Original Article

Perceptions of Health Sciences Faculty Students about Covid-19 and their Attitudes towards Covid-19 Vaccination

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Abstract

Objective: It is thought that the COVID-19 pandemic can be controlled with an effective and safe vaccination. The thoughts and attitudes of individuals towards the disease and the vaccine are important for the success of vaccination. This study was conducted to determine the perceptions of health sciences faculty students about COVID-19 and their attitudes towards COVID-19 vaccination.
Method: A cross-sectional descriptive research design was used. The study consisted of students studying at the Faculty of Health Sciences between June and September 2021. A total of 674 students participated in the study.
Findings: The mean age of participants was 20.62±1.88 years, and 85.3% of them were female. Of the participants, 76.1% stated that they had been vaccinated against COVID-19. It was found that positive attitudes towards the COVID-19 vaccine were high among students who were male, were studying nutrition and dietetics, and were 3rd and 4th-year students.
Conclusions: In this study determined that most of the students had received the COVID-19 vaccine. Students obtained the lowest score on the belief sub-dimension of the perception of causes of COVID-19 scale and the highest on the environment sub-dimension. It was found that students' scores on the attitudes towards the COVID-19 vaccine scale were moderate.

Keywords: COVID-19, virus, vaccine, student, perception, attitude

Introduction

As the coronavirus (COVID-19) has spread rapidly across the world since its outbreak, healthcare institutions and medical communities see vaccination as a crucial step in reducing or eliminating the burden of COVID-19. Vaccination campaigns have emerged as a critical technique in the fight against COVID-19 as they can help achieve herd immunity if a large proportion of the population is vaccinated. It often takes years to develop vaccines before they reach the clinical application phase, but scientists raced to develop safe and effective COVID-19 vaccines as soon as possible in 2020 (Hossain et al., 2021). Although vaccination is one of the most successful ways to control infectious diseases, there has been an increase in anti-vaccine movements in recent years, which has contributed to vaccine hesitancy even among healthcare professionals (Pérez-Rivas et al., 2022). However, if vaccine hesitancy is more than the level of what is expected, it will not be possible to reach the desired immunity level in the society (Aslantekin-Ozcoban et al., 2021).

It is important to know the attitudes and perceptions of students studying health sciences towards the COVID-19 vaccine, as they will be the health professionals of the future and take responsibility for running vaccination programs. This can help them relieve their fears and anxieties (Pérez-Rivas et al., 2022). This research was conducted to determine the perception of health sciences students about COVID-19 and their attitudes towards COVID-19 vaccination.

Material and Method

This study is a cross-sectional, descriptive study conducted with students who were studying at Tokat Gaziosmanpasa University Faculty of Health Sciences between June and September 2021 and who agreed to participate in the study voluntarily. The data were collected online via a form created on Google Forms using the self-report method. Students were invited to the study by sharing the online survey link on social media tools (Twitter, Instagram, Facebook, WhatsApp, and e-mail).

Population and Sample of the Study

Population of the Study: The population of the research consisted of a total of 1302 students registered at Tokat Gaziosmanpasa University Faculty of Health Sciences Departments of Midwifery (333), Nursing (522), Physiotherapy and Rehabilitation (230), Nutrition and Dietetics (64), and Emergency Aid and Disaster Management (153).

Sample of the Study: The minimum sample size in the study was calculated on the G*Power 3.1.9 software. The sample size was calculated as 297 subjects using the sampling the known universe formula based on statistical power of 95% and a margin of error of 0.05. The study sample consisted of 674 students who could be reached during the time when the study was conducted and voluntarily accepted to participate in the study.

Data Collection Tools: The study data were collected by using a descriptive information form to determine the descriptive characteristics of students, the "Perception of Causes of COVID-19 Scale," and the "Attitudes towards the COVID-19 Vaccine Scale."

Descriptive Information Form: This form, which was prepared by the researchers, consists of 10 questions. It includes questions about the socio-demographic and COVID-19-related characteristics of students.

Attitudes towards the COVID-19 Vaccine Scale (ATV-COVID19): This scale was developed by Genis et al. (2020). It consists of 9 items and has two sub-dimensions (positive and negative attitudes). It has a 5-point Likert-type scale with options ranging between 1 “strongly disagree” and 5 “strongly agree.” Items on the negative attitudes sub-dimension are reverse scored. High scores on the positive attitudes sub-dimension indicate that the attitude towards the vaccine is positive. The score of the negative attitudes sub-dimension is calculated after its items are reversed, and high scores on this sub-dimension indicate that the negative attitude towards the vaccine is low. Cronbach’s alpha reliability coefficient of the scale is 0.80 (Genis et al., 2020).

Perception of Causes of COVID-19 Scale (PCa-COVID-19): This scale, developed by Genis et al. (2020), consists of 14 items and three sub-dimensions. It has a 5-point Likert-type scale with options ranging between 1 “strongly disagree” and 5 “strongly agree.” The first sub-dimension is named “conspiracy,” which covers conspiracy theories (biological warfare, efforts to sell vaccines, etc.) that are frequently voiced in the media about the causes of the disease. The second is the “environment” sub-dimension, which shows the social and physical environment as possible causes of the COVID-19 outbreak. This sub-dimension is about reasons, such as unhealthy diet, global warming, and pollution of natural resources. The last sub-dimension is named “belief”. The items on this sub-dimension relate to perceptions about religious and spiritual explanations as the cause of COVID-19. High scores on a given domain indicate a high level of perception about that sub-dimension. Cronbach’s alpha reliability coefficient of the scale is 0.88 (Genis et al., 2020).

