

ORIGINAL ARTICLE

Medicine Science 2022;11(4):1494-501

Experience and opinions of healthcare professionals on COVID-19 and inactive COVID-19 vaccine (Coronavac, developed by sinovac of china)

 **Burcu Kayhan Tetik¹**,  **Cigdem Tekin²**,  **Leman Acun Delen³**,
 **Isilay Gedik Tekinemre⁴**,  **Yasar Bayindir⁵**

¹Inonu University Faculty of Medicine, Department of Family Medicine, Malatya, Türkiye

²Inonu University, Vocational School of Health Care Services, Department of Home Patient Care, Malatya, Türkiye

³Malatya Training and Research Hospital, Department of Anesthesia and Reanimation, Malatya, Türkiye

⁴Elazığ Ulukent Family Health Center, Family Medicine Unit, Elazığ, Türkiye

⁵Inonu University Faculty of Medicine, Department of Infectious Diseases and Clinical Microbiology, Malatya, Türkiye

Received 01 July 2022; Accepted 21 September 2022

Available online 16.10.2022 with doi: 10.5455/medscience.2022.05.121

Copyright©Author(s) - Available online at www.medicinescience.org

Content of this journal is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International.



Abstract

It is aimed to determine the opinions and experiences of healthcare professionals about COVID-19, inactive COVID-19 vaccine and the frequency of hesitation, vaccine rejection, and vaccination status, and to analyze the reasons for vaccine rejection and the contributing factors. The research is a cross-sectional study, and the universe of the study consists of all healthcare personnel (7200 people) working in hospitals. The independent variables of the questionnaire included socio-demographic characteristics, descriptive questions about the COVID-19 pandemic, and the COVID-19 Fear Scale. A value of $p < 0.05$ was considered statistically significant. We found that 26.2% (184) of the healthcare workers participating in the study were diagnosed with COVID-19. 53.7% of the participants reported that they provided health care for COVID-19 patients. When the vaccine preferences of the participants were questioned, 42.2% stated that they would prefer the Chinese CoronaVac vaccine, 30.1% Turkish vaccine, 22.4% German BioNTech/Pfizer vaccine, 1.7% American Moderna vaccine, 3.1% English Oxford \ AstraZeneca vaccine, and 0.6% the Russian Gamaleya vaccine. When the reasons for anti-vaccine attitude were questioned, 44.2% of the participants stated that they did not think the vaccine was safe. When we compared the COVID-19 Fear Scale scores according to the characteristics of the participants, we found that individuals in the 35-44 age group got higher COVID-19 Fear Scale scores than the other groups ($p < 0.05$). When the median scores of the profession groups were compared, the median scores of nurses/midwives/paramedics were found to be higher than the other groups ($p < 0.05$). Awareness in the population can be raised and confusion can be eliminated by healthcare professionals by speaking clearly and decisively, based on experience in previous epidemics.

Keywords: Covid-19, vaccine, attitude

Introduction

A novel infectious disease was first appeared in Wuhan, China in December 2019, and was characterized by respiratory symptoms such as fever, cough, and shortness of breath. The new coronavirus as a causative agent was referred to as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), and the associated disease was named as 2019 coronavirus disease (COVID-19) [1]. With the increase of cases in a short time around the world, World Health Organization (WHO) declared the outbreak as a pandemic on March 11, 2020 [2]. The pandemic caused immense psychological pressure due to the risk of death from viral infection [3].

A standard for the treatment and medications for COVID-19 have not yet been defined. On one hand the most effective treatment methods for the disease has been sought on the other, a campaign for vaccination is continuing, at different stages. All countries have determined vaccination policies and especially developed countries started to vaccinate their citizens with the discovered vaccines. However, even if sufficient vaccine is available, the popular indecision about vaccination, which is also promoted by the negative impact of the media, compromises the targeted population vaccination [4]. WHO listed "anti-vaccination" at the top of the 10 global health problems, in 2019, due to the rapid increase in vaccine rejection cases, worldwide and the growing danger [5]. The indecision or distrust towards vaccination is popular even among healthcare professionals who are at the forefront of the struggle against COVID-19. On the other hand, the concerns about the safety of rapidly developing vaccines contribute the hesitations about vaccination [6]. In the survey studies conducted among healthcare professionals, hesitations against the COVID-19

