EHD
Available online at: https://dergipark.org.tr/tr/pub/jnef
Doi: 10.46483/deuhfed.1104030

ORIGINAL ARTICLE / ORİJİNAL MAKALE

COVID-19 Perceptions, Avoidance and Vaccine Attitudes of Nursing Students: Case of Türkiye

Hemşirelik Öğrencilerinin COVID-19 Algıları, Kaçınma ve Aşı Tutumlarının İncelenmesi: Türkiye Örneği

Gülşen Ulaş Karaahmetoğlu[1] Zeynep Arabacı[2]

[1]PhD. RN. Assis. Prof., Kastamonu University Faculty of Health Sciences, Kastamonu, Türkiye
[2] Ph.D., RN., Kastamonu University, Tosya Vocational School, Department of Health Care Services, Kastamonu, Türkiye

Recieved: 15.04.2022, **Accepted:** 20.10.2023

Abstract

Objective: This study was carried out to investigate the factors related to the attitudes of nursing students to avoid COVID-19, their perceptions of the disease, and their attitudes towards the vaccine.

Methods: The study used a descriptive cross-sectional study design. Nursing students (n = 354) studying at a university in Turkey formed the sample. Online forms included the descriptive characteristics survey form, the avoidance from COVID-19 attitudes scale, the COVID-19 disease perception scale and the COVID-19 vaccine attitudes scale.

Results: The students' mean COVID-19 disease perception scale dangerousness subscale score was 3.86 ± 0.77 and mean contagiousness subscale score was 3.73 ± 0.99. The students' mean avoidance from COVID-19 attitudes scale cognitive avoidance subscale score was 2.29 ± 0.92 and mean behavioral avoidance subscale score was 3.40 ± 1.04. the students' mean COVID-19 vaccine attitudes scale positive attitude subscale score was 3.62 ± 1.08 and mean negative attitude subscale score was 3.42 ± 0.89. the women had higher scores than the men ($p<.05$). The students whose mother was postgraduate had lower mean COVID-19 vaccine attitudes scale scores than others ($p<.05$).

Conclusions: In our study, it was found that there was a difference between genders in the COVID-19 Illness Perception Scale and Avoidance Attitudes Scale scores, and the avoidance attitude scale scores of second-year students were higher than senior students.

Keywords: COVID-19, Vaccine, Nursing, Nurse Education, Public Health

Correspondence Author: Zeynep ARABACI Ph.D., RN., Kastamonu University, Tosya Vocational School, Department of Health Care Services, Kastamonu, Türkiye. **Email:** arabacizeynep@hotmail.com, **Telefon:** +90 366 280 22 09.

Cite This Article: Karaahmetoğlu GU, Arabacı Z. COVID-19 Perceptions, Avoidance and Vaccine Attitudes of Nursing Students: Case of Türkiye. Journal of Nursing Effect. 2024;17(1): 111-122.

Journal of Nursing Effect published by Cetus Publishing.

Öz

Amaç: Bu çalışma, hemşirelik öğrencilerinin COVID-19'dan kaçınma tutumları, hastalık algıları ve aşıya yönelik tutumları ile ilgili faktörleri araştırmak amacı ile yapıldı.

Yöntem: Tanımlayıcı-kesitsel bir çalışma tasarımı kullanıldı. Türkiye'de bir üniversitede öğrenim gören hemşirelik öğrencileri (n = 354) örneklemi oluşturdu. Çevrimiçi uygulanan formlar, Tanımlayıcı özellikler anket formu; COVID-19 dan Kaçınma Tutumları Ölçeği; COVID-19 Hastalık Algısı Ölçeği ve COVID-19 Aşısına Yönelik Tutumlar Ölçeğini içeriyordu.

Bulgular: Öğrencilerin, COVID-19 Hastalık Algısı Ölçeği tehlikelilik alt boyutu puan ortalamaları 3.86 ± 0.77 ve bulaştırıcılık puan ortalamaları 3.73 ± 0.99 bulundu. COVID-19'dan Kaçınma Tutumları Ölçeği bilişsel kaçınma alt boyutu puan ortalamaları 2.29 ± 0.92 ve davranışsal kaçınma puan ortalamaları 3.40 ± 1.04 saptandı. COVID-19 Aşısına Yönelik Tutumlar Ölçeği olumlu tutum puan ortalamaları 3.62 ± 1.08 ve aşıya yönelik olumsuz tutum puan ortalamaları 3.42 ± 0.89 olarak hesaplandı. Kadınların puanları erkeklerden daha yüksek bulundu ($p<.05$). Annesi üniversite mezunu olan öğrencilerin aşıya yönelik tutumlar ölçeği puan ortalamaları diğerlerinin puanlarından daha düşük saptandı ($p<.05$).

Sonuç: Çalışmamızda, COVID-19 Hastalık Algısı Ölçeği ve Kaçınma Tutumları Ölçeği puanlarında cinsiyetler arasında farklılık olduğu ve çalışmamız ikinci sınıf öğrencilerinin kaçınma tutum ölçeği puanlarının son sınıf öğrencilerine göre daha yüksek olduğu bulundu.