Data analysis: Data were analyzed on IBM SPSS AMOS software. Path analysis was used to examine factors affecting the scale scores. Analysis results were presented as mean±standard deviation and median (minimum-maximum) values for quantitative data, and as frequency and percentage values for categorical data. The significance level was accepted as $p<0.050$.

Ethical Aspects of the Research: Before the research was initiated, the permission of the Ministry of Health Scientific Research Platform and the approval of the Social and Human Sciences Research Ethics Committee of Tokat Gaziosmanpasa University were obtained (session number: 12; decision number: 12.11; date: June 8, 2021; issue: E-33490967-044-45654). In addition, the permission of the relevant faculty was obtained.

Findings

The mean age of students participating in the research was 20.62±1.88 years, and 85.3% of them were female. Of the participants, 40.7% were studying in the midwifery department, and 27.6% were first-year students. It was determined that 94.4% of students did not have a chronic disease, 79.7% had not been diagnosed with COVID-19, 73.7% had a relative diagnosed with

COVID-19, 84.1% were non-smokers, 76.1% had been vaccinated against COVID-19, and that 77.4% wanted to have the COVID-19 vaccine (Table 1).

Descriptive statistics for ATV-COVID19 and PCa-COVID-19 scale scores are shown in table 2.

The path coefficient between the mean score on the positive attitude sub-dimension of the attitudes towards the COVID-19 vaccine scale and age was found to be statistically significant (β=-0.038; p=0.030). Accordingly, a one-unit increase in age decreased the mean scores on the positive attitude sub-dimension of the attitudes towards the COVID-19 vaccine scale by 0.038. The path coefficient between the mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and the department (nutrition and dietetics) was found to be statistically significant (β=0.377; p=0.037). The score of the students in the nutrition and dietetics department on the positive attitude sub-dimension of the ATV-COVID19 scale was 0.377 points higher than the score of those in the midwifery department. The path coefficient between the mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and school year (3) was found to be statistically significant (β=0.190; p=0.010). The positive attitude score of 3rd-year students was 0.190 points higher than the score of 1st-year students. In addition, the path coefficient between the mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and school year (4) was found to be statistically significant (β=0.176; p=0.037). The positive attitude score of 4th-year students was 0.176 points higher than the score of 1st-year students. The path coefficient between mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and the status of having been vaccinated against COVID-19 (yes) was found to be statistically significant (β=0.218; p=0.005). The positive attitude score of students who had been vaccinated against COVID-19 was 0.218 points higher than the score of those who had not been vaccinated yet. The path coefficient between the mean score on the positive attitude sub-dimension of the ATV-COVID19 scale and the status of wanting to have the COVID-19 vaccine (yes) was found to be statistically significant (β=0.720; p<0.001). The positive attitude score of students who wanted to be vaccinated against COVID-19 was 0.72 points higher than the score of those who did not. The path coefficient between the mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and the status of wanting to have the COVID-19 vaccine (no) was found to be statistically significant (β=-0.598; p<0.001). The positive attitude score of students who did not want to be vaccinated against COVID-19 was 0.598 points lower than the score of those who were undecided. The path coefficient between the mean scores on the positive attitude sub-dimension of the ATV-COVID19 scale and gender (male), department (nursing, emergency aid and disaster management, and physiotherapy and rehabilitation), school year (2), the presence of a chronic illness (yes), the status of having been diagnosed with COVID-19 (yes), the presence of a relative diagnosed with COVID-19 (yes), and the status of smoking (yes) was not found to be statistically significant (Table 3).

The path coefficient between the mean scores on the negative attitude sub-dimension of the attitudes towards the COVID-19 vaccine scale and the male gender was found to be statistically significant (β=-0.216; p=0.011). The negative attitude score of males was 0.216 points lower than the score of females. The path coefficient between the mean scores on the negative attitude sub-dimension of the ATV-COVID19 scale and the nursing department was found to be statistically significant (β=-0.137; p=0.029). The negative attitude score of students in the nursing department was 0.137 points higher than the score of those in the midwifery department. The path coefficient between the mean scores on the negative attitude sub-dimension of the ATV-COVID19 scale and the nutrition and dietetics department was found to be statistically significant (β=0.387; p=0.019). The negative attitude score of students in the nutrition and dietetics department was 0.387 points higher than the score of those in the midwifery department. The path coefficient between the mean scores on the negative attitude sub-dimension of the ATV-COVID19 scale and the school year (3) was found to be statistically significant (β=-0.149; p=0.026). The negative attitude score of 3rd-year students was 0.149 points higher than the score of 1st-year students. The path coefficient between the mean scores on the negative attitude sub-dimension of the ATV-COVID19 scale and the school year (4) was found to be statistically significant (β=-0.190; p=0.014). The negative attitude score of 4th-year students was 0.190 points lower than the score of 1st-year students. The path coefficient between the mean scores on the negative attitude sub-

