ARAŞTIRMA MAKALESİ / *RESEARCH ARTICLE*

Determining the Relationship Between Coronavirus Anxiety and Attitudes Towards the COVID-19 Vaccination in Students from Vocational School of Health Services

Sağlık Hizmetleri Meslek Yüksekokulu Öğrencilerinin Koronavirüs Anksiyetesi ve Covid-19 Aşısına Yönelik Tutumları Arasındaki İlişkinin Belirlenmesi

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ABSTRACT

Aim: *This research was aimed to determine the relationship between coronavirus anxiety and attitudes toward the COVID-19 vaccination in students from the vocational school of health services.*

Material and Method: *This cross-sectional study was completed with 700 students attending the Vocational School of Health Services at a university in eastern Turkey in the 2020–2021 academic year. The data were collected through an online survey via the Social media platform (Whatsapp) between 15–31 January 2021. The data were collected Student Information Form, Coronavirus Anxiety Scale, and Attitude towards the COVID-19 Vaccine. The data were evaluated using the SPSS 22.0 program with standard deviation, mean, percentage, number, t-test in independent groups, one-way analysis of variance, and Spearman rho correlation analysis. The statistical significance level was taken as p<0.05.*

Results: *Attitudes Towards the COVID-19 Vaccine Scale positive attitude subscale mean score of the students was moderate (11.07±4.03), and their Attitudes Towards the COVID-19 Vaccine Scale negative attitude subscale mean score (15.37±3.64) was moderate. The Coronavirus Anxiety Scale mean score (6.81±3.42) was low. It was found that the students who suffered from a chronic disease, had family members with a chronic disease, had family members infected with COVID-19, and lost a family member due to COVID-19 had higher Coronavirus Anxiety Scale mean scores compared to the other students and this was statistically significant.*

Conclusion: *These results highlight that training should be planned to increase students' positive attitudes toward the COVID-19 vaccine.*

Key words: *anxiety; Covid-19 vaccine; student*

ÖZET

Amaç: *Bu araştırma COVID-19 pandemisi sürecinde sağlık hizmetleri meslek yüksekokulu öğrencilerinin Koronavirüs anksiyetesi ve COVID-19 aşısına yönelik tutumları arasındaki ilişkinin belirlenmesi amacıyla yapıldı.*

Materyal ve Metot: *Kesitsel türde yapılan bu araştırma Türkiye'nin doğusunda bulunan bir üniversitenin Sağlık Hizmetleri Meslek Yüksekokulu'nda 2020–2021 eğitim-öğretim yılında derslere devam eden 700 öğrenci ile tamamlandı. Veriler 15–31 Ocak 2021 tarihleri arasında sosyal medya platformu (Whatsapp) aracılığıyla çevrimiçi anket yoluyla, Öğrenci Tanıtım Formu, Koronavirüs Anksiyete Ölçeği ve COVID-19 Aşısına Yönelik Tutumlar Ölçeği kullanılarak toplanmıştır. Verilerin değerlendirilmesinde SPSS 22.0 programında standart sapma, ortalama, yüzde, sayı, bağımsız gruplarda t-testi, tek yönlü varyans analizi ve Spearman rho korelasyon analizi kullanıldı.*

Bulgular: *Öğrencilerin COVID-19 Aşısına Yönelik Tutumlar Ölçeği Olumlu Tutum alt boyut puan ortalaması orta seviye (11,07±4,03), Olumsuz Tutum alt boyut puan ortalaması orta seviye (15,37±3,64) ve Koronavirüs Anksiyete Ölçeği puan ortalaması düşük seviye, (6,81±3,42) olarak belirlendi. Kronik hastalığa sahip, aile bireylerinde kronik hastalık bulunan, aile bireyleri COVID-19 enfeksiyonu geçiren ve COVID-19 enfeksiyonu nedeniyle aile bireyi vefat eden öğrencilerin, Koronavirüs Anksiyete Ölçeği puan ortalamaları diğer öğrencilere göre daha yüksek ve anlamlı bulundu.*

Sonuç: *Araştırma sonuçları öğrencilerin COVID-19 aşısına yönelik olumlu tutumlarını artırmak amacıyla eğitimlerin planlanması gerektiğini vurgulamaktadır.*