Anahtar Kelimeler: COVID-19, Aşı, Hemşirelik, Hemşirelik Eğitimi, Halk Sağlığı

INTRODUCTION

The COVID-19 pandemic remains a significant threat to life and a global issue which has affected every area of people's lives and led to fear and anxiety (Al-Amer et al., 2022; Albaqawi et al. 2020; Fauci, Lane & Redfield, 2020; Inocian et al., 2021). According to the 12 August 2023 data, there have been 101.419 losses of lives in Turkey and 6.954.336 losses of lives worldwide due to COVID-19 (WHO Coronavirus Latest Situation Covid 19, 2023). People across the world think that the disease is dangerous and worry that their family members / themselves may catch the virus (Abdelhafiz et al., 2020). Since the beginning of the pandemic all countries have taken many public health measures. Although these measures, which have included lockdown, mask-wearing and social and physical distancing, aimed to control the pandemic, they have not been able to reduce the number of cases and deaths. Additionally they have affected the physiological stages of life and led to many psychosocial problems, impairment of the quality of life, concerns related to education and health and a global economic recession (Mehta, 2020). In the fight against the COVID-19 virus, which has had a profound global impact, developing safe and effective vaccines suitable for all age groups is of critical importance in being able to control and, ultimately, end the pandemic (Marco, 2020; Yıldırım Baş, 2021). Every country has put vaccination programs using different vaccines into place, in order to limit the number of cases and subsequent deaths, and to foster a return to normalization by ensuring that herd immunity can be achieved through vaccination (Cyranoski, 2020; Mahase, 2021). Vaccines have historically been among the most effective and important

public health practices, both in terms of their cost and reliability, and their role in preventing death and disability, safeguarding people's health of people and mitigating against infectious diseases (Arısoy et al., 2015; Andre et al., 2008; Remy, Zöllner & Heckmann, 2015; Yıldırım Baş, 2021). Nevertheless, people have often distrusted the effectiveness and levels of protection of the COVID-19 vaccines; concerns about their negative effects and vaccine hesitancy have been present ever since the vaccines were rolled out (Rhodes et al., 2020). This causes people to overrate the risks and underrate the benefits of vaccines. Indeed, the World Health Organization declared that vaccine hesitancy was among the ten most serious threats to world health (Javier et al, 2021).

According to the data of 14 June 2023, Turkey administered 139.694.693 doses of vaccine, and countries around the world recently administered 13.397.153.690 doses of vaccine (WHO Coronavirus Vaccination Situation COVID-19). At the national level the high vaccination rates are crucial; however, in order to fully get rid of the pandemic the vaccination rates should be at maximum level worldwide (Yıldırım Baş, 2021; Salmon et al., 2015). Indecision or unwillingness of COVID-19 vaccination may seriously endanger the herd immunity which is tried to be created (Al-Amer et al., 2022; Randolp & Barreiro, 2020). In order to succeed in the struggle against the pandemic it is important for communities to widely accept the vaccines besides the effectiveness of the vaccines. Therefore it is important to investigate the determinants of the vaccination behavior to plan effective vaccination strategies (Noushad et al., 2021).

Examining the literature the main obstacles for vaccination intention of healthcare professionals are lack of data, unknown risks, security concerns, doubts about effectiveness of the vaccines and lack of knowledge (Meyer, Gjorgjieva & Rosica, 2021: Dror et al, 2020; Maltezou et al., 2021; Wang et al., 2020). A study demonstrates that even vaccine with optimal qualities has a rejection rate of 30% (Motta, 2021).

In the literature, there are studies in which students from health departments were refused vaccination due to the side effects of vaccines, although they are at high risk (Abalkhail et al., 2017; Sandler et al., 2018; Lucia, Kelekar &Afonso; 2021). Another study states that vaccination rates are high in university students (Seanehia et al., 2017). A study on how nursing students tried to protect themselves during the COVID-19 pandemic revealed that they generally showed a high level of adherence to preventive measures (Albaqawi et al, 2020; Sun et al., 2020; Yuan et al., 2020; Gohel et al., 2021). However, in one study, only 45% of nursing students planned to receive the COVID-19 vaccine (Manning et al., 2021).

As nursing students give direct care to patients during their applied training, they have a higher risk of encountering the virus (Albaqawi et al, 2020). Therefore it is crucial for them to receive vaccine in protection from the disease. In addition, as future professionals they have a crucial role in discussing with the general public the kinds of interventions and vaccinations aimed at ensuring health and preventing diseases (Alshehry et al., 2021; Jamshidi et al., 2016). We believe that the study will provide important information on preventive behaviors and attitudes towards vaccines in infectious diseases.

Objectives of the Research

The aim of this study is to determine the perceptions and protective behaviors of nursing students about COVID-19 and their attitudes

towards vaccines. The information obtained from this study may contribute to the literature on this topic and provide guidance the implementation of immunization programs.

Research Questions

What is the level of students' attitudes towards COVID-19 vaccine?

What is the level of students' avoidance attitudes from COVID-19?

What is the level of students' perception of COVID-19 disease?

Do students' introductory characteristics affect their attitudes to avoid COVID-19, perception of disease, and attitudes towards vaccine?

METHODS

The type of the Research

We conducted the study as a descriptive cross-sectional study.

The Place and Time of the Research

We conducted the study in the Nursing Department of the Faculty of Health Sciences of a university in Turkey. We collected the data between 1-15 June 2021 through an online survey system.

The Universe/Sample of the Research

The target population of the study was made up of 482 students who were studying in the Department of Nursing in the Faculty of Health Sciences in a university in Turkey. We determined the sample of the study according to the prevalence formula in known populations (n=214). We completed the study with 354 students who agreed to take part.

Data Collection Instrument- Validity and Reliability Information

The data were collected using the Descriptive Characteristics Survey Form, the COVID-19 Vaccine Attitudes Scale, the Avoidance from COVID-19 Attitudes Scale and the COVID-19 Disease Perception Scale.

The Descriptive Characteristics Survey Form: This survey form, which was prepared by the researches, has nine questions about the students' descriptive characteristics.

