ORIGINAL ARTICLE
KLİNİK ARAŞTIRMA

# Healthcare professionals who did not get COVID-19 vaccine, but why?

## COVID-19 aşısı yaptırmayan sağlıkçılar, ama neden?

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## SUMMARY

**Aim:** In this study, it was aimed to determine the percentage of not being vaccinated and the reasons for not being vaccinated among 112 Emergency Health Services employees.

**Material and Methods:** 197 healthcare workers' files were scanned backwards. The effects of various sociodemographic and other variables (age, gender, marital status, cases of tetanus, measles, rubella, mumps vaccinations) were investigated retrospectively by scanning the files. Calculations were made by applying chi-square test and logistic regression using windows SPSS Version 21.0 (SPSS, Inc., Chicago, IL, USA). The study was conducted on 06.2021 as a retrospective file review.

**Results:** Of the 197 employees participating in the study, 128(65%) healthcare workers accepted the vaccine, 69 healthcare workers refused the vaccine (35%). Of the 69 people who did not receive the vaccine, 37 (53.6%) were women, 49 were between the ages of 20-30 (71%), 44 were married (63.8%), and 64 were non-physician health personnel.(92, 8%). Being married increased the rejection of vaccines 2.3 times (p = 0.017). Being previously infected with COVID-19 increased vaccine rejection 2.2 times (p = 0.033).

**Conclusion:** Even if the number of unvaccinated people in the study was not in the majority, the finding of this number among health workers is disappointing for epidemic disease management. In order to quickly get rid of this pandemic, the public should be informed about COVID-19 vaccines by reliable scientists and their fear, anxiety and reservations should be eliminated. The higher the number that cannot be persuaded, the less useful the vaccines will be..

**Keywords:** COVID-19 vaccines, healthcare professionals, vaccine hesitancy, safety, efficacy

## ÖZET

**Amaç:** Bu çalışmada 112 Acil Sağlık Hizmetleri çalışanları arasında aşı yaptırmama yüzdesini ve aşı yaptırmama nedenlerini belirlemek amaçlanmıştır

**Materyal ve Metodlar:** 197 sağlık çalışanının dosyası geriye doğru tarandı. Dosyalar taranarak çeşitli sosyodemografik ve diğer değişkenlerin (yaş, cinsiyet, medeni durum, tetanoz, kızamık, kızamıkçık, kabakulak aşısı vakaları) etkileri geriye dönük olarak araştırıldı.Hesaplamalar Windows SPSS Sürüm 21.0 (SPSS, Inc., Chicago, IL, ABD) programı kullanılarak ki-kare testi ve lojistik regresyon uygulanarak yapılmıştır. Çalışma 06.2021 tarihinde retrospektif dosya taraması şeklinde yapılmıştır.

**Bulgular:** Araştırmaya katılan 197 çalışandan 128'i (%65) aşıyı kabul ederken, 69'u aşıyı (%35) reddetti. Aşılanmayan 69 kişiden 37'si (%53,6) kadın, 49'u 20-30 yaşları arasında (%71), 44'ü evli (%63,8) ve 64'ü hekim dışı sağlık personeliydi. (92, %8). Evli olmak aşı reddini 2,3 kat artırmıştır (p = 0,017). Daha önce COVID-19 ile enfekte olmak aşı reddini 2,2 kat artırmıştır (p = 0.033).

**Sonuç:** Çalışmada aşılanmamış kişi sayısı çoğunlukta olmasa da sağlık çalışanları arasında bu sayının bulunması salgın hastalık yönetimi için hayal kırıklığı yaratıyor. Bu pandemiden hızlı bir şekilde kurtulmak için halkın güvenilir bilim adamları tarafından COVID-19 aşıları hakkında bilgilendirilmesi, korku, endişe ve çekincelerinin giderilmesi gerekmektedir. İkna edilemeyen sayı ne kadar yüksek olursa, aşılar o kadar az faydalı olacaktır.