Anahtar kelimeler: *anksiyete; Covid-19 aşısı; öğrenci*

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Introduction

The restriction measures taken for the COVID-19 pandemic have negatively affected all areas and have started a difficult process especially in the education system[1]. In Turkey students started to receive online education as of 26 March 2020 but this has caused university students to suffer from social isolation, fail to receive hands-on training for professional competence,[2] and experience inequality of opportunity in technological dimension[3]. University students currently studying in the field of health have a high level of anxiety due to some reasons such as the pressure of academic achievement, the difficulties of the clinical environment, and working with patients with chronic and terminal diseases[4]. Unexpected sudden changes in the education system with the COVID-19 pandemic and health threats associated with infection have led students to feel increasingly anxiety / fear and concern[5–7]. Anxiety can have a negative effect on students' quality of life, academic achievement, and family and social relations and can lead them to experience serious problems such as deterioration of their mental health and school dropout[8,9].

Increased level of fear/anxiety individuals feel due to uncertainty during epidemics also influences their thoughts and tendencies about treatment methods and basic preventive practices such as vaccines[10,11]. Therapeutic approaches are significant; however, the most important factor in preventing the spread of infection is vaccination. The key to the vaccination is the positive attitude of the society towards the vaccine[12]. In 2019, the World Health Organization[13] reported that vaccine refusal is one of ten global problems and similarly, rate of vaccine refusal has increased in Turkey in recent years. The positive expectations of the societies for the development of vaccines in the fight against coronavirus at the beginning of the pandemic have been replaced by the problems of doubt, hesitation and vaccine rejection regarding the COVID-19 vaccine today[14].

COVID-19 vaccine hesitancy has been commonly encountered in numerous countries[11]. In a study conducted with 3936 people regarding attitudes towards the COVID-19 vaccine in Turkey, it was determined that 31% of the participants were hesitant about the COVID-19 vaccine and 3% refused to be vaccinated[15]. In their study, Köse et al.[16], determined that 68.6% of the healthcare professionals (n=1138) requested to be vaccinated. In a study conducted by the American Nurses Foundation (ANF) with 13,000 nurses, approximately one-third (36%) of the nurses stated that they did not want to be volunteers to get vaccinated against COVID-19 and approximately one-third (31%) expressed that they were undecided about getting vaccinated. In addition, in the same study, 65% of the nurses stated that they provided care for confirmed or suspected COVID-19 cases[17].

It is important to evaluate the views and expectations of all healthcare professionals and the society about vaccination in order to achieve COVID-19 vaccination programs[18]. Healthcare professionals are the most effective and reliable consultants for people to exhibit vaccine acceptance and a positive attitude towards vaccination[19]. Students studying in the field of health are expected to take part in the COVID-19 pandemic or other epidemics in the near future and consult the society about vaccination. Given the guidance offered by students in the field of health protection and promotion, it is of primary importance to determine their anxieties about the COVID-19 pandemic and their attitudes towards the COVID-19 vaccine.

The aim of this study, which was conducted at the beginning of the COVID-19 vaccination in Turkey, was to determine the relationship between the anxieties of the students, who represent an important group in the field of health, about the COVID-19 infection and their attitudes towards the COVID-19 vaccine.

Research Questions

- How is the Coronavirus Anxiety Scale (CAS) score of students from Vocational School of Health Services (VSHS) during the pandemic?
- How is the Attitudes Towards the COVID-19 Vaccine (ATV-COVID-19) Scale score of VSHS students during the pandemic?
- Is there any correlation between the CAS score and ATV-COVID-19 Scale score and some sociodemographic characteristics of VSHS students?
- Is there any correlation between the Coronavirus Anxiety score and the ATV-COVID-19 score of VSHS students?

Material and Method

Type of the study: The study is cross-sectional.

Period and setting of the study: The study was conducted in a vocational school of health services between 15 and 31 January 2021.

Population and sample: The population of the study consisted of a total of 1730 first– and second-year students studying in the departments of Anaesthesia, First and Emergency Aid, Medical Imaging Techniques, Medical Laboratory Techniques, Home Patient Care, Elderly Care, Medical Documentation and Secretarial, and Medical Promotion and Marketing in the Vocational School of Health Services. No sample selection was applied in the study and the sample consisted of 700 (response rate=40%) students who actively joined in classes in the 2020–2021 academic year, agreed to participate in the study, and filled out the measurement tools completely. Students who didn't actively participate in the classes in the 2020–2021 academic year, didn't accept to participate in the research and filled the measurement tools incompletely were excluded from the study.