The Avoidance from COVID-19 Attitudes Scale: This scale was developed by Geniş et al., 2020. It has ten items and two subscales (Cognitive Avoidance and Behavioral Avoidance). It is a five-point Likert-type scale in which statements are marked "Strongly disagree (1)", "Disagree (2)", "Undecided (3)", "Agree (4)", "Strongly agree (5)". There are no reverse items in the scale. A value from 1 to 5 is obtained by dividing the total score obtained by adding up the scores for each subscale by the number of items in that subscale. High scores point to a high degree of avoidance in that specific area. The cronbach alpha coefficient was 0.88. In our study, the cronbach alpha coefficient was detected as 0.76.

The COVID-19 Disease Perception Scale: Developed by Geniş et al., 2020, the scale has seven items. The five point likert scale has two subscales as "Dangerousness" and "Contagiousness". The statements are assessed as "Strongly disagree (1)", "Disagree (2)", "Undecided (3)", "Agree (4)", "Strongly agree (5)". The first subscale called Dangerousness includes the perceptions and beliefs concerning the danger created by COVID-19. The second subscale called Contagiousness comprises of perceptions concerning the contagiousness of the disease. Some items in the Dangerousness subscale of the scale are coded reversely. A value from 1 to 5 is obtained by dividing the total score obtained by adding up the item scores in each subscale by the number of items in that subscale. High scores in the Dangerousness subscale

indicate that the dangerousness perception conerning the disease is high, while high scores in the Contagiousness subcale indicate that the virus has a high contagiousness. Reverse items are coded as 1→5; 2→4; 3→3; 4→2; 5→1. The cronbach alpha coefficient was 0.74. In our study, the cronbach alpha coefficient was detected as 0.73.

The COVID-19 Vaccine Attitudes Scale: This scale was developed by Geniş et al., 2020. It has nine items and two subscales (positive and negative attitude). It is a five-point Likert-type scale in which statements are marked as "Strongly disagree (1)", "Disagree (2)", "Undecided (3)", "Agree (4)", "Strongly agree (5)". Items in the negative attitude subscale are reverse-scored. A value from 1 to 5 is obtained by dividing the total score obtained by adding up the item scores in the subscale by the number of items in that subscale. High scores for the positive attitude subscale demonstrate a positive attitude toward vaccines. Items in the negative attitude subscale are reverse-scored; high scores for this subscale point to a less negative attitude towards vaccines. The cronbach alpha coefficient was 0.80. In our study, the cronbach alpha coefficient was detected as 0.74.

Evaluation of the Data

The data obtained from the research were analyzed in computer environment. Number, percentage, mean and standard deviation were used as descriptive statistical methods in the evaluation of the data. Normal distribution assumptions were taken into account in the application of the hypothesis tests. In the analysis of the data, the t-test was used to compare the quantitative continuous data between two independent groups, and the ANOVA test was used to compare the quantitative continuous data between more than two independent groups. Scheffe test was used to determine the differences after the ANOVA test. Pearson correlation and linear regression analysis were applied to determine the relationship between the scales. The findings were evaluated at the 95% confidence interval at the 5% significance level. Cronbach's α coefficients were calculated for validity and reliability.

Variables of the study

The dependent variable; COVID-19 Avoidance Attitudes Scale; COVID-19 Disease Perception Scale and Attitudes Towards COVID-19 Vaccine Scale.

Independent variable; Introductory characteristics of students

Ethical Aspect of the Research

Prior to the application we received written permission from the Faculty of Health Sciences Deaconship. We also obtained permission to use the scale from the developer via e-mail. We received ethics committee approval from Clinical Research Ethics Committee (dated 27.05.2021 and numbered 2020-KAEK-143-92).

RESULTS

Descriptive features of the participants

78.2% of the students participating were female, 38.7% were junior students, 49.4% had mothers who were primary school graduates and 30.5% had fathers who were primary school graduates (Table 1).

Scale Score Means and Cronbach Alpha Values

According to the data of our study we found the Cronbach's Alpha value to be 0.73 for the Disease Perception Scale, 0.76 for the Avoidance Attitudes Scale and 0.74 for the Vaccine Attitudes Scale. We determined that the scales used are highly reliable (Table 2).

Table 1. Descriptive features of the participants (n=354)

Variable	n	%
Gender		
Female	277	78.2
Male	77	21.8
Grade		
Freshman	67	18.9
Sophomore	75	21.2
Junior	137	38.7
Senior	75	21.2
Maternal Education Level		
Primary	175	49.4
Secondary	54	15.3
High school	63	17.8
University	37	10.5
Other	25	7.1
Paternal Education Level		
Primary	108	30.5
Secondary	70	19.8
High school	102	28.8
University	69	19.5
Gradute	5	1.4

Table 2. Distribution of the Mean Subscale Scores of the Students and the Cronbach's Alpha Values of the Scales

Subscale	n	M ± SD	Min - Max	Cronbach's Alpha Value
The Disease Perception Scale				
Dangerousness	354	3.86 ± 0.77	1.00 - 5.00	0.73
Contagiousness	354	3.73 ± 0.99	1.00 - 5.00	
The Avoidance Attitudes Scale				
Cognitive avoidance	354	2.29 ± 0.92	1.00 - 5.00	0.76
Behavioral avoidance	354	3.40 ± 1.04	1.00 - 5.00	
The Vaccine Attitudes Scale				
Positive attitude	354	3.62 ± 1.08	1.00 - 5.00	0.74
Negative attitude	354	3.42 ± 0.89	1.00 - 5.00	

In the COVID-19 Disease Perception Scale we found the students' mean score to be 3.86 ± 0.77 for the dangerousness subscale and 3.73 ± 0.99 for the contagiousness subscale. In the Avoidance from COVID-19 Attitudes Scale we found the students' mean score to be 2.29 ± 0.92 for the cognitive avoidance subscale and 3.40 ± 1.04 for the behavioral avoidance subscale. For the COVID-19 Vaccine Attitudes Scale the students' mean score was 3.62 ± 1.08 for the positive attitude subscale and 3.42 ± 0.89 for the negative attitude subscale (Table 2).

