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Examination of Attitudes of Healthcare Professionals in Turkey towards Covid-19 Vaccines*

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Abstract
Vaccination is an effective method for ensuring herd immunity during the Covid-19 pandemic. In order to expand the scope of vaccination, it is essential to vaccinate healthcare professionals and to guide society about vaccination. This study aims to examine the attitudes of healthcare professionals towards Covid-19 vaccines. The study data were collected with the Covid-19 Vaccine Attitude Scale. 420 health workers participated in the study. It has been determined that the vast majority of healthcare professionals are vaccinated, and they would prefer the Pfizer/Biontech vaccine if possible. It has been determined that healthcare professionals recommend vaccination, and at this point, physicians come to the fore the most. There are healthcare professionals who are not vaccinated and have doubts about the Covid-19 vaccine. It is recommended that studies be carried out to address the concerns of healthcare professionals who are suspicious of Covid-19 vaccines and avoid being vaccinated.

Keywords
Covid-19, Covid-19 Vaccine Attitude, Covid-19 Anti-Vaccination, Healthcare Professionals, Turkey

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Türkiye'deki Sağlık Çalışanlarının Covid-19 Aşılarına Yönelik Tutumlarının İncelenmesi

Öz

Aşılama, Covid-19 pandemisinde sürü bağışıklığının sağlanmasında etkili bir yöntemdir. Aşılama kapsamının genişlemesi adına sağlık çalışanlarının aşılanması ve toplumdaki bireyleri aşılanma konusunda yönlendirmesi önemlidir. Bu araştırmada, sağlık çalışanlarının Covid-19 aşılarına yönelik tutumlarının incelenmesi amaçlanmaktadır. Çalışma verileri Covid-19 Aşı Tutum Ölçeği ile toplanmıştır. Araştırmaya 420 sağlık çalışanı katılmıştır. Araştırma sonucunda sağlık çalışanlarının büyük çoğunluğunun aşı olduğu, imkân olsaydı Pfizer/Biontech aşısını tercih edecekleri tespit edilmiştir. Sağlık çalışanlarının aşılamayı önerdiği ve bu noktada hekimlerin öne çıktığı görülmüştür. Aşı olmayan sağlık çalışanlarının bulunduğu, bu kişilerin Covid-19 aşılarına şüpheyle yaklaştıkları anlaşılmıştır. Sağlık çalışanları içindeki Covid-19 aşılarına şüphe duyanların, endişelerinin giderilmesi yönünde çalışmaların yapılması önerilir.

Anahtar Kelimeler

Covid-19, Covid-19 Aşı Tutumu, Covid-19 Aşı Karşıtlığı, Sağlık Profesyonelleri, Türkiye

Introduction

The Covid-19 pandemic has resulted in high case numbers and mortality rates worldwide (WHO, 2021a). The disease has affected many people globally and has staggering societies in health, social and economic aspects. Drug and vaccine studies are carried out to prevent the devastating effects of the disease and to control the Covid-19 pandemic. It is necessary to ensure herd immunity to end the pandemic. In this way, the risk of transmission should also be reduced. Ensuring this is possible by the natural immunity that may occur over time or by vaccination on a global scale (Randolph & Barreiro, 2020: 738-741; Polack et al., 2020: 2603-2604).

Vaccination plays a significant role in preventing the spread of diseases. Vaccination is considered as a significant public health tool in preventing the spread of the disease and ensuring the immunization of communities, especially during epidemics. It is essential to have a high rate of vaccination to ensure herd immunity (Omer et al., 2009: 1981; Weigel, 2014: 1009). The World Health Organization has included vaccine hesitancy (the reluctance or refusal of individuals to be vaccinated despite the availability of a vaccine for the disease) among the "10 threats to global health" (WHO, 2021b). The World Health Organization has included this situation among the "10 threats to global health" (WHO, 2021b). Although hesitations about vaccination are seen as individual concerns, the results are social. The World Health Organization Strategic Advisory Group of Experts on Immunization has emphasized that vaccine hesitation and rejection are critical to global health. One of the determining factors in vaccination is healthcare professionals. It is stated that the lack of knowledge and hesitations of healthcare professionals about vaccination also affect vaccine hesitancy in society. It was emphasized that the vaccination of healthcare professionals, in particular, and their recommendation to their patients has a significant role in immunization practices (Dubé et al., 2014: 6652-6654; Sage Working Group on Vaccine Hesitancy, 2014: 12). Verger et al. (2020: 6) in their study on the attitudes of healthcare professionals in France, Belgium and Canada towards Covid-19 vaccines; stated that it is important because the first group to be vaccinated is health workers and they are the first to experience this situation. Researchers who offered suggestions to increase the confidence of healthcare professionals in vaccines and to eliminate my concerns, underlined the importance of healthcare professionals at the point of community immunization. Li et al. (2021: 1) also emphasized the importance of the issue by expressing that the hesitancy of healthcare workers about vaccination is a public health threat.