*Corresponding Author: Burcu Kayhan Tetik, Inonu University Medical Faculty, Department of Family Medicine, Malatya, Türkiye
E-mail: drburcukayhan@hotmail.com

vaccine have been reported [6,7]. As the number of people who are immune to a certain disease in the society increases, the capability of the disease to cause an epidemic decreases, and when the rate of immunity increases above a certain threshold, the risk of epidemic can be removed completely. In the literature, this condition is called "mass immunity". Therefore, the decision to be vaccinated concerns not only the individual, but also the society. Anti-vaccination actions endanger the health of the whole society as well as individuals [8]. However, further anti-vaccine attitudes are also expected against COVID-19 vaccines being developed, including vaccines in the national immunization program.

Awareness of the anti-vaccine attitudes against COVID-19 vaccines is essential for public health interventions and the struggle against the epidemic. Therefore, in this study, it is aimed to determine the opinions of healthcare professionals about inactive COVID-19 vaccine and the frequency of hesitation, vaccine rejection, and vaccination status, and to analyze the reasons for vaccine rejection and the contributing factors.

Material and Methods

The research is a cross-sectional study, and the universe of the study consists of all healthcare personnel (7200 people) working in hospitals (Turgut Ozal Medical Center and Malatya Training and Research Hospital) providing health services in Malatya as of March 2021. The healthcare personnel who agreed to answer the questionnaire were accessed by mobile phones by using a web-based program and a questionnaire prepared by the researchers was applied to the participants, between March and April 2021. In the power analysis, it was determined that 773 individuals should be included in order to obtain an 80% power and a 95% confidence interval. In the study 91% (702 persons) of the targeted sample size was reached. Ethical approval for the study was obtained from Inonu University Faculty of Medicine Ethics Committee and written permission was obtained from the Ministry of Health (2021\1655).

The independent variables of the questionnaire included socio-demographic characteristics, descriptive questions about the COVID-19 pandemic, and the COVID-19 Fear Scale. The dependent variables consisted of questions about the inactive COVID-19 vaccine and vaccination. The first part of the questionnaire included questions about demographic characteristics, COVID-19 vaccination status and vaccination practices developed by the researcher in line with the literature. In the second part, the COVID-19 Fear Scale was applied to measure the levels of the fear of disease of healthcare personnel. The COVID-19 Fear Scale has been adapted to Turkish and used in many scientific studies. The scale consists of seven items, answered on a five-point Likert-style scale. A higher total score indicates a higher level of fear of the COVID-19 [9]. Other diagnostic methods mentioned in the question in which COVID-19 diagnostic methods are questioned include serological tests.

The data were analyzed by using SPSS package program (version 22.0). The normal distribution of the data was detected by using Kolmogorov-Smirnov test (K-S). Normally distributed data were analyzed by using Student's t test and One Way Anova test and the data that did not comply with normal distribution was analyzed by using Mann-Whitney U test and Kruskal Wallis test. A value of $p < 0.05$ was considered statistically significant.

Results

A total of 702 healthcare personnel participated in the study and 51.9% of them were females and 48.1% of them were males. When we evaluated the characteristics of the participant we found that, 36.3% of the participants were between the ages of 35 and 44, 21.4% were students, 20.7% were health technicians, 18.5% were nurses /midwives\health officers, 9.5% were paramedics, 5.6% were research assistant, and 4.3% were faculty member. In addition we detected that, 28.1% of the participants have been serving in the profession for 11-20 years, 72.1% were working in TOTM Hospital, and 27.9% were working in Malatya Training and Research Hospital [Table 1].

When we evaluated the knowledge of the participants about COVID-19 and its management, 53.7% of the participants reported that they provided health care for COVID-19 patients. We found that, 26.2% (184) of the healthcare workers participating in the study were diagnosed with COVID-19 and 22.9% of them were diagnosed by PCR test; 13.0% of them lost a close relative due to COVID-19; and 21.8% of them had at least one chronic disease [Table 2]. The median COVID-19 Fear Scale Score of the participants was 17 ± 6.5 (min:7, max:35).