Data collection tools and method: Data collection tools include three parts; student information form, Coronavirus Anxiety Scale (CAS) and Attitudes Towards the COVID-19 Vaccine (ATV-COVID-19) Scale.

Student information form: This form was prepared by the researcher upon the literature review[20,21]. The form includes the questions about socio-demographic characteristics of the students such as gender, age, department, marital status, education level, income status, status of suffering from a chronic disease and having a parent with a chronic disease as well as questions related to COVID-19 such as being diagnosed with COVID-19 and losing a relative due to COVID-19.

Coronavirus Anxiety Scale (CAS): The Coronavirus Anxiety Scale (CAS) was developed by Lee in 2020 to identify possible dysfunctional anxiety cases associated with the COVID-19 crisis and its Turkish validity and reliability study was conducted by Biçer et al.[20]. This 5-point Likert scale consists of 5 questions and a single dimension. The scale is scored as "0": "never", "1": "Rarely, less than one or two days", "2": "A few days", "3": "more than seven days", and "4": "almost every day in the last two weeks". The Cronbach's Alpha reliability coefficient was calculated as 0.832. In this study, Cronbach's Alpha coefficient was determined as 0.875.

Attitudes Towards the COVID-19 Vaccine (ATV-COVID-19) Scale: The scale was developed by Geniş et al.[21], and consists of 9 items and two subscales (positive and negative attitude). The items are rated as "Strongly disagree (1)", "Disagree (2)", "Undecided (3)", "Agree (4)", and "Strongly agree (5)". The items in the negative attitude subscale (items 5, 6, 7, 8 and 9) are scored reversely. High scores obtained from the positive attitude subscale (items 1, 2, 3, and 4) indicate that the attitude towards the vaccine is positive. In the negative attitude subscale, high scores signify that negative attitudes towards the vaccine are less. Reverse items are coded as 1 → 5; 2 → 4; 3 → 3; 4 → 2; and 5 → 1.

Data collection method: The survey link created via Google Form was sent to the students via the social media platform (Whatsapp) to collect the data and they were asked to answer it in the electronic environment.

Data assessment: SPSS 22.0 packaged software was used for the statistical analysis of the data and descriptive statistics (mean, standard deviation, number and percentage) were calculated. Parametric test assumptions were checked before data analysis. Independent samples t-test or one-way analysis of variance was used to compare the groups. The correlation between numerical variables was determined using the Spearman rho correlation coefficient. The value of $p<0.05$ was taken as statistical significance level.

Ethical considerations: The study was approved by the Republic of Turkey Ministry of Health Scientific Research Platform (2020-12-30T00_28_45) and the Non-Invasive Research Ethics Committee of the Faculty of Health Sciences of Kafkas University (05.01.2021/136). In order to carry out the study, permission to use scales was taken from their authors and institutional permission was obtained. Before completing the online survey, voluntary participants were asked to click the checkbox stating that they agree to participate. They were informed that the survey did not contain any personal information and the answers would be collected anonymously in order to prevent any coercion.

Results

The average age of the participants was 20.43±1.85 (18–35) years. Table 1 shows the distribution of some socio-demographic characteristics of the students and ATV-COVID19 and CAS mean scores. It was determined that anxiety scores and scores of positive

attitude towards the vaccine were higher and statistically significant in female students than male students (p=0.001).

When examining mean scores of the ATV-COVID-19 positive attitude subscale, these mean scores were higher in those residing in the Eastern Anatolia region than those residing in the Mediterranean region and this was statistically significant (p=0.002; Table 1). Scores of positive attitude towards the vaccine were lower and in students who were infected with COVID-19 than those who were not (p=0.003) and in students with low level of income than those with the other income levels (p<0.001) and this was statistically significant (Table 1).

The ATV-COVID-19 negative attitude subscale mean scores were lower in students residing in the Black Sea region compared to those residing in the Aegean region; in students with low level of income than those with the other income level; and in students who were infected with COVID-19 than those who were not and this was statistically significant (p<0.001). The ATV-COVID-19 negative attitude subscale mean scores were higher in those residing in the village than those residing in the province and this was statistically significant (p=0.001; Table 1).