dimension of the ATV-COVID19 scale and the status of wanting to have the COVID-19 vaccine (yes) was found to be statistically significant (β=-0.622; p=0.001). The negative attitude score of students who wanted to have the COVID-19 vaccine was 0.622 points higher than the score of students who did not. The path coefficient between the mean scores on the negative attitude sub-dimension of the ATV-COVID19 scale and age, department (emergency aid and disaster management, and physiotherapy and rehabilitation), school year (2), the presence of a chronic illness (yes), the status of having been diagnosed with COVID-19 (yes), the presence of a relative diagnosed with COVID-19 (yes), the status of smoking (yes), the status of having been vaccinated against COVID-19 (yes), and the status of wanting to have the COVID-19 vaccine (no) was not found to be statistically significant (Table 3).

The relationship between the conspiracy sub-dimension score of the perception of causes of COVID-19 scale and some variables is given in Table 4. Accordingly, the path coefficient between the conspiracy sub-dimension score and the school year (2) was found to be statistically significant (β=0.289; p<0.001). The conspiracy sub-dimension score of the 2nd-year students was 0.289 points higher than the score of 1st-year students. The path coefficient between the conspiracy sub-dimension score of the PCa-COVID-19 scale and the school year (3) was found to be statistically significant (β=0.228; p=0.003). The conspiracy sub-dimension score of the 3rd-year students was 0.228 points higher than the score of 1st-year students. The path coefficient between the conspiracy sub-dimension score of the PCa-COVID-19 scale and the status of wanting to have the COVID-19 vaccine (yes) was found to be statistically significant (β=0.368; p=0.001). The conspiracy sub-dimension score of students who wanted to have the COVID-19 vaccine was 0.368 points lower than the score of students who were undecided. The path coefficient between the conspiracy sub-dimension score of the PCa-COVID-19 scale and the status of wanting to have the COVID-19 vaccine (no) was found to be statistically significant (β=0.300; p=0.017). The conspiracy sub-dimension score of students who did not want to have the COVID-19 vaccine was 0.300 points higher than the score of students who were undecided. The path coefficient between the conspiracy sub-dimension score of the PCa-COVID-19 scale and age (p=0.530), gender (male) (p=0.227), department (nursing, p=0.835; nutrition and dietetics, p=0.249; emergency aid and disaster management, p=0.593; physiotherapy and rehabilitation, p=0.709), school year(4) (p=0.067), the presence of a chronic disease (yes) (p=0.960), the status of having been diagnosed with COVID-19 (yes) (p=0.916), the presence of a relative diagnosed with COVID-19 (yes) (p=0.506), the status of smoking (yes) (p=0.160), and the status of having been vaccinated against COVID-19 (yes) (p=0.156) was not found statistically significant.

The path coefficient between the environment sub-dimension score of the perception of Causes of COVID-19 Scale and the department (emergency aid and disaster management) was found to be statistically significant (β=0.201; p=0.045). The environment sub-dimension score of students in the emergency and disaster management department was 0.201 points higher than the score of those in the midwifery department. The path coefficient between the environment sub-dimension score of the PCa-COVID-19 scale and the department (physiotherapy and rehabilitation) was found to be statistically significant (β=0.204; p=0.012). The environment sub-dimension score of those in the physiotherapy and rehabilitation department was 0.204 points higher than the score of those in the midwifery department. The path coefficient between the environment sub-dimension score of the PCa-COVID-19 scale and the school year (2) was found to be statistically significant (β=0.457; p<0.001). The environment sub-dimension score of the 2nd-year students was 0.457 points higher than the score of 1st-year students. The path coefficient between the environment sub-dimension score of the PCa-COVID-19 scale and the school year (3) was found to be statistically significant (β=0.280; p=0.002). The environment sub-dimension score of 3rd-year students was 0.28 points higher than the score of 1st-year students. The path coefficient between the environment sub-dimension score of the PCa-COVID-19 scale and age (p=0.617), gender (male) (p=0.053), department (nursing, p=0.125; nutrition and dietetics, p=0.568), school year (4) (p=0.640), the presence of chronic disease (yes) (p=0.292), the status of having been diagnosed with COVID-19 (yes) (p=0.421), the presence of a relative diagnosed with COVID-19 (yes) (p=0.780), the status of smoking (yes) (p=0.855), the status of having been vaccinated against

COVID-19 (yes) (p=0.504), the status of wanting to be vaccinated against COVID-19 (yes) (p=0.416), and the status of wanting to be vaccinated against COVID-19 (no) (p=0.732) was not found to be statistically significant (Table 4).