The question "Do you think that the COVID-19 vaccine should be compulsory?", was answered as "Yes" by 59.3%, "No" by 18.9%, and "Undecided" by 21.8% of the participants. When we evaluated where the participants got knowledge about COVID-19 vaccines, 68.1% of them stated that they got knowledge from healthcare personnel, 66.2% from internet/social media, 49.1% from television, and 44.2% from scientific articles. When the vaccine preferences of the participants were questioned, 42.2% stated that they would prefer Chinese CoronaVac vaccine, 30.1% Turkish vaccine, 22.4% German BioNTech \Pfizer vaccine, 1.7% American Moderna vaccine, 3.1% English Oxford \ AstraZeneca vaccine, and 0.6% the Russian Gamaleya vaccine. When the vaccination status of the participants was questioned (Corona Vaccine), 49.1% of the participants stated that they were vaccinated and trusted the vaccine, 34.8% stated that they were vaccinated but were worried, and 16.1% stated that they were not vaccinated [Table 3].

When the vaccinated participants were questioned about reasons affecting their decisions to have the vaccine, 69.6% stated that they were vaccinated because they were at higher risk as healthcare workers, 40.6% stated that they believed that vaccine was effective, 39.7% believed the vaccine was safe, 36.0% stated that they believed the scientists, 30.2% of them stated that they had the vaccine because, lots of COVID-19 vaccine recipients were trustworthy person for this issue. In addition, 11.2% of the participants stated that they had the vaccine despite having a history of allergy / asthma, 6.3% had rheumatic / autoimmune disease, and 3.2% were using immune suppressive drugs. We found that post-vaccination side effects developed in 34.1% of the vaccinated participants and there were no side effects in 65.9% of them. Among the side effects, the most common side effects were headache in 58.3% of the patients, fatigue in 57.3%, and muscle and joint pain in 55.3% of the patients [Table 3].

It was stated to the participants that they could choose more than one option for their reasons for refusing the vaccine. When the reasons for anti-vaccine attitude were questioned, 44.2% of the participants stated that they did not think the vaccine was safe,

38.1% postponed it for a certain time, because it was new, 33.6% stated that they did not believe that the vaccine was effective, 27.4% stated that they did not need it because they followed the recommendations for protection measures strictly, 23.9% stated that they did not trust Chinese companies. 8.8% of the participants stated that they think the metals in the vaccine can cause autism,

19.5% stated that they had a chronic disease, 13.3% stated that they feared side effects of the vaccines, and 10.6% stated that they refused to be vaccinated because they were against vaccines in general. 3.5% of the participants stated that they were pregnant and 1.8% stated that they were breastfeeding, 9.7% stated that they are not afraid of the disease [Table 4].

Table 1. Sociodemographic characteristics of the participants

Socio-demographic Characteristics	Noun(n)	%
Gender		
Female	364	51.9
Male	338	48.1
Age		
Under 25 years	161	22.9
25-34 years	207	29.5
35-44 years	255	36.3
45 years and older	79	11.3
Profession		
Faculty Member	30	4.3
Research Assistant	39	5.6
Nurse\ midwife	130	18.5
Student	150	21.4
Officer	44	6.3
Sister	13	1.9
Cleaning staff	36	5.1
Health Technician	145	20.7
Specialist Dr	23	3.3
Other Technician	67	9.5
Other	25	3.6
Your institution		
Turgut Ozal Medical Center	506	72.1
Research and Training Hospital	196	27.9
Year of Office		
<1	92	13.1
1-5	194	27.6
6-10	126	17.9
11-20	197	28.1
21<	93	13.2
Total	702	100

Table 2. The knowledge of the participants about COVID-19 management

Characteristics	Number (n)	%
Have you ever provided health service to COVID-19 patients?		
Yes	377	53.7
No	325	46.3
Have you been diagnosed with COVID-19?		
Yes	184	26.2
No	518	73.8
How was the diagnosis of COVID-19 made?		
PCR	161	22.9
PCR-PA Lung Radiografi	4	0.6
PCR- CT	15	2.1
Only CT	4	0.6
Other	518	73.8
Have you lost any relatives due to COVID-19?		
Yes	91	13.0
No	611	87.0
Do you have a chronic disease?		
No	549	78.2
1	113	16.1
2	30	4.3
3 or more	10	1.4