When the anxiety scores of the students were examined, it was found that the students who suffered from a chronic disease, had family members with a chronic disease and lost a family member due to COVID-19 had higher CAS mean scores compared to the other students and this was statistically significant (p<0.001). Additionally, it was found that the students who infected with COVID-19 (p=0.008) and had family members infected with COVID-19 (p=0.001) had higher CAS mean scores compared to the other students and this was statistically significant (Table 1).

Table 2 shows ATV-COVID-19 Scale subscale and CAS total mean scores. ATV-COVID-19 positive attitude subscale mean score of the participants was moderate (11.07±4.03), and their ATV-COVID-19 negative attitude subscale mean score (15.37±3.64) was moderate. The CAS mean score (6.81±3.42) was low.

Table 3 shows the Spearman correlation between ATV-COVID-19 subscales scores and CAS total mean scores. There was no correlation between the CAS mean score and the ATV-COVID-19 positive attitude subscale (p=0.128) and ATV-COVID-19 negative attitude subscale (p=0.740) mean scores.

Discussion

The present study is believed to be important since such study has not been conducted with these students and this study examines the correlation between the coronavirus anxiety score and the score of attitude towards the COVID-19 vaccine in the VSHS students.

In the study, the students' CAS mean score was found to be low. However, studies conducted on students have revealed that restrictive measures for COVID-19 infection have led them to experience high levels of anxiety[22–25]. Low anxiety score found in the present study is thought to be associated with the fact that the students have been adapted to the online education process of about 10 months, the home quarantine process was over, they have regained the opportunity to meet with their peers outside, and hospital processes are carried out online.

In the study, it was determined that the positive attitude scores of the students towards the COVID-19 vaccine were moderate. In the literature, there are numerous studies indicating that the positive attitude towards the vaccine in the field of health is moderate[7,26,27]. In one study, it was reported that only 45% of students studying in health-related departments wanted to be vaccinated with the COVID-19 vaccine and the most important reason for their drawbacks about the vaccination was vaccine safety and its side effects[26]. In a study conducted with medical students from the USA, about three-quarters (75%) of the students stated that they wanted to be vaccinated and one-fourth (25%) were hesitant about the vaccine[27,]

When the findings were evaluated in terms of demographic variables, it was found that the anxiety scores of female students were higher than those of male students and this was statistically significant (p=0, 001). Likewise, the studies conducted with students on coronavirus anxiety have revealed that the anxiety scores of female students were higher compared to their male counterparts[22,23,28]. In the study conducted by Özdin and Özdin[28] in Turkish society, they reported that the anxiety scores of women were higher than the anxiety scores of men in a statistically significant manner during the COVID-19. It is known that women generally have a higher level of anxiety than men due to their gender characteristics, and cultural situations, social expectations and experiences play a role in increasing this anxiety[29]. The fact that the anxiety scores were higher in female gender than males in the present study was thought to be associated with academic

Table 1. *Some socio-demographic characteristics of the students and ATV-COVID-19 and CAS mean scores*