The path coefficient between the belief sub-dimension score of the perception of causes of COVID-19 scale and the status of smoking (yes) was found to be statistically significant (β=-0.290; p=0.007). The belief sub-dimension score of students who smoked was 0.29 points lower than that of non-smokers. The path coefficient between the belief sub-dimension score of the PCa-COVID-19 scale and the status of having received the COVID-19 vaccine (yes) was statistically significant (β=-0.256; p=0.005). The belief sub-dimension score of students who had been vaccinated against COVID-19 was 0.256 points lower than the score of those who had not. The path coefficient between the belief sub-dimension score of the PCa-COVID-19 scale and age (p=0.582), gender (male) (p=0.425), department (nursing, p=0.272; nutrition and dietetics, p=0.546; emergency aid and disaster management, p=0.051; physiotherapy and rehabilitation, p=0.471), school year (2, p=0.317; 3, p=0.062; 4, p=0.565), the presence of chronic disease (yes) (p=0.189), the status of having been diagnosed with COVID-19 (yes) (p=0.150), the status of having a relative diagnosed with COVID-19 (yes) (p=0.711), the status of wanting to be vaccinated against COVID-19 (yes) (p=0.061), and the status of wanting to be vaccinated against COVID-19 (no) (p=0.907) was not statistically significant (Table 4).

The standard and non-standard path coefficients are presented in figure 1 and figure 2.

Table 1. Frequency and percentage values for categorical data

	Frequency	%
Gender		
Female	575	85.3
Male	99	14.7
Department		
Midwifery	274	40.7
Nursing	236	35.0
Nutrition and Dietetics	23	3.4
Emergency Aid and Disaster Management	41	6.1
Physiotherapy and Rehabilitation	100	14.8
School year		
1	186	27.6
2	178	26.4
3	186	27.6
4	124	18.4
Presence of chronic diseases		
Yes	38	5.6
No	636	94.4
COVID-19 Diagnosis		
Yes	137	20.3
No	537	79.7
Presence of a relative diagnosed with COVID-19		

Yes	497	73.7
No	177	26.3
Do you smoke?		
Yes	107	15.9
No	567	84.1
Have you received the COVID-19 vaccine?		
Yes	513	76.1
No	161	23.9
Do you want to have the COVID-19 vaccine?		
Yes	522	77.4
No	56	8.4
Undecided	96	14.2
Total	**674**	**100.0**

Table 2. Descriptive statistics on scale scores

	Mean ± Standard Deviation	Median (Min. - Max.)
Positive Attitude towards COVID-19	3.68 ± 0.97	3.75 (1-5)
Negative Attitude towards COVID-19	3.43 ± 0.84	3.4 (1- 5)
Conspiracy subscale of the causes of COVID-19	2.78 ± 0.93	3 (1-5)
Environment subscale of the causes of COVID-19	2.92 ± 0.95	3 (1-5)
Belief subscale of the causes of COVID-19	2.50 ± 1.04	2.33 (1-5)

Table 3. Determination of factors affecting scores on the Attitudes towards COVID-19 Vaccine Scale by path analysis

			β_0	β_1	Standard Error	Test Stat.	p	R^2
Positive Attitude towards COVID-19	<---	Age	-0.076	-0.038	0.017	-2.170	**0.030**	0.179
Positive Attitude towards COVID-19	<---	Gender (Male)	-0.031	-0.083	0.093	-0.891	0.373	
Positive Attitude towards COVID-19	<---	Department (Nursing)	-0.050	-0.098	0.069	-1.420	0.156	
Positive Attitude towards COVID-19	<---	Department (Nutrition and Dietetics)	0.073	0.377	0.181	2.084	**0.037**	
Positive Attitude towards COVID-19	<---	Department (Emergency Aid and Disaster Management)	0.061	0.240	0.137	1.750	0.080	
Positive Attitude towards COVID-19	<---	Department (Physiotherapy and Rehabilitation)	0.044	0.117	0.092	1.272	0.203	

Positive Attitude towards COVID-19	<---	School year (2)	-0.003	-0.007	0.074	-0.095	0.925	
Positive Attitude towards COVID-19	<---	School year (3)	0.090	0.190	0.073	2.587	**0.010**	
Positive Attitude towards COVID-19	<---	School year (4)	0.073	0.176	0.085	2.083	**0.037**	
Positive Attitude towards COVID-19	<---	Presence of chronic disease (Yes)	0.006	0.025	0.142	0.177	0.859	
Positive Attitude towards COVID-19	<---	Have you been diagnosed with COVID-19? (Yes)	-0.019	-0.045	0.082	-0.555	0.579	
Positive Attitude towards COVID-19	<---	Do you have a relative diagnosed with COVID-19? (Yes)	0.016	0.035	0.075	0.470	0.639	
Positive Attitude towards COVID-19	<---	Do you smoke? (Yes)	-0.035	-0.090	0.090	-1.001	0.317	
Positive Attitude towards COVID-19	<---	Have you had the COVID-19 vaccine? (Yes)	0.099	0.218	0.077	2.829	**0.005**	
Positive Attitude towards COVID-19	<---	Do you want to have the COVID-19 vaccine? (Yes)	0.320	0.720	0.079	9.173	**<0.001**	
Positive Attitude towards COVID-19	<---	Do you want to have the COVID-19 vaccine? (No)	-0.176	-0.598	0.119	-5.030	**<0.001**	
Negative Attitude towards COVID-19	<---	Age	0.007	0.003	0.016	0.183	0.855	0.144
Negative Attitude towards COVID-19	<---	Gender (Male)	-0.091	-0.216	0.084	-2.552	**0.011**	
Negative Attitude towards COVID-19	<---	Department (Nursing)	0.078	0.137	0.063	2.185	**0.029**	
Negative Attitude towards COVID-19	<---	Department (Nutrition and Dietetics)	0.084	0.387	0.165	2.348	**0.019**	
Negative Attitude towards COVID-19	<---	Department (Emergency Aid and Disaster Management)	0.026	0.092	0.125	0.734	0.463	
Negative Attitude towards COVID-19	<---	Department (Physiotherapy and Rehabilitation)	0.006	0.014	0.084	0.167	0.867	
Negative Attitude towards COVID-19	<---	School year (2)	-0.067	-0.128	0.068	-1.886	0.059	
Negative Attitude towards COVID-19	<---	School year (3)	-0.080	-0.149	0.067	-2.234	**0.026**	
Negative Attitude towards COVID-19	<---	School year (4)	-0.088	-0.190	0.077	-2.463	**0.014**	