Table 3. Vaccination Status of Participants and thoughts about vaccination

Characteristics	Number (n)	%
Do you think that vaccination for COVID-19 should be compulsory?		
Yes	416	59.3
No	133	18.9
Undecided	153	21.8
Which vaccine would you prefer?		
Chinese CoronaVac vaccine	296	42.2
German BioNTech\Pfizer vaccine	157	22.4
ABD Moderna vaccine	12	1.7
Russion Gamaleya vaccine	4	0.6
British Oxford\AstraZeneca vaccine	22	3.1
I will wait for domestic vaccine	211	30.1
Have you had CoronaVac (China) vaccine?		
Yes. I trust in the vaccine	345	49.1
Yes. But I am concerned	244	34.8
No	113	16.1
What are the reasons that affected your decision to have the vaccine		
I believe that the vaccine is safe	234	39.7
I believe that the vaccine is effective	239	40.6
I do not believe that the vaccine is effective. I had it due to the pressure from friends	18	3.1
I do not believe that the vaccine is safe. I had it due to the pressure from friends	12	2.0
I had it because people I trusted also had it	178	30.2
I was affected by scientists	212	36.0
I was affected by press and social media	19	3.2
I had it due to the fear of disease	95	16.1
I had it because I felt at risk because I am a healthcare worker	410	69.6
I trust in vaccines regardless of in which country it was produced	84	14.3
Other	11	1.9
Which accompanying condition did you have when you had the vaccine?		
Pregnancy	1	0.2
Breastfeeding	6	1.0
Cancer treatment	2	0.3
The use of immune suppressive drugs	19	3.2
Rheumatic/autoimmune disease	37	6.3
Allergy/Asthma	66	11.2
History of Anaphylaxis	11	1.9
Did any side effects developed after you had the vaccine?		
Yes	199	34.1
No	385	65.9
Side effects		
Fever	37	18.6
Fatigue	114	57.3
Muscle and joint pain	110	55.3
Sore throat	37	18.6
Nasal congestion	17	8.5
Runny nose	23	11.6
Skin rash	4	2.0
Anaphylaxis	4	2.0
Muscle weakness	46	23.1
Headache	116	58.3
High blood pressure	11	5.5
Diarrhea	7	3.5
Arm pain	6	3.0
Dizziness	4	2.0
Nausea	5	2.5
Other	15	7.5

Table 4. Participants' sources of information and reasons for refusing vaccine

Characteristics	Number (n)	%
What is your source of information about the vaccine?		
Scientific article	310	44.2
Book	38	5.4
TV	345	49.1
Internet\social media	495	66.2
Family\friend	179	25.5
Healthcare professionals	478	68.1
Other	8	1.1
If you were not vaccinated, what was the reason or reasons for this?		
I don't believe the vaccine is safe	50	44.2
I don't believe the vaccine is effective	38	33.6
I think the metals in the vaccine can cause autism	10	8.8
I believe the vaccine is effective, but I'm concerned about side effects	15	13.3
I believe the vaccine is safe but I'm concerned about side effects	11	9.7
I expect to be immune by substituting the vaccine for the disease	5	4.4
I need to spend some more time, it's still too new	43	38.1
I didn't had it done because people I trust didn't had it	1	0.9
I rejected it under the influence of scientists	8	7.1
I did not have it due to the influence of social media and press	4	3.5
I have a chronic disease	22	19.5
I'm not afraid of the disease	11	9.7
As a healthcare worker, I am at risk, but I strictly follow the recommendations	31	27.4
The country where the vaccine is produced is important, I do not trust Chinese companies	27	23.9
I did not have it because I was pregnant	4	3.5
I did not have it because I was breastfeeding	2	1.8
I had a rheumatic/autoimmune disease	4	3.5
I am receiving cancer treatment	1	0.9
I have allergies/asthma	10	8.8
I am protected with Natural Methods, no need for vaccination	7	6.2
I'm against vaccines in general	12	10.6
Other	6	5.3

When we compared the COVID-19 Fear Scale scores according to the characteristics of the participants, we found that individuals in the 35-44 age group got higher COVID-19 Fear Scale scores than the other groups ($p<0.05$). When the median scores of the profession groups were compared, the median scores of nurses/midwives/paramedics were found to be higher than the other groups ($p<0.05$). COVID-19 Fear Scale Scores of those who worked for 21 years or more, those had at least two chronic diseases, and those who had the vaccine but worried, were found to be higher than the other groups ($p<0.05$). COVID-19 Fear Scale Scores of the participants who thought vaccination should not be

compulsory were found to be lower ($p<0.05$). (Table 4). When we compared the COVID-19 Fear Scale scores according to gender, it was found that females got higher scores than males ($p<0.05$). In addition, COVID-19 Fear Scale scores of individuals with COVID-19 disease were found to be higher than those who did not get the disease ($p<0.05$). In addition, the COVID-19 Fear Scale scores of those who work in the Training and Research Hospital, those who provided health care service for COVID-19 patients, and those who lost one close relative were found to be higher ($p<0.05$) [Table 5, Table 6].