Variables		n	%	ATV-COVID-19 subscales: Positive attitude Mean ± SD	ATV-COVID-19 subscales: Negative attitude Mean ± SD	CAS total score Mean ± SD
Gender	Female	491	70.1	11.38±3.83	15.41±3.45	7.01±3.60
	Male	209	29.9	10.33±4.38	15.26±4.07	6.33±2.90
				p=0.001	*p=0.277*	***p=0.001***
Marital status	Single	685	97.9	11.07±4.02	15.35±3.65	6.83±3.44
	Married	15	2.1	12.00±4.74	16.00±3.21	5.00±1.53
				p=0.730	*p=0.628*	*p=0.111*
Department	Anaesthesia	70	10.0	11.47±3.20	15.20±3.36	6.90±3.72
	First and Emergency Aid	153	21.9	11.23±3.87	15.22±3.48	6.50±3.25
	Home Patient Care	95	13.6	10.53±4.04	14.75±3.64	6.98±3.21
	Medical Imaging Techniques	128	18.3	11.32±4.40	15.78±3.61	6.78±3.12
	Medical Laboratory Techniques.	56	8.0	11.17±3.53	14.83±2.49	7.25±4.05
	Medical Documentation and Secretarial	100	14.3	10.60±4.08	15.01±3.88	6.64±2.96
	Medical Promotion and Marketing	27	3.9	11.07±4.72	16.96±3.36	6.03±1.65
	Elderly Care	71	10.1	11.15±4.45	16.22±4.50	7.38±4.62
				p=0.790	*p=0.089*	*p=0.487*
Place of residence	Cities	325	46.4	10.92±3.95	15.19±3.50	6.84±3.24
	District	214	30.6	11.00±4.05	15.04±3.86	6.57±3.10
	Village	161	23.0	11.45±4.15	16.16±3.52	7.06±4.10
				p=0.380	***p=0.001***	*p=0.275*
Geographical region they resided in	The Eastern Anatolia	348	49.7	11.65±4.09	15.85±3.53	6.76±2.99
	The South Eastern Anatolia	197	28.1	10.47±3.76	15.10±3.63	6.90±3.66
	The Central Anatolia	27	3.9	11.22±4.62	15.22±4.43	8.14±6.21
	The Black Sea	27	3.9	10.55±3.60	14.18±3.22	5.66±1.54
	The Marmara	28	4.0	9.46±4.76	13.64±5.05	6.71±4.22
	Mediterranean	56	8.0	9.98±3.70	14.35±3.02	6.94±3.65
	The Aegean	17	2.4	12.82±2.72	16.88±2.17	6.00±2.09
				p=0.002	***p<0.001***	*p=0.203*
Employment status	Unemplayment	606	86.6	11.15±4.02	15.48±3.49	6.74±3.38
	Working in healthcare field	21	3.0	10.61±3.99	14.00±4.30	7.00±4.42
	Working outside in healtcare field	73	10.4	10.54±4.12	14.83±4.50	7.31±3.42
				p=0.419	*p=0.215*	*p=0.076*
Income status	High	63	9.0	11.60±4.32	15.85±4.47	6.55±3.24
	Middle	511	73.0	11.32±3.92	15.56±3.41	6.57±3.02
	Low	109	15.6	10.21±3.98	14.73±3.85	7.89±4.67
	Very low	17	2.4	7.00±3.93	11.82±3.50	7.88±4.44
				p<0.001	***p<0.001***	*p=0.079*
Infected with COVID-19	Yes	112	16.0	9.56±4.23	13.87±3.88	8.59±5.64
	No	588	84.0	11.22±3.98	15.52±3.58	6.62±3.05
				p=0.003	***p<0.001***	***p=0.008***
Chronic disease	Yes	66	9.4	11.09±3.97	15.17±3.66	7.38±4.07
	No	634	90.6	11.04±4.11	15.61±3.61	6.09±2.17
				p=0.761	*p=0.169*	***p<0.001***
Having a parent with a chronic disease	Yes	389	55.6	11.09±3.97	15.17±3.66	7.38±4.07
	No	311	44.4	11.04±4.11	15.61±3.61	6.09±2.17
				p=0.761	*p=0.169*	***p<0.001***
Had family members infected with COVID-19	Yes	246	35.1	11.32±4.03	15.35±3.70	7.26±3.80
	No	454	64.9	10.93±4.03	15.37±3.61	6.56±3.17
				p=0.16	*p=0.347*	***p=0.001***
Losing a relative due to COVID-19.	Yes	61	8.7	10.91±4.03	14.81±3.84	8.95±5.49
	No	639	91.3	11.08±4.03	15.42±3.62	6.60±3.08
				p=0.647	*p=0.061*	***p<0.001***

ATV-COVID-19:Attitudes Towards the COVID-19 Vaccine; CAS: Coranavirus Anxiety Scale

Table 2. *ATV-COVID-19 Scale subscales and CAS total mean scores*

	N	Ortalama ± SS	Min-Max
ATV-COVID-19 positive attitude	700	11.07±4.03	4.00–20.00
ATV-COVID-19 negative attitude	700	15.37±3.64	5.00–25.00
Coronavirus anxiety scale	700	6.81±3.42	5.00–25.00

ATV-COVID-19:Attitudes Towards the COVID-19 Vaccine; CAS: Coranavirus Anxiety Scale

Table 3. *The Spearman correlation between ATV-COVID-19 subscales scores and CAS total mean scores*

Spearman's rho	ATV-COVID-19 negative attitude	Coronavirus anxiety scale
Positive attitude correlation coefficient	0.654*	0.058
P value	***<0.001***	0.128
Negative attitude correlation coefficient		-0.013
P value		0.740

p* <0.01; ATV-COVID-19: Attitudes Towards the COVID-19; CAS: Coronavirus Anxiety Scale

achievement as well as obligations such as traditionally doing household chores and helping family members due to staying at home.