Negative Attitude towards COVID-19	<---	Presence of chronic disease (Yes)	-0.001	-0.003	0.130	-0.027	0.979	
Negative Attitude towards COVID-19	<---	Have you been diagnosed with COVID-19? (Yes)	0.043	0.090	0.074	1.211	0.226	
Negative Attitude towards COVID-19	<---	Do you have a relative diagnosed with COVID-19? (Yes)	0.042	0.080	0.068	1.175	0.240	
Negative Attitude towards COVID-19	<---	Do you smoke? (Yes)	0.004	0.009	0.082	0.115	0.908	
Negative Attitude towards COVID-19	<---	Have you had the COVID-19 vaccine? (Yes)	0.012	0.023	0.070	0.331	0.741	
Negative Attitude towards COVID-19	<---	Do you want to have the COVID-19 vaccine? (Yes)	0.310	0.622	0.072	8.696	**<0.001**	
Negative Attitude towards COVID-19	<---	Do you want to have the COVID-19 vaccine? (No)	-0.058	-0.177	0.108	-1.633	0.102	

β_0: Standardized coefficient; β_1: Non-standardized coefficient

Table 4. Determination of factors affecting scores on the Perception of Causes of COVID-19 Scale by path analysis

			β_0	β_1	Standard Error	Test Stat.	p	R^2
Cause of COVID-19: Conspiracy	<---	Age	0.023	0.061	0.098	0.628	0.530	0.081
Cause of COVID-19: Conspiracy	<---	Gender (Male)	-0.045	-0.022	0.018	-1.208	0.227	
Cause of COVID-19: Conspiracy	<---	Department (Nursing)	-0.008	-0.015	0.072	-0.208	0.835	
Cause of COVID-19: Conspiracy	<---	Department (Nutrition and Dietetics)	-0.043	-0.219	0.190	-1.153	0.249	
Cause of COVID-19: Conspiracy	<---	Department (Emergency Aid and Disaster Management)	0.020	0.077	0.145	0.535	0.593	
Cause of COVID-19: Conspiracy	<---	Department (Physiotherapy and Rehabilitation)	-0.014	-0.036	0.097	-0.373	0.709	
Cause of COVID-19: Conspiracy	<---	School year (2)	0.136	0.289	0.078	3.689	**<0.001**	
Cause of COVID-19: Conspiracy	<---	School year (3)	0.109	0.228	0.077	2.947	**0.003**	
Cause of COVID-19: Conspiracy	<---	School year (4)	0.068	0.163	0.089	1.832	0.067	
Cause of COVID-19: Conspiracy	<---	Presence of chronic disease (Yes)	0.002	0.007	0.150	0.050	0.960	

Cause of COVID-19: Conspiracy	<---	Have you been diagnosed with COVID-19? (Yes)	-0.004	-0.009	0.086	-0.105	0.916	
Cause of COVID-19: Conspiracy	<---	Do you have a relative diagnosed with COVID-19? (Yes)	-0.025	-0.052	0.078	-0.665	0.506	
Cause of COVID-19: Conspiracy	<---	Do you smoke? (Yes)	-0.052	-0.133	0.095	-1.404	0.160	
Cause of COVID-19: Conspiracy	<---	Have you had the COVID-19 vaccine? (Yes)	-0.052	-0.115	0.081	-1.420	0.156	
Cause of COVID-19: Conspiracy	<---	Do you want to have the COVID-19 vaccine? (Yes)	-0.164	-0.368	0.083	-4.450	**<0.001**	
Cause of COVID-19: Conspiracy	<---	Do you want to have the COVID-19 vaccine? (No)	0.088	0.300	0.125	2.394	**0.017**	
Cause of COVID-19: Environment	<---	Age	0.018	0.009	0.019	0.500	0.617	0.085
Cause of COVID-19: Environment	<---	Gender (Male)	-0.071	-0.195	0.101	-1.938	0.053	
Cause of COVID-19: Environment	<---	Department (Nursing)	-0.057	-0.301	0.196	-1.535	0.125	
Cause of COVID-19: Environment	<---	Department (Nutrition and Dietetics)	0.021	0.085	0.149	0.572	0.568	
Cause of COVID-19: Environment	<---	Department (Emergency Aid and Disaster Management)	0.074	0.201	0.100	2.003	**0.045**	
Cause of COVID-19: Environment	<---	Department (Physiotherapy and Rehabilitation)	0.093	0.204	0.081	2.520	**0.012**	
Cause of COVID-19: Environment	<---	School year (2)	0.211	0.457	0.080	5.734	**<0.001**	
Cause of COVID-19: Environment	<---	School year (3)	0.112	0.280	0.092	3.043	**0.002**	
Cause of COVID-19: Environment	<---	School year (4)	-0.017	-0.035	0.075	-0.468	0.640	
Cause of COVID-19: Environment	<---	Presence of chronic disease (Yes)	0.039	0.163	0.154	1.055	0.292	
Cause of COVID-19: Environment	<---	Have you been diagnosed with COVID-19? (Yes)	-0.030	-0.071	0.088	-0.805	0.421	
Cause of COVID-19: Environment	<---	Do you have a relative diagnosed with COVID-19? (Yes)	-0.010	-0.023	0.081	-0.279	0.780	