Table 5. Comparison of the COID-19 Fear Scale Scores according to Characteristics of the Participants

COVID-19 Fear Scale Scores					
	n	Min	Med	Max	p
Age					
25>	161	7.00	16.38	35.00	0.068
25-34	207	7.00	17.55	35.00	
35-44	255	7.00	18.39	35.00	
45<	79	7.00	17.82	35.00	
Profession					
Faculty Member	30	7.00	16.83	29.00	0.001
Research Assistant	39	8.00	17.25	29.00	
Nurse \ Midwife \Paramedic	130	7.00	19.58	35.00	
Student	150	7.00	16.29	30.00	
Officer	44	7.00	16.13	35.00	
Nurse	13	7.00	17.92	28.00	
Janitor	36	7.00	15.25	35.00	
Health technician	145	7.00	18.57	35.00	
Specialist	23	7.00	19.47	32.00	
Health technician	67	7.00	16.26	27.00	
Other	25	8.00	19.20	35.00	
Participant's duration in the profession					
Less than a year	92	7.00	15.42	30.00	0.001
1-5 years	194	7.00	17.10	35.00	
6-10 years	126	7.00	18.61	35.00	
11-20 years	197	7.00	17.77	35.00	
21 years and above	93	7.00	19.20	35.00	
Do you have a chronic disease					
No	549	7.00	16.99	35.00	0.001
Yes, only one	113	7.00	19.11	35.00	
Yes two	30	18.00	22.26	35.00	
Yes three or more	10	7.00	21.40	28.00	
Should Vaccination Be Mandatory?					
Yes	416	7.00	17.94	35.00	0.005
No	133	7.00	16.06	35.00	
I am indecisive	153	7.00	18.09	34.00	
Have You Had CoronaVac Vaccine?					
Yes	345	7.00	17.07	35.00	0.001
Yes but I'm concerned	244	7.00	18.83	35.00	
No	113	7.00	16.67	35.00	

Table 6. Comparison of the COID-19 Fear Scale Scores according to Characteristics of the Participants

COVID-19 Fear Scale Scores					
	n	Min	Med	Max	p
Gender					
Female	364	7.00	19.84	35.00	0.001
Male	338	7.00	15.22	35.00	
Institution					
TOTM	506	7.00	17.51	35.00	0.566
Research and Training	196	7.00	17.89	35.00	
Being In The Health Service					
Yes	377	7.00	17.70	35.00	0.893
No	325	7.00	17.52	35.00	
COVID-19 positive diagnosis					
Yes	184	7.00	18.47	35.00	0.035
No	518	7.00	17.32	35.00	
Loss of Family Member					
Yes	91	7.00	18.08	35.00	0.605
No	611	7.00	17.55	35.00	

Discussion

Vaccination is a great success of the industrial age, which has been used in the prevention of infectious diseases and has saved and continues to save millions of lives. Our hope to get rid of the COVID 19 pandemic is mass immunity. The way to achieve mass immunity is to make vaccination prevailing. However, there is a worldwide lack of confidence in the COVID 19 vaccine. To make vaccination prevailed can be done by persuading individuals by eliminating the confusion about vaccination.