**Anahtar kelimeler:** COVID-19 aşıları, sağlık çalışanları, aşı tereddütü, güvenlik, etkinlik

## INTRODUCTION

COVID-19 is a disease that was investigated and announced to the world with the increase of common respiratory symptoms and probably started in a fish market in Wuhan, China on December 31, 2020. As a result of research by China and WHO (World Health Organization), it is a disease called COVID-19, whose factor is Sars cov-2(Severe acute respiratory syndrome coronavirus-2), which was declared an epidemic on March 11, 2020 [1] During the peak periods, primary care, hospital and 112 emergency health care workers spend too much time and come into contact with COVID-19 patients. The way to be protected is explained as mask, distance and hygiene. The way to be protected much more precisely is vaccination. With the first emergence of the epidemic, scientists quickly started vaccine studies, and many vaccines that could be applied in a short time could be produced with the support of a known virus family, rapid genetic sequencing, new vaccine technologies and financial opportunities. As of January 2021, vaccination studies have started in the world and in Turkey, primarily risk groups. There are many COVID-19 vaccines produced by various countries and companies around the world. Coronavac vaccine produced by Sinovac company of Chinese origin and German-American vaccine produced by Biontech-Pfizer company are used in Turkey. Sinovac is a type of vaccine produced by the inactive virus method. Biontech- Pfizer vaccine is a vaccine produced with mRNA technology. As in all over the world, there is distrust, prejudice and opposition to COVID-19 vaccines in Turkey.[2] Vaccination percentages are not at the desired level in Turkey, where almost all adult population should be vaccinated in order to achieve social immunity.There are also health workers among those who refuse to be vaccinated. The opposition of those who will persuade the public to be vaccinated raises concerns about the course of the epidemic.[3] There are not many publications on vaccine rejection in healthcare professionals. Existing publications generally reflect the situation regarding influenza vaccines. According to the publications, they do not have influenza vaccines due to lack of time, because they think they are not at risk or because of insecurity against the vaccine.[4] In a study conducted in Turkey, only 6.7% of healthcare workers regularly get influenza vaccine. 55% of them have never had an influenza vaccine so far. [5] If there are low vaccination percentages in healthcare workers against a well-known disease such as influenza, it is possible that such a vaccine rejection exists against COVID-19, a very new disease. It is important to investigate this situation in a critical group such as healthcare professionals.

There are many factors that can lead to vaccine rejection; Insecurity in the production of vaccines, in their efficacy, in production technologies, in their content, in their rapid availability, sociocultural factors, religious factors, social beliefs, political factors, the media, press, and social media, which are caused by negative publications, and caused by conspiracy theories, factors such as avoidance of side effects, inability to grasp the severity of the disease, and the inability of knowledgeable and reliable scientists to provide adequate explanations can increase vaccine rejection at an alarming rate.[6-8]

In this study, it was aimed to investigate the vaccination rates among Emergency Health Services employees, the rate of COVID-19, and the factors affecting those who were not vaccinated.

## MATERIAL AND METHODS

### Study Design
Emergency Health Services employees, who were periodically examined in the Occupational Health and Safety Unit of the Kayseri Provincial Health Directorate on March 1-April 15, 2021, were asked about their COVID-19 vaccine, their status of COVID-19 vaccine during the examinations, and if they did not, the reasons were recorded in their files. 197 healthcare workers' files were scanned backwards. The effects of various sociodemographic and other variables (age, gender, marital status, cases of tetanus, measles, rubella, mumps vaccinations) were investigated retrospectively by scanning the files. To explain the terms used in the study; the presence of contraindications; pregnancy, chronic immune disorders, groups with chronic diseases for which the physician did not recommend vaccination, not trusting the vaccine; On the other hand, reasons such as not trusting the content, refraining due to its side effects, distrust due to social media, and not believing that the vaccines produced will protect from the disease are meant by the term not believing in its protection. The last 6 months were taken as the duration of previous covid-19 disease.

### Statistical Analyses
Kolmogorov-Smirnov test was used for normality distribution and it was found that the data were not normally distributed. Descriptive statistics, chi-square test, regression test were applied using SPSS-21 program. (IBM SPSS Corp.; Armonk, NY, USA) Institutional permit from Kayseri Provincial Directorate of Health, work permit from Ministry of Health and ethical permission from Sivas Cumhuriyet University Non-Invasive Research Ethics Committee.( Decision date:26.05.2021, Decision No: 2021-05/02) p <0.05 was considered statistically significant.

