vaccines. Among the common reasons in other studies are nursing students' doubts about the safety and effectiveness of vaccines, thinking that the vaccine has side effects, and the lack of sufficient evidence for the effectiveness of the vaccine (Alshehry et al., 2022; Patelarou et al., 2021; Yeşiltepe et al., 2021; Zhou et al., 2021).

In this study, the nursing students who had all their vaccinations fully completed according to the national immunization schedule and who thought that childhood vaccinations should not be left to the parents' decision were willing to be vaccinated. Yesiltepe et al. (2021) reported that there is a significant relationship between COVID-19 vaccine hesitancy and having a negative experience with any vaccine among nursing students. Accordingly, it is noteworthy that individuals with positive attitudes towards vaccination against other vaccines also adopt a positive attitude towards vaccines against COVID-19.

### Conclusion and Recommendations

As a result, it was determined that the nursing students had a positive attitude towards the COVID-19 vaccine, and most were willing to have the COVID-19 vaccine. Having insufficient information about COVID-19 vaccines, the safety of the vaccines, and their possible harmful or lethal effects or side effects were among the frequently expressed concerns about vaccines and the reason for not being willing to be vaccinated against COVID-19. In addition, those who had their vaccinations fully and thought that childhood vaccinations should not be left to the parents' decision and thought had sufficient and accurate information about vaccines against COVID-19 had a more positive attitude COVID-19 vaccine and were more willing to be vaccinated against COVID-19. Determining the attitudes and concerns of student nurses towards the COVID-19 vaccine may contribute to promoting immunization against infectious diseases, increasing vaccination rates, and preventing epidemiological diseases. Considering vaccination rates during pandemic periods may change the course of pandemics affecting the whole world it is recommended to carry out campaigns that support positive attitudes towards vaccines, conduct

studies on vaccine safety and provide accurate information.

### Limitations

The limitation of this study is that the data is collected online for a certain period of time and is based on the self-reports of the participants.

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### What did the study add to the literature?

- It was observed that the attitudes of nursing students towards vaccination were mostly positive, but the concerns about vaccination stemmed from not having sufficient information about vaccines against COVID-19 and the safety of the vaccines.
  - It was found that individuals who had a positive attitude towards other vaccines also had a positive attitude towards other vaccines.
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