World Health Organization stated that vaccine hesitancy is among the top 10 threats to contributing to global epidemics, in 2019. In a study investigating the causes of vaccine rejection, the most common reason was found to be distrust of vaccines [5,10]. In the past few decades, hesitations about vaccines have emerged as a major public health problem leading to outbreaks of infectious infections such as measles [5]. Some studies conducted in developed countries explain the underlying causes of vaccine hesitancy or opposition; experiences, emotions, routine ways of thinking, sources of information, peers/family, risk perceptions, and trust [11]. The reasons for vaccine refusal and hesitation in underdeveloped countries are different from those in developed countries, and lack of information about vaccines, distrust of vaccine companies, and religious and cultural factors are the main reasons [12]. In our study, in line with the literature, the most common reasons for rejecting vaccination were found to be distrust of vaccine with a rate of 44.2% and getting the disease already with a rate of 38.1%. In order to establish trust in the vaccine, it would be appropriate for the ministry of health and authorities in the health care profession to give more speeches in the press and social media. In this regard, in our country, persuasion teams for vaccination were established by the Ministry of Health.

Other common reasons for vaccine rejection are that people afraid that aluminum and mercury, which are used as auxiliary metals in vaccines, can cause autism. However, in a large-scale epidemiological study, it was reported that there was no association between neurodevelopmental abnormalities and metals [5]. In our study, although it was not a very high rate, 8.8% of the participants stated that they rejected vaccination because they thought the vaccine can cause autism. In a study examining the effects of aluminum on infants, the hair and blood samples of babies were evaluated and it was found that there was no relationship between the aluminum and neurodevelopmental problems [13].

Vaccination is one of the primary prevention measures used in preventive medicine and are administered to healthy people. A vaccine is presented to use after passing many safety and efficiency procedures. Although these procedures were performed rapidly, during the pandemic period, security was never compromised but only the procedural processes are expedited. Therefore serious side effects are not expected. Nevertheless, reported side effects are recorded carefully in order not to overlook a serious situation. In a study, side effects developing after the Moderna™ COVID-19 vaccine in more than half of the participants were reported to be rash at the injection site, fatigue, tremors, headache, myalgia, and pain [14]. In our study, no side effects related to the vaccine were seen in 65.9% of the participants. Among the side effects, the most common side effects were headache in 58.3% of the patients, fatigue in 57.3%, and muscle and joint pain in 55.3% of

the patients.

In our struggle to get rid of the pandemic, starting by eliminating the hesitations about vaccination among healthcare professionals may provide much rapid progress. In the studies investigating the trust in vaccination for COVID 19, in Europa, it was found that the rate of trust in the vaccine was 72% in Northern Europe, 32-48% in Eastern Europe, and 59% in Western Europe [15]. In studies conducted in different countries, 30-40% or more of the population showed negative attitudes towards vaccines developed or to be developed against COVID-19 [16,17]. In our study, we found that, 49.1% of the participants were vaccinated and had trust in the vaccine, 34.8% had the vaccine but they did not trust the vaccine. We think that the inadequacy of trust against vaccination is due to the fact that not much time has passed since the pandemic is very recent and the protection rates of the vaccines are still not known clearly. The highest rate of trust in the vaccine is in Asia with 95% and East Africa with 92%, in the world [15].

In our study, 53.7% of the participants have been providing healthcare service to COVID 19 patients, 26.2% were diagnosed with COVID 19, and 13% had lost a relative due to COVID 19. The mean score of the COVID 19 fear scale was 17 ± 6.5 . We found that COVID 19 Fear Scale scores of females were significantly higher compared to males. In a study by Taspinar et al., the COVID-19 fear levels of physiotherapists were found to be 17.19 ± 5.38 detected and women's scores were found to be higher than men's. These findings are similar to our study [18]. This difference may be due to the higher anxiety levels of females or the maternal ideation of what will happen to their children if something happens to them. COVID 19 Fear Scale scores of midwives and nurses were higher compared to doctors, students, and janitors. This difference may be due to the fact that midwives and nurses afraid that the risk of transmission is higher for them because they usually apply invasive procedures and spend more time with patients during the treatment process. In addition we found that COVID 19 Fear Scale scores of the healthcare professionals who have been serving more than 21 years and those with at least two comorbidities were significantly higher. It may be due to the fact that, it was reported especially in the studies conducted at early stages of the pandemic that, mortality rate of the disease is higher in middle-aged and older individuals and those with chronic diseases. Our study was conducted in the two largest hospitals of our city. We found that COVID 19 Fear Scale scores of those who work in the training and research hospital were significantly higher compared to those who work in the university hospital. In our city, the training and research hospital was allocated as the pandemic hospital. Since the personnel working in training and research hospital provided service for COVID 19 patients more frequently compared to those working in the university hospital, they might be feeling themselves at higher risk. Another group with higher COVID 19 Fear Scale scores was those who were diagnosed with COVID 19, previously.