The safety and effectiveness of vaccines is another determining factor in the vaccination decisions of individuals. Vaccine studies have been initiated and are currently continuing to control the pandemic (Polack et al., 2020: 2603-2604). As a result of the vaccine studies carried out, covid-19 vaccine types developed with various production technologies have been introduced to the market (T.R. Ministry of Health, 2021a). The covid-19 vaccination program in Turkey was started on January 14, 2021, with the vaccination of healthcare professionals at the first stage. CoronaVac/Sinovac and Pfizer/BioNTech vaccines are currently administered within the scope of the vaccination program (Gürbüz et al., 2021: 54; T.R. Ministry of Health, 2021b). The production technologies of the two vaccines differ from each other. CoronaVac vaccine, also known as Sinovac, is among the inactivated vaccines, and it is stated that it is safer in the first place since the killed virus is injected into the body. Pfizer/BioNTech vaccines are among the mRNA vaccines (T.R. Ministry of Health, 2021a). Studies have revealed that two doses of BNT162b2 produced by Pfizer/Bionetch provide 95% protection against covid-19 at the age of 16 and above (Polack et al., 2020: 2603).

This study aims to examine the attitudes of healthcare professionals towards Covid-19 vaccines. Healthcare professionals are a group of great importance, both because they are the first group to be vaccinated and because their attitudes towards vaccination are a significant determinant in the implementation of vaccination in the general population. Therefore, healthcare professionals were included in the study, and their beliefs and hesitations about the benefit of Covid-19 vaccines and their behavior of suggesting vaccination were evaluated. The vaccination status of healthcare professionals and which Covid-19 vaccine they had were also examined. As stated, there are various types of vaccines (CoronaVac/Sinovac, Pfizer/BioNTech, Moderna, Sputnik, Johnson & Johnson etc.) within the scope of the Covid-19 pandemic vaccination program, and the researchers evaluated which Covid-19 vaccine would be preferred by healthcare professionals if they had a choice.

Materials and methods

This study was carried out to determine the reasons that are effective in the confidence of healthcare professionals in Covid-19 vaccines and their preferences, the trust of healthcare professionals in vaccines in the fight against Covid-19, whether healthcare professionals recommend the vaccine, and their doubts about the vaccine.

In this quantitative study, a five-point Likert questionnaire technique was used. The literature reviewed for a scale to be used in the study, but it was determined that the existing questionnaires and scales did not explain the study objectives. Hence, first of all, a scale development study was carried out to achieve the purpose of the study. In this study, "Covid-19 Vaccine Attitude

Scale" was developed. The scale development study was published as a separate paper and article for the benefit of other researchers (İzgüden et al., 2022).

In this study, the attitudes of healthcare professionals about covid-19 vaccines were measured with the "Covid-19 Vaccine Attitude Scale" developed in the previous study. The scale consists of 24 items and four factors. Table 1 shows the results of the validity and reliability analysis of the study in which the scale was developed and the results of confirmatory factor analysis and reliability analysis of this study.