Mean Scores of Scales by Descriptive Characteristics

The t-test was conducted to determine whether there was a statistically significant difference between the mean Avoidance from COVID-19 Attitudes Scale (AAS), COVID-19 Disease Perception Scale (DPS) and COVID-19 Vaccine Attitudes Scale (VAS) scores and the variables. A statistically significant difference was found between all mean scale scores and the gender variable ($p<.05$). The women's scores were higher than those of the men (Table 3).

A statistically significant difference was found between the mean AAS and VAS scores and the grade variable ($p<.05$). The mean scores of sophomore students were higher than those of the senior students. A statistically significant difference was found between the mean scale scores and the gender variable ($p<.05$). The women's scores were higher than those of the men (Table 3).

A statistically significant difference was found between the mean DPS and VAS scores and the maternal education level variable ($p<.05$). The students whose mother was university graduate had lower mean DPS scores than those whose mother was primary school graduate or literate. The students whose mother was university graduate had lower mean VAS scores than others (Table 3).

A statistically significant difference was found between the mean DPS scores and the paternal education level variable ($p<.05$). The students whose father was primary school graduate had higher mean scores than those whose father was high school and university graduate (Table 3).

Table 3. Comparison of the Introductory Characteristics of the Students and the Mean Scale Scores

		The Avoidance Attitudes Scale	The Disease Perception Scale	The Vaccine Attitudes Scale
Variable	**n**	**M ± SD**	**M ± SD**	**M ± SD**
Gender				
Male	77	2.51 ± 0.89	3.54 ± 0.86	3.27 ± 0.70
Female	277	2.94 ± 0.67	3.86 ± 0.74	3.57 ± 0.74
*t / p		-3.961 / **.00**	-2.970 / **.00**	-3.289 / **.00**
Grade				
Freshman	67	2.89 ± 0.63	3.85 ± 0.72	3.56 ± 0.67
Sophomore	75	3.04 ± 0.65	3.94 ± 0.62	3.69 ± 0.74
Junior	137	2.79 ± 0.75	3.72 ± 0.82	3.44 ± 0.71
Senior	75	2.70 ± 0.86	3.70 ± 0.86	3.40 ± 0.84
**F / p		3.037 / **.03**	1.833 / .14	2.657 / **.04**
		2 > 4		2 > 4
Maternal Education Level				
Primary	175	2.83 ± 0.76	3.86 ± 0.74	3.57 ± 0.74
Secondary	54	2.98 ± 0.59	3.77 ± 0.85	3.61 ± 0.70
High School	63	2.75 ± 0.73	3.70 ± 0.77	3.55 ± 0.79
University	37	2.88 ± 0.76	3.41 ± 0.78	3.06 ± 0.64
Other	25	2.88 ± 0.88	4.06 ± 0.67	3.44 ± 0.64
**F / p		0.749 / .56	3.785 / **.01**	4.212 / **.00**
			1 > 4, 5 > 4	1 > 4, 2 > 4, 3 > 4
Paternal Education Level				
Primary	108	2.84 ± 0.73	4.04 ± 0.74	3.59 ± 0.76
Secondary	70	2.92 ± 0.66	3.83 ± 0.72	3.55 ± 0.76
High School	102	2.82 ± 0.77	3.61 ± 0.78	3.47 ± 0.65
University	69	2.81 ± 0.81	3.64 ± 0.78	3.44 ± 0.82
Graduate	5	2.86 ± 0.84	3.37 ± 0.92	3.04 ± 0.24
**F / p		0.253 / .91	5.510 / **.00**	1.088 / .36
			1> 3, 1 > 4	

*t-test, ** ANOVA test, (p<.05)

Correlation Between Scales

We conducted the Correlation Test to determine the correlation between the Disease Perception Scale, the Avoidance Attitudes Scale and the Vaccine Attitudes Scale. According to the test results we found a significantly weak correlation between the Disease Perception Scale and the Avoidance Attitudes Scale in a positive direction. We found a moderate correlation between the Disease Perception Scale and the Vaccine Attitudes Scale in a positive direction. We found a very weak correlation between the Avoidance Attitudes Scale and the Vaccine Attitudes Scale in a positive direction (Table 4).

Table 4. Correlation between the Disease Perception, Avoidance Attitudes and Vaccine Attitudes Scales

		Avoidance	Disease	Vaccine
Avoidance	r	1		
	p	.00		
	n	354		
Disease	r	0.183**	1	
	p	.00	.00	
	n	354	354	
Vaccine	r	0.111*	0.444**	1
	p	.02	.00	.00
	n	354	354	354

Table 5. Linear Regression of the Effect of Avoidance Attitude and Illness Perception on Attitudes Towards Vaccine

The dependent variable	Independent variable	ß	t	p	F	Model (p)	R^2
Attitude Towards Vaccine	Stable	1.895	9.313	.000	41.871	.000	0.188
	Avoidance Attitude	0.011	0.223	.824			
	Disease Perception	0.418	8.858	.000			

Regression Between Scales

The regression analysis conducted to determine the cause-effect relationship between avoidance attitude, perception of illness and attitude towards vaccine was found to be significant (F=41.871; p=.000<.05). 18.8% of the total difference in the attitude towards the vaccine was explained by the avoidance attitude and the perception of the disease (R^2=0.188). Avoidance attitude did not affect the attitude towards the vaccine (p=.824>.05). A perception of illness increased the degree of positive attitude towards vaccine (ß=0.418) (Table 5).