Conclusion

Since different types of vaccines with very different characteristics were produced, in a relatively short period, during the pandemic, there is a lack of trust in the effectiveness of these vaccines. It is obvious that there is need for more time to fully understand the protective capacity of these products. However, there is no place

for confusion in these critical circumstances. The main reasons for confusion are lack of information and information pollution. Healthcare professionals play a key role in transmitting correct information to the population. Therefore it should be the priority to inform healthcare personnel comprehensively to be able to answer questions about the necessity of vaccination. Awareness in the population can be raised and confusion can be eliminated by healthcare professionals by speaking clearly and decisively, based on experience in previous epidemics.

Patient Consent:

Since there was no invasive procedure, verbal consent was obtained from the patient.

Conflict of interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical approval

Ethical approval for the study was obtained from Inonu University Faculty of Medicine Ethics Committee and written permission was obtained from the Ministry of Health (2021\1655).

References

1. Corona viridae Study Group of the International Committee on Taxonomy of Viruses. The species severe acute respiratory syndrome-related coronavirus: classifying 2019-nCoV and naming it SARS-CoV-2. *Nat Microbiol.* 2020;5:536–44.
2. WHO Director-General's opening remarks at the media briefing on COVID-19- 11 March 2020. <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19%2D11-march-2020> access date 30.03.2020
3. Cao W, Fang Z, Hou G, et al. The psychological impact of the COVID-19 epidemic on college students in China. *Psychiatry Res.* 2020;287:112934.
4. Omer SB, Salmon DA, Orenstein WA, et al. Vaccine refusal, mandatory immunization, and the risks of vaccine-preventable diseases. *NEJM.* 2009;360:1981–8.
5. Geoghegan S, O'Callaghan KP, Offit PA. Vaccine safety: myths and misinformation. *Front Microbiol.* 2020;11:372.
6. Dror AA, Eisenbach N, Taiber S, et al. Vaccine hesitancy: the next challenge in the fight against COVID- 19. *Eur J Epidemiol.* 2020;35:775-9.
7. Palamenghi L, Barelli S, Boccia S, et al. Mistrust in biomedical research and vaccine hesitancy: the forefront challenge in the battle against COVID-19 in Italy. *Eur J Epidemiol.* 2020;1–4.
8. Azap A. The social consequences of unvaccination. *Society and Physician Journal.* 2018;33:217-9.
9. Satıcı B, Gocet-Tekin E, Deniz ME, et al. Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *Int J Ment Health Addict.* 2020;19:1980-8.
10. Larson HJ, Jarrett C, Eckersberger E, et al. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: a systematic review of published literature, 2007-2012. *Vaccine.* 2014;17:32:2150-9.
11. Dubé E, Gagnon D, MacDonald N, et al. Underlying factors impacting vaccine hesitancy in high income countries: a review of qualitative studies. *Expert Rev Vaccines.* 2018;17:989–1004.
12. Özceylan G, Toprak D, Esen ES. Vaccine rejection and hesitation in Turkey. *Hum Vaccin Immunother.* 2020;16:5:1034-9.
13. Karwowski MP, Stamoulis C, Wenren LM, et al. Blood and hair aluminum levels, vaccine history, and early infant development: a cross-sectional study. *Acad Pediatr.* 2018;18:161-5.
14. Jackson LA, Anderson EJ, Roupheal NG, et al. An mRNA vaccine against SARS- CoV-2-preliminary report. *N Engl J Med.* 2020;383:1920–31.
15. Wellcome Global Monitor How Does the World Feel about Science and Health? <https://wellcome.org/sites/default/files/wellcome-global-monitor-2018.pdf>: access date 09.02.2021
16. Lazarus JV, Ratzan SC, Palayew A, et al. A global survey of potential acceptance of a COVID-19 vaccine. *Nature Med.* 2021;27:225-8.
17. Coconel Group. A future vaccination campaign against COVID-19 at risk of vaccine hesitancy and politicisation. *Lancet Infect Dis.* 2020;20:769-70.
18. Taspınar B, Taspınar F, Gülmez H, et al. The relationship between fear of COVID-19 and quality of life in physiotherapists. *Forbes J Med* 2021;2:108-15.