In this study, anxiety scores were found to be higher and statistically significant in students who had a chronic disease in themselves and their family members, were infected with COVID-19 or lost a family member due to COVID-19 infection ($p<0.05$). In a study conducted in Jordan during the pandemic, it was determined that university students who suffered from a chronic disease and had family members with the chronic disease had higher levels of anxiety than the other students and this was statistically significant[23]. A study conducted with nursing students reported that the students with family members/relatives who tested positive for the COVID-19 had higher anxiety scores than other students[22]. In another study conducted with medical students actively working in the clinics, the students who were infected with COVID-19 were found to have higher levels of anxiety than those who were not[30]. Chronic diseases are life-threatening and can cause people to experience anxiety and depression especially during the pandemic[31]. The constant mentioning of topics related to the susceptibility to COVID-19 infection in the media and society, especially in those with chronic diseases, is effective in increasing anxiety[32].

When examining the relationship between the attitude towards the COVID-19 vaccine and demographic data of the participants, it was concluded that gender, geographical region they resided in, and income status affected their attitude towards the vaccine ($p<0.05$). In the study, it was determined that the positive attitude towards the vaccine was higher and statistically significant in females than males. However, contrary to the results of the study, there are studies in the literature demonstrating that men are more willing to get vaccinated than women[26,28]. In this study, it was determined that the score of positive attitude towards the vaccine was low in families with low level of income. High-income and educated individuals are more likely to have the COVID-19 vaccine. Unemployment can also reduce the positive attitude towards the vaccine. Low-income families are often literate at low rates[33]. It is considered that the low literacy rate may cause individuals to be more affected by environmental discourses and family members under the same roof to affect each other, resulting in a negative attitude towards the vaccine.

In this study, it was concluded that being infected with COVID-19 reduced the positive attitude towards the vaccine and this was statistically significant ($p<0.05$). This result was due to the insufficient level of knowledge of the students about the COVID-19 infection and the newly applied coronavirus vaccination and it was interpreted as the fact that that the students thought that being infected with COVID-19 can eliminate the need for vaccination.

When the positive attitude subscale was examined, it was determined that those residing in the Black Sea and Eastern Anatolia Regions exhibited positive attitudes towards the vaccine and the regional difference was statistically significant. Considering that the climatic conditions of these regions are harsh, it is thought that individuals living in these regions prefer to be vaccinated more in diseases such as COVID-19 that require medical assistance and care. Although the scores of positive attitude towards the vaccine were high in the Eastern Anatolia Region in this study, the vaccination rate was low according to the vaccination data of the Ministry of Health[34]. It is claimed that the slow progress of vaccination in the region is due to the fact that people who are not illiterate and do not speak Turkish have trouble in hospital appointment system[35].

No correlation was found between the CAS mean score and the ATV-COVID-19 positive and negative attitude subscale mean score in the study. Unlike this study, there are studies in the literature showing that high anxiety is associated with high vaccine acceptance[15,36]. In a study conducted with a total of 5024 people from the United Kingdom (n=1088) and Turkey (n=3936), it was determined that the vaccine acceptance rates of the participants with high COVID-19 anxiety scores were also high[36]. Similarly, in their study, Bandeu et al.[14], concluded that individuals with high anxiety were highly willing to be vaccinated.

In this study, it was determined that the coronavirus anxiety score of the students was low and ther attitude score towards the vaccine was moderate. For this reason, it is thought that it would be beneficial for the educators to identify the students who are hesitant about the vaccine in particular and to improve the education method to increase compliance with the vaccination protocols in order to increase the positive attitude of the students towards the COVID-19 vaccine in the related Vocational School. In addition, it is recommended to conduct comparative studies with students studying in other departments or in different provinces.

Limitations

The limitation of the study are the research is single-centered and the low response rate (40%) to online surveys since the study was conducted during the online education period.

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Conflict of Interest

There is no conflict of interest related to this study.

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