Of the students, 80.8% stated that they had not had COVID-19, 79.1% had a relative who had had COVID-19, 73.7% had lost noone to COVID-19, 92.4% had no chronic disease and 85.6% had not received the COVID-19 vaccine (Diagram 1).

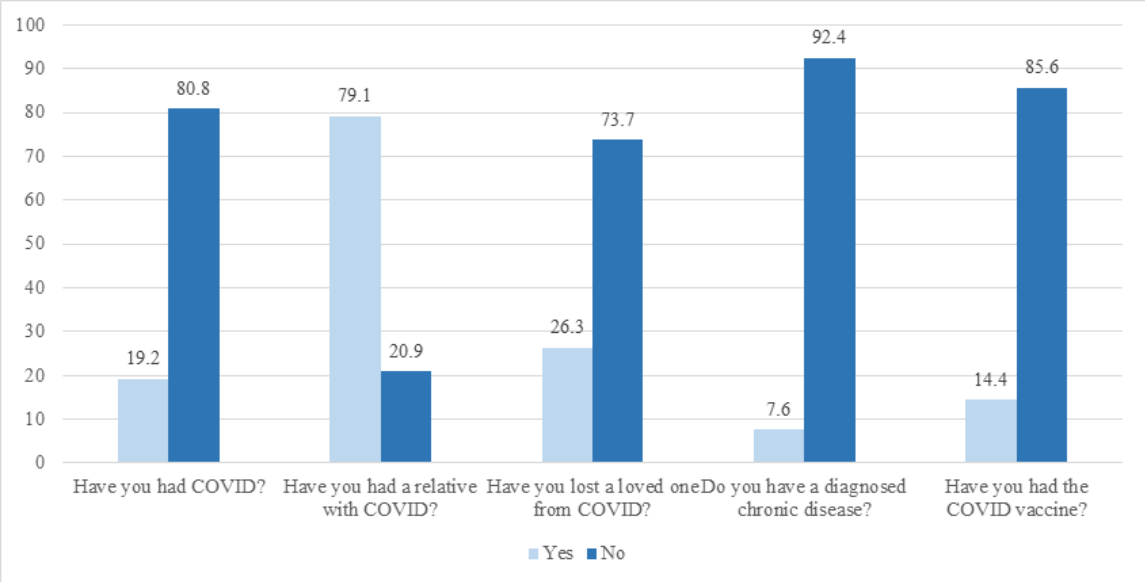

Diagram 1. *COVID-19-Related Characteristics of the Students*

DISCUSSION

Several individual and social factors affect perceptions and attitudes related to infectious diseases. Feeling in danger and desperate, past experiences in the social and cultural environment affect the person's beliefs, perceptions and attitudes on this matter (Cori et al., 2020).

Aslan and Pekince's (2020) study, which assessed the views of nursing students regarding the COVID-19 pandemic and their perceived stress level, found that they were moderately stressed (Aslan & Pekince, 2021). One study conducted in three European nations to determine the attitudes of nursing students toward vaccines and a number of other preventive measures against COVID-19 found that the psychological burden and levels of anxiety were high. The nursing students had a higher adaptation compared to the protective behavior (Velikonja et al., 2021). Sun et al.'s study established that nursing students have higher levels of anxiety during the pandemic. Also the study determined a significant correlation between occupational identity,

gender and anxiety and found that gender, grade and seldom use of preventive measures have a noteworthy impact on anxiety (Sun et al., 2020). Another study found that male students have a lower possibility of taking preventive measures than female students (Yuan et al., 2020). A study conducted in India to determine the knowledge and perception of medical and auxiliary health sciences students related to COVID-19 found that they had a positive perception of measures to prevent and control COVID-19 (Gohel et al., 2021). Our study found that the female students had higher avoidance attitudes and disease perception scale scores than the male students. Considering the grades our study found that the sophomore students had higher avoidance attitudes scale scores than the senior students.