Cause of COVID-19: Environment	<---	Do you smoke? (Yes)	-0.007	-0.018	0.097	-0.182	0.855	
Cause of COVID-19: Environment	<---	Have you had the COVID-19 vaccine? (Yes)	-0.025	-0.056	0.083	-0.668	0.504	
Cause of COVID-19: Environment	<---	Do you want to have the COVID-19 vaccine? (Yes)	-0.030	-0.069	0.085	-0.813	0.416	
Cause of COVID-19: Environment	<---	Do you want to have the COVID-19 vaccine? (No)	0.013	0.044	0.129	0.342	0.732	
Cause of COVID-19: Belief	<---	Age	0.021	0.011	0.021	0.550	0.582	0.049
Cause of COVID-19: Belief	<---	Gender (Male)	-0.030	-0.088	0.110	-0.797	0.425	
Cause of COVID-19: Belief	<---	Department (Nursing)	-0.041	-0.179	0.163	-1.099	0.272	
Cause of COVID-19: Belief	<---	Department (Nutrition and Dietetics)	-0.023	-0.049	0.082	-0.604	0.546	
Cause of COVID-19: Belief	<---	Department (Emergency Aid and Disaster Management)	0.074	0.419	0.214	1.957	0.051	
Cause of COVID-19: Belief	<---	Department (Physiotherapy and Rehabilitation)	-0.027	-0.079	0.109	-0.721	0.471	
Cause of COVID-19: Belief	<---	School year (2)	-0.038	-0.088	0.088	-1.001	0.317	
Cause of COVID-19: Belief	<---	School year (3)	-0.070	-0.163	0.087	-1.869	0.062	
Cause of COVID-19: Belief	<---	School year (4)	-0.022	-0.058	0.100	-0.575	0.565	
Cause of COVID-19: Belief	<---	Presence of chronic disease (Yes)	0.049	0.222	0.169	1.314	0.189	
Cause of COVID-19: Belief	<---	Have you been diagnosed with COVID-19? (Yes)	0.054	0.139	0.097	1.439	0.150	
Cause of COVID-19: Belief	<---	Do you have a relative diagnosed with COVID-19? (Yes)	0.014	0.033	0.088	0.371	0.711	
Cause of COVID-19: Belief	<---	Do you smoke? (Yes)	-0.102	-0.290	0.107	-2.719	**0.007**	
Cause of COVID-19: Belief	<---	Have you had the COVID-19 vaccine? (Yes)	-0.106	-0.256	0.091	-2.809	**0.005**	
Cause of COVID-19: Belief	<---	Do you want to have the COVID-19 vaccine? (Yes)	-0.071	-0.175	0.093	-1.877	0.061	

Cause of COVID-19: Belief	<---	Do you want to have the COVID-19 vaccine? (No)	-0.004	-0.017	0.141	-0.117	0.907	