Table 1. Validity and reliability analysis results of the scale

Factor Analysis		**Scale Study**	**Health Worker Study (This work)**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO)		,920	,894
Bartlett's Test of Sphericity	Approx. Chi-Square	9120,816	7891,621
	Df	276	276
	Sig.	0,000	0,000
Total Variance Explained	%	72,907	67,89
Factor Load Range	734	879	613/895
Factors	**Number of Items**	**Cronbach's Alpha**	**Cronbach's Alpha**
The effect of determinants on Covid-19 vaccine preference	12	0,951	0,928
Belief in the benefits of Covid-19 vaccines	5	0,924	0,919
Behavior of recommending Covid-19 vaccines	4	0,952	0,941
Doubt about Covid-19 vaccines	3	0,792	0,774
Total	24	0,894	0,862

As seen in Table 1; the scale study and the Cronbach alphas of the dimensions in this study were close to each other. In this context, it has been determined that the first three dimensions (The effect of determinants on Covid-19 vaccine preference, Belief in the benefits of Covid-19 vaccines, Behavior of recommending Covid-19 vaccines) in the table are highly reliable and the last one dimension (Doubt about Covid-19 vaccines) are quite reliable (Kayış, 2005). The KMO value of the study was found to be 0.894 and the variables were found to be suitable for factor analysis at a significantly good level (Field, 2018).

The universe of the study consists of healthcare professionals working in Turkey. The convenience sampling method was used to determine the sample

of the study. In addition, there is various calculation methods used in determining the sample size (Karagöz, 2014). In such methods, it is considered sufficient to collect data from 384 individuals with a confidence interval of 95% (Coşkun et al., 2020). In the study, valid data were collected from a total of 420 healthcare professionals.

Data obtained from healthcare professionals were analyzed with SPSS descriptive, inferential, and significance tests such as frequency analysis, ANOVA, Tukey, t-test, and correlation test. How the Covid-19 vaccine attitudes of the participants differed according to independent variables such as demographic characteristics and their status regarding the Covid-19 vaccine were analyzed by ANOVA and t-Test, and the variables with statistically significant differences are given in the tables.

Results

The distribution of healthcare professionals according to various independent variables within the scope of the study is as follows. A total of 420 healthcare professionals participated in the study. It was determined that 66.2% of the participants were female, 64% were married, 46% were 34 years old and under, 41.7% were 35-50 years old, and 12.4% were 51 years old and over. In terms of profession, 17.1% of the participants are physicians, 40.7% are nurses, and 42.1% are other health professionals (pharmacists, medical secretaries, psychologists, etc.). Among the healthcare professionals who participated in the study, 64% work in hospitals, 8% in provincial/district health directorates, 6.9% in universities, 6% in family medicine, 5.7% in community health centers, and 9% in other healthcare institutions. The rates in the demographic data are compatible with the demographic characteristics of healthcare professionals in Turkey.

Table 2 shows the situation regarding the covid-19 vaccines of healthcare professionals. As can be seen in Table 2, 60% of the healthcare professionals have served Covid-19 patients in their institution. Also, 64.8% of the healthcare professionals did not catch the Covid-19 disease, and 26.2% lost a relative due to this disease.

As can be seen in Table 2, 42.5% of the healthcare professionals had Sinovac, and 33.7% had Biontech and Sinovac vaccines. Also, it was determined that 13.2% of the healthcare professionals did not get vaccinated and 10.6% of them had the Biontech vaccine. In addition, when healthcare professionals were asked about which Covid-19 vaccine they would prefer if they had a choice, 46.7% of them stated that they would prefer the Biontech vaccine, and 25.4% of them stated that they did not want to have any vaccine.

Table 2. Characteristics of healthcare professionals regarding covid-19 and vaccination

Variables	n	%
Have you served a Covid-19 patient?		
Yes	252	60
No	168	40
Have you had the Covid-19 disease?		
Yes	148	35.2
No	272	64.8
Have you lost a relative to Covid-19 disease?		
Yes	110	26.2
No	310	73.8
Have you had the flu vaccine before?		
Yes	158	37.6
No	262	62.4
Have you had the Covid-19 vaccine?		
Yes	361	86
No	59	14
Which Covid-19 vaccine did you have?		
Pfizer-Biontech	44	10.6
Sinovac	177	42.5
Biontech ve Sinovac (Both)	140	33.7
I didn't get vaccinated	55	13.2
If possible, which vaccine would you like to have?		
Pfizer-Biontech	196	46.7
Sinovac	69	16.4
Moderna	3	0.7
Sputnik	4	1
Johnson & Johnson	3	0.7
None	106	25.4
Other (Turkish Vaccine)	36	8.6

It was determined that 37.6% of the healthcare professionals had the flu vaccine and 86% had the Covid-19 vaccine. It was examined whether there is a relationship between the healthcare professionals' status of being vaccinated against influenza and their status of being vaccinated against Covid-19. As a result of the correlation analysis (r= 0.172, p=0.000) performed between the two variables, it was found that there was a low level of a positive and significant relationship between healthcare professionals' status of getting the flu vaccine and getting the Covid-19 vaccine.