Vaccines are a basic component for individuals' right to health and are among the most important preventive health services with the highest utility cost ratio providing individual, social and national advantages in immunization and control of infectious diseases (Yıldırım Baş, 2021). The noteworthy instability in vaccine intention ratio worldwide prevents the efforts of acquiring immunity to COVID-19. It is important to take into account the thoughts of nurses with regard to vaccine safety and effectiveness, in order to increase their acceptance of vaccines, and the impact of this on the general public's decision whether to get vaccinated (Al- Amer et al., 2022). Alshehry et al.'s (2021) study, which aimed to determine the intent to get vaccinated against COVID-19 in nursing students in a number of universities in Saudi Arabia, found that over 50% of the students wanted to receive the vaccine and that the majority had not previously had COVID-19 (Alshehry et al., 2021). In Baghdadi et al.'s (2021) study to investigate the views of healthcare professionals in Riad, Saudi Arabia about COVID-19 vaccine, more than 61.2% stated that they wanted to receive the vaccine, believed it would be safe, and felt that all healthcare professionals should receive it (Baghdadi et al., 2021). A systematic review performed by Wake (2021) in order to assess the desire to receive the COVID-19 vaccine and related factors, defined a number of relevant factors, including age, gender, race, education, income level, place of residence, occupation, marital status, health insurance, perceived COVID-19 risk, trust in the healthcare system, attitude towards the vaccine, perceived benefits and effectiveness of the vaccine, perception of possible harm, chronic disease, concern about vaccine safety ,and fear of COVID-19 (Wake, 2021). Dengiz and Hisar, in their qualitative study, found that nursing students stated the reason for not getting vaccinated as confidence in the vaccine (Dengiz & Hisar, 2023). In another study, the participants stated that antibiotics (53.29%) and vaccines (50.77%) did not effectively prevent or treat; COVID-19; however, nearly 25% of the participants thought that antibiotics or vaccines might be useful (Gohel et al., 2021). In Velikonja et al.'s study, 35% of the nursing students involved definitely intended to receive the vaccine (Velikonja et al., 2021). In the current study, the majority of the students had not had COVID-19, while a very large majority (85.6%) had not received the COVID-19 vaccine. In our study illness perception increases the level of attitude towards vaccine. Nurses' desire of receiving vaccine against COVID-19 not only draws an individual conclusion, but it is also noteworthy in terms of being an important occupational group encouraging the society to receive vaccine (Velikonja et al., 2021). Güngör, Atik and Akyol in their study with nurses stated that although the majority of the nurses followed the vaccination study, the majority of the participants in our study were undecided

and reluctant to be vaccinated (Güngör, Atik & Akyol, 2022). Considering the study results we see that a number of parameters such as vaccine safety and benefits of vaccine affect the attitude of receiving vaccine.

Limitations

Our findings are limited to the statements of the students comprising our sample and thus cannot be generalized.

IMPLICATION FOR PRACTICE

To increase the general willingness of people to receive the COVID-19 vaccine, it is especially important to determine the attitudes towards vaccination of nurses and nursing students and the factors affecting their perception of the disease, as these individuals have direct contact with patients and healthy individuals. Also it is necessary to provide consultancy and health training on this matter. For the stress and anxiety of students, it is necessary to provide psychological support applications within their educational process and in educational institutions. Effective presentation of this psychological support will enable nursing students to be more active and efficient in their working life. It is necessary to develop training programs for nurses and nursing students in order to enhance their beliefs and attitudes concerning COVID-19 vaccine. It is because vaccine intention and vaccine desire of nurses are effective on vaccination process of society. Therefore the results of our study are also noteworthy in terms of determining the vaccine attitudes and disease perceptions of nurse candidates. We can recommend policy makers and researchers to make interventions especially for profoundly studying the factors affecting the vaccine attitudes and enhancing them.

Acknowledgement

All the authors declare that there are no conflict of interests. No financial support. Author Contributions; Concept: GUK, ZA, Design: GUK, ZA, Supervising: GUK, Financing and equipment: GUK, ZA, Data collection and entry: GUK, Analysis and interpretation: GUK, Literature search: GUK, ZA, Writing: GUK, ZA, Critical review: GUK, ZA. We received ethics committee approval from Clinical Research Ethics Committee (dated 27.05.2021 and numbered 2020-KAEK-143-92). Our study is not a clinical trial and was not presented at any meeting.

REFERENCES

Abalkhail, M. S., Alzahrany, M. S., Alghamdi, K. A., Alsoliman, M. A., Alzahrani, M. A., Almosned, B. S., Gosadi, I. M., & Tharkar, S. (2017). Uptake of influenza vaccination, awareness and its associated barriers among medical students of a University Hospital in Central Saudi Arabia. *Journal of infection and public health*, *10*(5), 644–648. https://doi.org/10.1016/j.jiph.2017.05.001

Abdelhafiz, A. S., Mohammed, Z., Ibrahim, M. E., Ziady, H. H., Alorabi, M., Ayyad, M., & Sultan, E. A. (2020). Knowledge, Perceptions, and Attitude of Egyptians Towards the Novel Coronavirus Disease (COVID-19). *Journal of community health*, *45*(5), 881–890. https://doi.org/10.1007/s10900-020-00827-7

Al-Amer, R., Maneze, D., Everett, B., Montayre, J., Villarosa, A. R., Dwekat, E., & Salamonson, Y. (2022). COVID-19 vaccination intention in the first year of the pandemic: A systematic review. *Journal of clinical nursing*, *31*(1-2), 62–86. https://doi.org/10.1111/jocn.15951

Albaqawi, H. M., Alquwez, N., Balay-Odao, E., Bajet, J. B., Alabdulaziz, H., Alsolami, F., Tumala, R. B., Alsharari, A. F., Tork, H. M. M., Felemban, E. M., & Cruz, J. P. (2020). Nursing Students' Perceptions, Knowledge, and Preventive Behaviors Toward COVID-19: A Multi-University Study. *Frontiers in public health*, *8*, 573390. https://doi.org/10.3389/fpubh.2020.573390

Alshehry, A. S., Cruz, J. P., Alquwez, N., Alsharari, A. F., Tork, H. M. M., Almazan, J. U., Alshammari, F., Alabdulaziz, H., Alsolami, F., Tumala, R. B., Al Thobaity, A., Alqahtani, F. M., & Balay-Odao, E. (2022). Predictors of nursing students' intention to receive COVID-19 vaccination: A multi-university study in Saudi Arabia. *Journal of advanced nursing*, *78*(2), 446–457. https://doi.org/10.1111/jan.15002

Andre, F. E., Booy, R., Bock, H. L., Clemens, J., Datta, S. K., John, T. J., Lee, B. W., Lolekha, S., Peltola, H., Ruff, T. A., Santosham, M., & Schmitt, H. J. (2008). Vaccination greatly reduces disease, disability, death and inequity worldwide. *Bulletin of the World Health Organization*, *86*(2), 140–146. https://doi.org/10.2471/blt.07.040089

Arısoy, ES., Çiftçi, E., Hacımustafaoğlu, M., Kara, A., Kuyucu, N., Somer, A., Vardar, F. (2015). Clinical practical recommendations for Turkish National Vaccination Schedule for previously healthy children (National Vaccination Schedule) and vaccines not included in the Schedule-2015. *J Pediatr Inf,* 9:1-11.