β_0: Standardized coefficient; β_1: Non-standardized coefficient

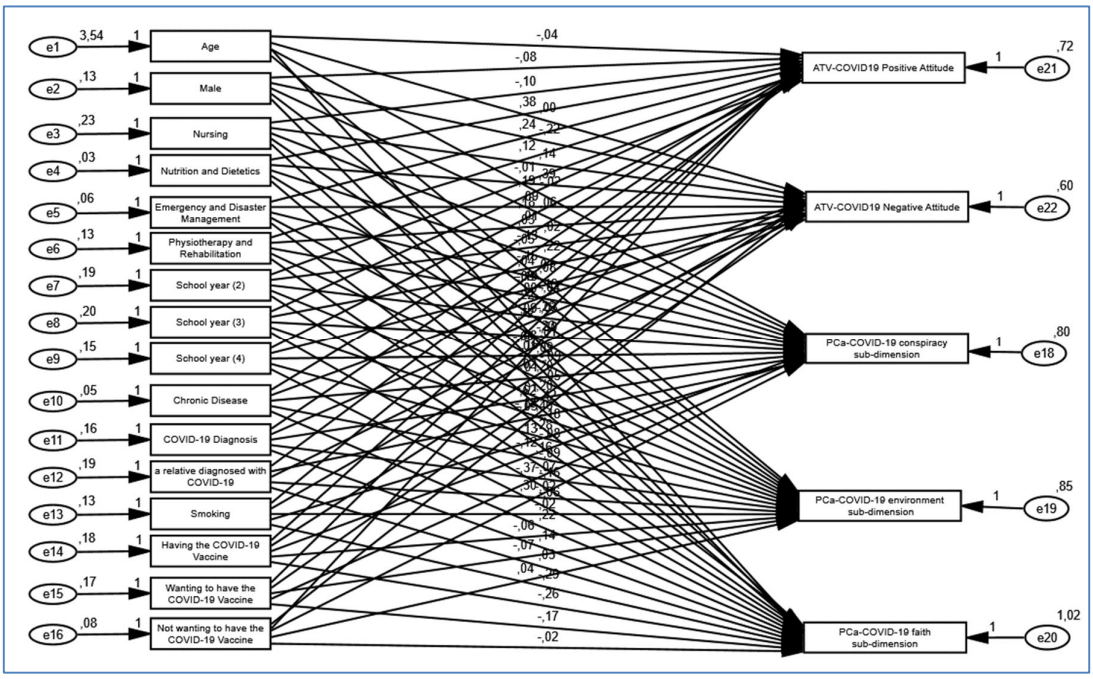

Figure 1. Non-standard path coefficients

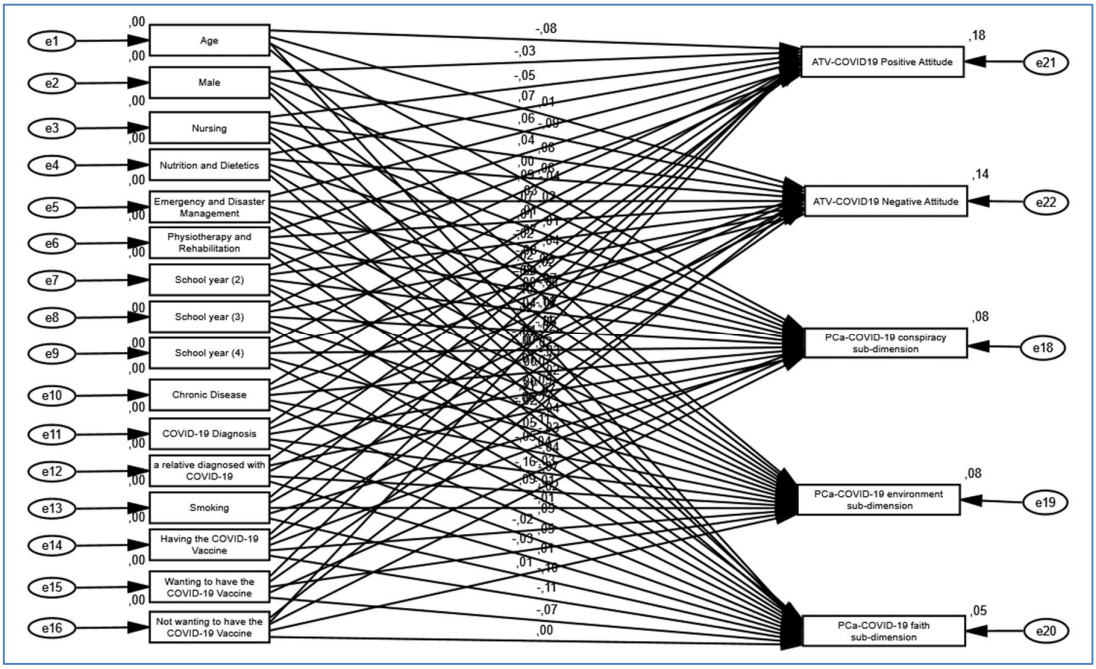

Figure 2. Standard path coefficients

Discussion

The COVID-19 virus has infected millions of people since November 2019. The development of an effective and safe vaccine in the fight against this pandemic is a very important step, and for this purpose, vaccine production studies with different technologies have been carried out by various countries and companies across the world (Yildirim-Bas, 2021). It was found that most of the students (76.1%) in our study had been vaccinated against COVID-19. This result is an important finding in the fight against the pandemic. Similar to our study, in a study conducted with midwifery students, 65.7% of participants stated that they did not want to have the COVID-19 vaccine (Aslantekin-Ozcoban et al., 2021). In a study conducted with medical faculty students, it was stated that 60.1% of the students wanted to be vaccinated against COVID-19, 14.2% refused the vaccine, and that 25.7% were undecided (Kaya et al., 2021). In a study conducted in India, it was stated that 70% of the participants were willing to have the COVID-19 vaccine and that 49.4% believed that people could be protected with the COVID-19 vaccine (Kishore et al., 2021). In a study evaluating the perceived stress levels of parents about the pandemic and its effects on vaccine hesitancy, it was reported that 85.7% of parents thought positively about vaccines, 43.4% would definitely have the COVID-19 vaccine, and that participants with high stress levels had more vaccine hesitancy (Yilmazbas et al., 2021).