Based on the data provided by the participating healthcare professionals, the statistical values of the Covid-19 vaccine attitude scale dimensions and the arithmetic mean and standard deviation distributions of each expression in

the scale were calculated. As can be seen in findings, it has been observed that the highest level of agreement among the expressions in the dimension of the effect of the determinants in the choice of Covid-19 vaccine is in the statement "*Scientific publications on the subject are effective in my choice of coronavirus vaccine*" (3.77). When the mean scores of the statements are examined in general, the mean of 3.00 and above indicate that participants tend to agree with the relevant statements. It has been determined that the mean score of the effect of the determinants in the Covid-19 vaccine preference of the healthcare professionals is 3.58, and the determinants are effective in the vaccine preference.

The dimension of recommending Covid-19 vaccines (3.82) has the highest mean score among the dimensions in the Covid-19 vaccine attitude scale and has the highest level of agreement of healthcare professionals. It has been determined that healthcare professionals recommend Covid-19 vaccines. It has been determined that healthcare professionals recommend Covid-19 vaccines mostly to the group aged 50 and over (3.88).

It has been found that the dimension of belief in the benefits of Covid-19 vaccines has a mean of 3.63, and healthcare professionals believe that the vaccine will benefit. From the statements in the dimension, "I believe that coronavirus vaccines will reduce the number of intensive care patients." (3.95) was the expression with the highest agreement of healthcare professionals. The dimension of suspicion about Covid-19 vaccines (2.70) is the dimension with the lowest agreement level among the dimensions in the Covid-19 vaccine attitude scale. As seen in the previous dimension, healthcare professionals believe in the benefits of vaccines and remain below average in the dimension of suspicion.

The results of the t-test and ANOVA test performed to detect statistically significant differences in the Covid-19 Vaccine Scale according to independent variables are given below. The first dimension of the scale, "The effect of determinants on Covid-19 vaccine preference", was analyzed according to independent variables. In this dimension, a statistically significant difference was found between the groups only according to the gender of the participants (t= 3.073, p=0.002). No statistically significant difference was found according to other variables. It has been found that apart from being male or female, healthcare professionals have a common attitude regarding the determinants of covid-19 vaccines. According to gender, female healthcare professionals stated that they considered the effect of determinants in vaccine preferences more than male healthcare professionals.

Table 3 shows the significant differences in the dimension of "Covid-19 vaccine recommendation behavior" of healthcare professionals according to independent variables. While a statistically significant difference was found between the groups according to the demographic variables of the "profession"

(F=16.542, p=0.000) and "the institution they work" (F= 2.284, p=0.046), no significant difference was found according to other variables. It was observed that the scores of the physicians were higher than the other groups. Also, it was determined that the Covid-19 vaccine recommendation behavior of the healthcare professionals working in family medicine was higher compared to those in the other group. It is a situation that can be seen as positive that physicians, who are an important factor in increasing vaccination rates on a social basis, have a higher rate of recommending vaccination compared to other groups. In addition, the high level of vaccination recommendation behaviors of health personnel working in family medicine will have an increasing effect on the spread of the vaccine, since the health institutions where people frequently apply for the first time and where health follow-ups are made are family physicians. It can also be thought that the values of the individuals included in these two groups are higher than the other groups due to the roles they undertake on the basis of social health. There was no significant difference found according to other demographic variables.

In the dimension of the Covid-19 vaccine recommendation behavior of healthcare professionals, a statistically significant difference was found between the groups according to the vaccine-related variables including serving Covid-19 patients (t= 2.022, p=0.044), having Covid-19 disease (t= 1.996, p= 0.047), having a flu vaccine (t= 2.366, p= 0.018), and Covid-19 vaccination status (t= 10.094, p= 0.000). It has been observed that the Covid-19 vaccine recommendation behavior is higher of those who provide services to patients compared to those who do not, those who have had the disease compared to those who have not the disease, those who have had the flu vaccine compared to those who have not, and those who have Covid-19 vaccine compared to those who have not.