Aslan, H., Pekince, H. (2021). Nursing Students' Views on COVID-19 Pandemic and Their Perceived Stress Levels. *Perspect Psychiatr Care,* 57: 695-701. https://doi.org/10.1111/ppc.12597

Baghdadi, L R, Alghaihb, S G, Abuhaimed, A A., Alkelabi, D.M., Alqahtani, R.S. (2021). Healthcare Workers' Perspectives on the Upcoming COVID-19 Vaccine in Terms of Their Exposure to the Influenza Vaccine in Riyadh, Saudi Arabia. A Cross-sectional Study. *Vaccines,* 9(5), 465. https://doi.org/10.3390/vaccines9050465

Cori L, Bianchi F, Cadum E, Anthonj, C. (2020). Risk Perception and COVID-19. *International Journal of Environmental Research and Public Health,* 17(9), 3114. doi: 1.3390/ijerph17093114

Cyranoski, D. (2020). Why emergency COVID-vaccine approvals pose a dilemma for scientists. *Nature,* 588, 18–19. https://doi.org/10.1038/d4158 6-020-03219-y

Dengiz, K. S. & Hisar, F. (2023). Determining the Reasons for Nursing Students for Not Accepting COVID-19 Vaccine: A Qualitative Study. *E-Journal Of Dokuz Eylul University Nursing Faculty,* 16 (2), 173-188 . DOI: 10.46483/deuhfed.976519

Dror, A. A., Eisenbach, N., Taiber, S., Morozov, N. G., Mizrachi, M., Zigron, A., Srouji, S., & Sela, E. (2020). Vaccine hesitancy: the next challenge in the fight against COVID-19. *European journal of epidemiology*, *35*(8), 775–779. https://doi.org/10.1007/s10654-020-00671-y

Fauci, AS., Lane, HC., Redfield, RR. (2020). COVID-19-Navigating the uncharted. *New England Jouranl of Medicine,* 382. https://doi.org/10.1056/nejme 2002387

Geniş, B., Gürhan, N., Koç, M., Geniş, Ç. (2020). Development Of Perception And Attitude Scales For COVID-19 Pandemic. *Pearson Journal of Social Sciences – Humanities,* 7, p. 306-328. Doi: 10.46872/pj.127

Gohel, K. H., Patel, P. B., Shah, P. M., Patel, J. R., Pandit, N., & Raut, A. (2021). Knowledge and perceptions about COVID-19 among the medical and allied health science students in India: An online cross-sectional survey. *Clinical epidemiology and global health*, *9*, 104–109. https://doi.org/10.1016/j.cegh.2020.07.008

Güngör, S, Atik, D, Akyol, N. (2022). COVID-19 Vaccine Acceptance and Fear of Contagion. *Journal of Medical Sciences,* 3(1) 59-71

Inocian, E. P., Cruz, J. P., Saeed Alshehry, A., Alshamlani, Y., Ignacio, E. H., & Tumala, R. B. (2021). Professional quality of life and caring behaviours among clinical nurses during the COVID-19 pandemic. *Journal of clinical nursing*, 10.1111/jocn.15937. Advance online publication. https://doi.org/10.1111/jocn.15937

Jamshidi, N., Molazem, Z., Sharif, F., Torabizadeh, C., Kalyani, MN. (2016). The challenges of nursing students in the clinical learning environment: A qualitative study. *The Scientific World Journal,* 1–7. https://doi.org/10.1155/2016/1846178

Javier, P-RF., Ramón, DG-L., Ana, E-G., Alves, M-VCM., Julia, ABM. (2021). Attitude towards Vaccination among Health Science Students before the COVID-19 Pandemic. *Vaccines,* 9(6), 644. https://doi.org/10.3390/vaccines9060644

Lucia, VC., Kelekar, A., Afonso, NM. (2021). COVID-19 vaccine hesitancy among medical students. *Journal of Public Health (Oxford, England),* 43(3), 445–449. https://doi.org/10.1093/pubmed/fdaa230

Mahase, E. (2021). COVID-19: Vaccine brands can be mixed in "extremely rare occasions", says Public Health England. *BMJ,* 372. https://doi.org/10.1136/bmj.n12

Maltezou, H. C., Pavli, A., Dedoukou, X., Georgakopoulou, T., Raftopoulos, V., Drositis, I., Bolikas, E., Ledda, C., Adamis, G., Spyrou, A., Karantoni, E., Gamaletsou, M. N., Koukou, D. M., Lourida, A., Moussas, N., Petrakis, V., Panagopoulos, P., Hatzigeorgiou, D., Theodoridou, M., Lazanas, M., …

Sipsas, N. V. (2021). Determinants of intention to get vaccinated against COVID-19 among healthcare personnel in hospitals in Greece. *Infection, disease & health*, *26*(3), 189–197. https://doi.org/10.1016/j.idh.2021.03.002

Manning, M. L., Gerolamo, A. M., Marino, M. A., Hanson-Zalot, M. E., & Pogorzelska-Maziarz, M. (2021). COVID-19 vaccination readiness among nurse faculty and student nurses. *Nursing outlook*, *69*(4), 565–573. https://doi.org/10.1016/j.outlook.2021.01.019

Marco, V. (2020). COVID-19 vaccines: The pandemic will not end overnight. *The Lancet,* 2(1), https://doi.org/10.1016/S2666 -5247(20)30226 -3.