In our study, the mean score of students on the positive attitude sub-dimension of the attitudes towards the COVID-19 vaccine scale was 3.68±0.97, and the mean score on the negative attitude sub-dimension was 3.43±0.84. High scores on both sub-dimensions are in favor of positive attitudes. Compared to the results of similar studies, it can be said that the scores of students participating in our study on the attitudes towards the COVID-19 vaccine scale were at a moderate level (Alicilar et al., 2022; Ercelik & Camlica, 2022). The positive attitudes of students in our study towards the vaccine may have been because they study health sciences and the content of their courses include information about vaccines.

In our study, it was found that as students' age increased, their scores on the positive attitude sub-dimension of the attitudes towards COVID-19 vaccine scale decreased. In other words, younger students had a more positive attitude towards the COVID-19 vaccine than older students. In a similar study conducted in Turkey, it was shown

that individuals between the ages of 18 and 25 had higher positive attitude scores towards the COVID-19 vaccine (Ozturk-Copur & Karasu, 2022). However, in a study conducted in France, it was stated that individuals under the age of 35 refused the vaccine and had negative thoughts (Ward et al., 2020). In our study, the scores of the students in the nutrition and dietetics department on the positive attitude sub-dimension of the ATV-COVID19 scale were higher than the scores of students in the midwifery department. In addition, the scores of 3rd and 4th-year students on the positive attitude sub-dimension of the ATV-COVID19 scale were higher than the scores of 1st-year students. This may have been because there are subjects related to vaccines in the course content of departments such as midwifery and nursing, and therefore students have knowledge about the importance of vaccines as the school years progress. In our study, the scores of the students who had been vaccinated against COVID-19 on the positive attitude sub-dimension of the ATV-COVID19 scale were found to be higher than those of the students who had not.

In the study, the scores of male students on the negative attitude sub-dimension of the ATV-COVID19 scale were found to be higher than those of female students. According to the interpretation of the scale, high scores on these sub-dimensions indicate that the negative attitude towards the vaccine is lower (Genis et al., 2020). There are results similar to those of our study in the literature (Ercelik & Camlica, 2022; Mose et al., 2022). Considering the inter-department comparison of scores on the negative attitude sub-dimension of the ATV-COVID19 scale, the students in the nursing and nutrition and dietetics departments had higher scores than the students in the midwifery department. When students' scores on the negative attitude sub-dimension of the ATV-COVID19 scale were examined according to school years, it was found that the scores of 3rd and 4th-year students were lower than those of 1st-year students. Accordingly, it can be said that 1st-year students had less negative attitudes towards the COVID-19 vaccine than 3rd and 4th-year students.

In our study, the mean scores of students on the sub-dimensions of the perception of causes of COVID-19 scale were as follows: 2.78±0.93 on the conspiracy sub-dimension; 2.92±0.95 on the environment sub-dimension; 2.50±1.04 on the belief sub-dimension. The lowest score was obtained from the belief sub-dimension, while the highest score was obtained from the environment sub-dimension. In a similar study, the mean sub-dimension scores were calculated as follows: 3.45±0.99 on the conspiracy sub-dimension; 3.23±0.89 on the environment sub-dimension; 2.70±1.19 on the belief sub-dimension. In the same study, it was reported that male students' scores on the conspiracy sub-dimension of the PCa-COVID-19 scale were significantly higher than the mean scores of females. That is, more male participants than female participants believed that COVID-19 was a conspiracy theory (Aydin et al., 2021). However, in our study, no statistically significant relationship was found between those who thought that COVID-19 was a conspiracy theory in terms of gender. The scores of 2nd and 3rd-year students on the conspiracy sub-dimension of the PCa-COVID-19 scale were significantly higher than the scores of the 1st-year students.

In our study, it was determined that the scores of students in the Emergency Aid and Disaster Management and Physiotherapy and Rehabilitation departments had higher scores on the environment sub-dimension of the PCa-COVID-19 scale than the scores of students in the midwifery department. Accordingly, more students in Emergency and Disaster Management and Physiotherapy and Rehabilitation departments were likely to think that the COVID-19 pandemic was caused by people harming the environment than students in the midwifery department. In addition, it was found that the scores of 2nd and 3rd-year students on the same sub-dimension were higher than the scores of 1st-year students. It was determined in our study that the students who smoked had lower scores on the belief sub-dimension of the PCa-COVID-19 scale than those who did not. In other words, the belief that the COVID-19 pandemic was our destiny or that it was God's wrath against social corruption was higher among non-smokers than among students who smoked. In addition, it was found that the scores of students who had received the COVID-19 vaccine on the belief sub-dimension of the PCa-COVID-19 scale were lower than the scores of those who had not.

Conclusion: In this study, which was conducted to determine the perception and attitudes of health sciences faculty students towards the COVID-19 vaccine, it was determined that most of the students had received the COVID-19 vaccine. Students obtained the lowest score on the belief sub-dimension of the perception of causes of

COVID-19 scale and the highest on the environment sub-dimension. It was found that students' scores on the attitudes towards the COVID-19 vaccine scale were moderate.

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