Also, the Covid-19 vaccine recommendation behavior of healthcare professionals significantly differed according to the type of Covid-19 vaccine they get (F= 42.163, p= 0.000). It was determined that the group who had the Biontech and Sinovac vaccines recommended Covid-19 vaccines more than the others. The group that did not get the Covid-19 vaccine remained at the lowest level in recommending the vaccine. This situation can be interpreted as follows; the behavior of recommending the vaccine is also related to the vaccination status of the people at some point. Since vaccination in Turkey is with Sinovac and Biontech vaccines, it is natural for people who have these vaccines to recommend vaccines. In addition, it is usual for the group that does not want to be vaccinated to similarly do not recommend vaccinations.

Table 3. Comparison of covid-19 vaccine recommendation behavior dimension according to independent variables

Variables	$\overline{X}$	S	Test Value	p
Profession				
Physician	4.49	0.662	F= 16.542	**0.000**
Nurse	3.75	0.814		
Other Healthcare Professionals	3.67	1.051		
The institution they work				
Hospital	3.86	0.898	F= 2.284	**0.046**
University	3.90	0.914		
Family medicine	4.16	0.636		
Provincial/district health directorate	3.62	0.1.135		
Community Health Center	3.72	0.911		
Other	3.45	1.198		
Have you served a Covid-19 patient?				
Yes	3.90	0.906	t= 2.022	**0.044**
No	3.70	0.998		
Have you had the Covid-19 disease?				
Yes	3.95	0.904	t= 1.996	**0.047**
No	3.74	0.968		
Have you had the flu vaccine before?				
Yes	3.96	0.764	t= 2.366	**0.018**
No	3.73	1.038		
Have you had the Covid-19 vaccine?				
Yes	4.00	0.793	t= 10.094	**0.000**
No	2.78	1.093		
Which Covid-19 vaccine did you have?				
Pfizer-Biontech	3.96	0.768	F=42.163	**0.000**
Sinovac	3.84	0.806		
Biontech ve Sinovac (Both)	4.25	0.697		
I didn't get vaccinated	2.74	1.110		

Table 4 shows significant differences in the dimension of "belief in the benefits of Covid-19 vaccines" of healthcare professionals according to independent variables. A statistically significant difference was found between the groups in terms of demographic variables such as gender (t= -2.608, p= 0.009), age (F= 3.882, p= 0.021), and profession (F= 5.368, p= 0.005). No significant difference was found according to other demographic variables. It has been determined that male participants have higher scores than female participants, 51 and older age group have higher scores than other age groups, and physicians have higher scores than other healthcare professionals. In the previous analysis results, it was seen that physicians were the group that most recommended vaccination during the Covid-19 period. The result obtained here is also related to this. Physicians recommend vaccines because they believe in the benefits of vaccines.

In the dimension of the belief in the benefits of Covid-19 vaccines, a statistically significant difference was found between the groups according to the vaccine-related variables, including getting the flu vaccine (t= 2.529, p= 0.012) and getting the Covid-19 vaccine (t= 8.972, p= 0.000). It has been determined that those who have the flu vaccine have a higher belief in the benefits of Covid-19 vaccines than those who do not have the flu vaccine and those who have the Covid-19 vaccine than those who do not have the Covid-19 vaccine.

The belief in the benefits of the Covid-19 vaccines differs significantly according to the Covid-19 vaccine type that healthcare professionals get (F= 30,201, p= 0.000). It has been determined that those who have not been vaccinated have a lower belief in covid-19 vaccines than others. This is due to the fact that people who do not believe in the benefits of vaccines tend not to get vaccinated.

Table 4. Comparison of beliefs in the benefits of covid-19 vaccines dimension according to independent variables

Variables	$\bar{X}$	S	Test Value	p
Gender				
Female	3.55	0.880	t= -2.608	**0.009**
Male	3.80	0.796		
Age (Year)				
≤34	3.56	0.841	F= 3.882	**0.021**
35-50	3.60	0.908		
≥51	3.93	0.693		
Profession				
Physician	3.92	0.653	F= 5.368	**0.005**
Nurse	3.68	0.752		
Other Healthcare Professionals	3.50	0.976		
Have you had the flu vaccine before?				
Yes	3.77	0.760	t= 2.529	**0.012**
No	3.54	0.906		
Have you had the Covid-19 vaccine?				
Yes	3.78	0.728	t= 8.972	**0.000**
No	2.78	1.038		
Which Covid-19 vaccine did you have?				
Pfizer-Biontech	3.83	0.791	F= 30.201	**0.000**
Sinovac	3.75	0.760		
Biontech ve Sinovac (Both)	3.84	0.605		
I didn't get vaccinated	2.71	1.087		