Mehta, V. (2020). The new proxemics: COVID-19, social distancing, and sociable space. *Journal of Urban Design,* 25(6), 669–674. https://doi.org/10.1080/13574809.2020.1785283

Meyer, MN., Gjorgjieva, T., Rosica, D. (2021). Trends in health care worker intentions to receive a COVID-19 vaccine and reasons for hesitancy. *JAMA Network Open*, 4(3), e215344. https://doi.org/10.1001/jaman etwor kopen.2021.5344.

Motta M. (2021). Can a COVID-19 vaccine live up to Americans' expectations? A conjoint analysis of how vaccine characteristics influence vaccination intentions. *Social science & medicine (1982)*, *272*, 113642. https://doi.org/10.1016/j.socscimed.2020.113642

Noushad, M., Nassani, M.Z., Alsalhani, A.B., Koppolu, P., Niazi, F.H., Samran, A., Rastam, S., Alqerban, A., Barakat, A., Almoallim, H.S. (2021). COVID-19 Vaccine Intention among Healthcare Workers in Saudi Arabia: A Cross-Sectional Survey. *Vaccines.* 2021; 9, 835. https://doi.org/10.3390/vaccines9080835

Randolph, H. E., Barreiro, LB. (2020). Herd Immunity: Understanding COVID-19. *Immunity,* 52(5), 737–741. https://doi.org/10.1016/j.immuni.2020.04.012

Remy, V., Zöllner, Y., Heckmann, U. (2015). Vaccination: The cornerstone of an efficient healthcare system. J. Mark. *Access Health Policy,* 3, 27041.

Rhodes, A., Hoq, M., Measey, MA., et al. (2020). Intention to vaccinate against COVID-19 in Australia. *The Lancet Infectious Diseases*, 21(5), https://doi.org/10.1016/S1473 -3099(20)30724 -6

Salmon, D. A., Dudley, M. Z., Glanz, J. M., & Omer, S. B. (2015). Vaccine Hesitancy: Causes, Consequences, and a Call to Action. *American journal of preventive medicine*, *49*(6 Suppl 4), S391–S398. https://doi.org/10.1016/j.amepre.2015.06.009

Sandler, K., Srivastava, T., Fawole, O. A., Fasano, C., & Feemster, K. A. (2020). Understanding vaccine knowledge, attitudes, and decision-making through college student interviews. *Journal of American college health : J of ACH*, *68*(6), 593–602. https://doi.org/10.1080/07448481.2019.1583660

Seanehia, J., Treibich, C., Holmberg, C., Müller-Nordhorn, J., Casin, V., Raude, J., & Mueller, J. E. (2017). Quantifying population preferences around vaccination against severe but rare diseases: A conjoint analysis among French university students, 2016. *Vaccine*, *35*(20), 2676–2684. https://doi.org/10.1016/j.vaccine.2017.03.086

Sun, Y., Wang, D., Han, Z., Gao, J., Zhu, S., & Zhang, H. (2020). Disease Prevention Knowledge, Anxiety, and Professional Identity during COVID-19 Pandemic in Nursing Students in Zhengzhou, China. *Journal of Korean Academy of Nursing*, *50*(4), 533–540. https://doi.org/10.4040/jkan.20125

Velikonja Kregar , N., Dobrowolska, B., Stanisavljević, S., Erjavec, K., Globevnik Velikonja, V., & Verdenik, I. (2021). Attitudes of Nursing Students towards Vaccination and Other Preventive Measures for Limitation of COVID-19 Pandemic: Cross-Sectional Study in Three European Countries. *Healthcare (Basel, Switzerland)*, *9*(7), 781. https://doi.org/10.3390/healthcare9070781

Wake, AD. (2021). The Willingness to Receive COVID-19 Vaccine and Its Associated Factors: "Vaccination Refusal Could Prolong the War of This Pandemic"- A Systematic Review. *Risk Management and Healthcare Policy.* 14, 2609-2623. https://doi.org/10.2147/RMHP.S311074

Wang, K., Wong, E. L. Y., Ho, K. F., Cheung, A. W. L., Chan, E. Y. Y., Yeoh, E. K., & Wong, S. Y. S. (2020). Intention of nurses to accept coronavirus disease 2019 vaccination and change of intention to accept seasonal influenza vaccination during the coronavirus disease 2019 pandemic: A cross-sectional survey. *Vaccine*, *38*(45), 7049–7056. https://doi.org/10.1016/j.vaccine.2020.09.021

World Health Organization. (2023). Coronavirus Latest Situation Covid-19. 2023; Retrieved 12 August from https://covid19.who.int/

World Health Organization.(2023). Coronavirus Vaccination Situation Covid-19. 2023; Retrieved 12 August from https://covid19.who.int/

Yıldırım Baş, F. (2021). The Importance Of Vaccination In The Pandemia And Covid-19 Vaccination Studies. *Med J SDU,* (special issue-1):245-248.

Yuan, T., Liu, H., Li, X. D., & Liu, H. R. (2020). Factors Affecting Infection Control Behaviors to Prevent COVID-19: An Online Survey of Nursing Students in Anhui, China in March and April 2020. *Medical science monitor: international medical journal of experimental and clinical research*, *26*, e925877. https://doi.org/10.12659/MSM.925877.