Table 5 shows significant differences in the dimension of "Doubt about the Covid-19 vaccines" of healthcare professionals according to independent variables. A statistically significant difference was found between the groups in terms of demographic variables such as gender (t= 2.178, p= 0.030), the institution they work (F= 4.083, p= 0.001), and profession (F= 6.848, p= 0.001). No significant difference was found according to other demographic variables. As a result of the Tukey test, it was determined that female healthcare professionals were more suspicious of Covid-19 vaccines than males and other healthcare professionals were more suspicious than physicians. This finding also supports other findings. Since the physicians believed in the benefits of the vaccines and recommended the vaccine, their suspicion of the vaccine was seen at a lower level compared to the other group. Also, it has been determined that the level of suspicion about vaccines is higher in the healthcare professionals working in the community health center compared to those working in the provincial/district health directorate, family medicine, and universities.

It was observed that the Covid-19 vaccination status of healthcare professionals caused a significant difference in the extent of doubt about the vaccines. It was determined that the reason for this difference between the groups was due to the higher scores of those who did not get vaccinated. Also, the doubt about the Covid-19 vaccines significantly differs according to the type of Covid-19 vaccine that healthcare professionals get (F= 7.515, p= 0.00). Those who have not been vaccinated have more doubt about the Covid-19 vaccines than others.

Table 5. Comparison of doubt about the covid-19 vaccines dimension according to independent variables

Variables	$\bar{X}$	**S**	**Test Value**	**p**
Gender				
Female	2.76	0.702	t= 2.178	**0.030**
Male	2.59	0.797		
Profession				
Physician	2.44	0.698	F= 6.848	**0.001**
Nurse	2.64	0.676		
Other Healthcare Professionals	2.84	0.776		
The institution they work				
Hospital	2.78	0.738	F= 4.083	**0.001**
University	2.37	0.676		
Family medicine	2.41	0.618		
Provincial/district health directorate	2.47	0.748		
Community Health Center	3.02	0.728		
Other	2.65	0.687		
Have you had the Covid-19 vaccine?				
Yes	2.63	0.701	t= -4.878	**0.000**
No	313	0.797		
Which Covid-19 vaccine did you have?				
Pfizer-Biontech	2.48	0.596	F= 7.515	**0.000**
Sinovac	2.63	0.678		
Biontech ve Sinovac (Both)	2.70	0.769		
I didn't get vaccinated	3.11	0.808		

Discussion

The study was conducted with a total of 420 healthcare professionals, 72 physicians, 171 nurses, and 177 other healthcare professionals (pharmacists, medical secretaries, psychologists, etc.). In the study, the Covid-19 Vaccine Attitude Scale was used as a data collection tool. The data obtained from the participants were evaluated and the results were interpreted.

The vaccination of healthcare professionals and their vaccination recommendations are essential for the vaccination on a social basis (Dubé et al., 2014). As a result of the study, it has been determined that the vast majority of healthcare professionals, 86%, have had the Covid-19 vaccine. As Kurtuluş and Can (2021) stated, the vaccination of healthcare professionals, whom society considers as role models, is essential in controlling the pandemic. In the study conducted by Kurtuluş and Can, it was determined that almost half of the healthcare professionals were reluctant to be vaccinated, and it was stated that this would create a disadvantage in society.

Within the scope of the study, it was determined that the Covid-19 vaccine recommendation behavior dimension has the highest agreement level among the dimensions of the Covid-19 vaccine attitude scale and that healthcare professionals recommend vaccination to people during the Covid-19 pandemic period. Head et al. (2020: 707) revealed that if healthcare providers recommend getting the Covid-19 vaccine, the rate of vaccination of people increases. As a result of the analyzes, it was determined that the Covid-19 vaccine recommendation behaviors of physicians are at a higher level than nurses and other healthcare professionals. It is supported by study results that the attitudes of physicians towards vaccination and their vaccination advice to people in communities are extra important (Bovier et al., 2001: 4760; Weigel, 2014: 1015).

It has been observed that older age groups and physicians have a higher belief that Covid-19 vaccines will eliminate the negative effects of the pandemic. Another finding of the study, the fact that the physicians among the healthcare professionals are the group that recommends the vaccine the most, supports each other in this regard. Physicians believe in the benefits of Covid-19 vaccines and recommend vaccination to patients and their relatives. Another result that supports the consistency of the findings is that physicians have lower levels of suspicion about Covid-19 vaccines compared to other healthcare professionals. Also, it was determined that healthcare professionals recommended the most for the age of 50 and above to have the Covid-19 vaccines. The reason for this is considered to be due to the fact that the elderly are in the disadvantaged group in terms of the course of the disease and mortality rates, as mentioned in the study of Ek et al. (2020). In the study, it was observed that the behavior of suggesting vaccination of the participants who had the Covid-19 disease was at a higher level.

It was observed that the majority of the participants get the Sinovac vaccine. The reason for this is that the first vaccine to come to Turkey is Sinovac (Okyay, 2021: 13) and the first group to be vaccinated is healthcare professionals (T.R. Ministry of Health, 2021b). Also, when the participants were asked about which Covid-19 vaccine they would prefer if they had a choice, it was observed that the majority of the participants would prefer the Biontech vaccine.

During the study process, the statements of the healthcare professionals as "*We had Sinovac vaccine because the existing vaccine is Sinovac, but if Biontech was available, I would have preferred it at that time*" were noted by the researchers. In their study on the Turkish population, Yılmaz et al. (2021) was revealed that in the case of vaccine preference, the domestic vaccine constitutes more confidence than the imported vaccines. In this study, the domestic vaccine preference of healthcare professionals showed a lower participation tendency with a rate of 8.6%. In the study of Yılmaz et al. (2021), besides the preference for the vaccine to be produced in Turkey, it is also among the results that the vaccine produced in Germany was preferred. By considering the mean of the effect size of the determinants in the Covid-19 vaccine preference, it has been revealed that the factors such as the country where the vaccine is produced, the brand and company of the vaccine, the opinions of experts and government officials are effective in the vaccine preferences of the healthcare professionals. In addition, it has been observed that the most effective factor in the vaccine preference of healthcare professionals is the scientific studies on vaccines. It is considered that this is due to the fact that since the participants are in the health sector and have more knowledge of the subject, they rely on scientific publications instead of being under the influence of the infodemic which is false information and fake news due to the lack of information about the disease and fear-like situations during the pandemic period (Akyüz, 2020).

As a result of the analyzes, it was concluded that there is a significant relationship between healthcare professionals getting the flu vaccine and getting the Covid-19 vaccine. Another result of the study is that healthcare professionals who have flu vaccines have a higher level of recommending Covid-19 vaccines and their belief that Covid-19 vaccines will be beneficial compared to those who do not get the flu vaccines. Supporting the findings, Wang et al. (2020) also revealed that people who have had the flu vaccine before are more likely to accept the Covid-19 vaccine.

It was observed that healthcare professionals believed that Covid-19 vaccines would be beneficial. Healthcare professionals think that Covid-19 vaccines will reduce the number of cases, the number of intensive care patients, and mortality rates, and they believe that the pandemic period will be overcome in this way. Aktekin (2021) also stated that with full vaccination, the number of cases, hospitalization and intensive care unit admission rates, and mortality rates decreased. It was determined that participants' doubt about the Covid-19 vaccines is at a low level. The view that vaccines can be used as a commercial tool has come to the fore as the most significant element of doubt. The analyzes have shown that compared to others, healthcare professionals who do not have vaccinations are more suspicious of Covid-19 vaccines, have a low level of belief that the vaccines will be beneficial, and are also hesitant to recommend the vaccine. It has been found that people who have doubts

about vaccinations prefer not to be vaccinated. In the study of Li et al. (2021: 1), it is stated that health workers generally have a positive attitude towards future Covid-19 vaccines, and that vaccine hesitations have not completely disappeared. Although the rate of unvaccinated healthcare professionals is low, as stated above, this rate should be considered significant. Health system and agency officials should set up programs to address the concerns of unvaccinated healthcare professionals.

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