## RESULTS

The distribution of sociodemographic and some other characteristics of healthcare workers according to their status of being vaccinated against COVID-19 is shown in Table 1. Of the 197 employees participating in the study, 128(65%) healthcare workers accepted the vaccine, 69 healthcare workers refused the vaccine (35%). Of the 69 people who did not receive the vaccine, 37 (53.6%) were women, 49 were between the ages of 20-30 (71%), 44

were married (63.8%), and 64 were non-physician health personnel.(92, 8%). Of the 197 employees participating in the study 26 were doctors (13.2%), 171 (86.8%) were nurses, health officers, emergency medical technicians, paramedics, and other healthcare professionals. 106 of them were female (53.8%), 91 (46.2%) were male. 132 people were between 20-30 years old (67.0%) 55 people were 31-50 years old (27.9%) 10 people (5.1%) were between 51-65 years old. 110(55.8%) of them were married, 87 were single (44.2%) or separated. There was no difference between the categories related to healthcare workers' socio-demographic characteristics and their COVID-19 vaccination status. There was also no difference between getting infected with COVID-19 before and COVID-19 vaccination. And also there was no significant difference between getting other vaccines and getting the COVID-19 vaccine.

Table 2 presents the distribution of socio-demographic and some characteristics of healthcare workers who did not have the COVID-19 vaccine by the reasons for not having the vaccine. There was no significant difference between categories related to socio-demographic characteristics, getting infected with COVID-19 before or other vaccines status and reasons for COVID-19 vaccine rejection.

Table 3 shows the logistic regression model predicting COVID-19 vaccine rejection. Being between the ages of 20-30 increased vaccine rejection 2.1 times (p= 0.047). Being married increased the vaccine rejection 2.3 times (p= 0.017). Getting infected with COVID-19 before, increased the vaccine rejection 2.2 times (p= 0.033)

**Table 1.** Distribution of socio-demographic and some other characteristics of the healthcare workers according to their status of being COVID-19 vaccine

| | COVID-19 Vaccine Status | | | |
|---|---|---|---|---|
| | Yes (n,%) | No (n,%) | Total (n,%) | p |
| **Gender** | | | | |
| Female | 69(53.9) | 37(53.6) | 106(53.8) | $x^2$=0.001 |
| Male | 59(46.1) | 32(46.4) | 91(46.2) | p=0.970 |
| **Age group** | | | | |
| 20-30 years | 83(64.8) | 49(71.0) | 132(67.0) | $x^2$=0.518 |
| 31-65 years | 45(35.2) | 20(29.0) | 65(33.0) | p=0.472 |
| **Marital status** | | | | |
| Single+Widow | 62(48.4) | 25(36.2) | 87(44.2) | $x^2$=2.709 |
| Married | 66(51.6) | 44(63.8) | 110(55.8) | p=0.100 |
| **Occupation** | | | | |
| Physcian | 21(16.4) | 5(7.2) | 26(13.2) | $x^2$=2.533 |
| Other healthcare workers | 107(83.6) | 64(92.8) | 171(86.8) | p=0.112 |
| **Getting infected with COVID-19 before** | | | | |
| No | 99(77.3) | 45(65.2) | 144(73.1) | $x^2$=2.764 |
| Yes | 29(22.7) | 24(34.8) | 53(26.9) | p=0.096 |
| **Td* vaccine status** | | | | |
| No | 95(74.2) | 52(75.4) | 147(74.6) | $x^2$=0.031 |
| Yes | 33(25.8) | 17(24.6) | 50(25.4) | p=0.860 |
| **Other vaccines status**** | | | | |
| No | 92(71.9) | 50(72.5) | 142(72.1) | $x^2$=0.115 |
| Yes | 11(8.6) | 5(7.2) | 16(8.1) | p=0.944 |
| Getting infected before | 25(19.5) | 14(20.3) | 39(19.8) | |
| **All participants** | 128(65.0) | 69(35.0) | 197(100.0) | |

* Tetanus diphtheria, ** Measles, rubella, mumps, chickenpox vaccines

**Table 2.** Distribution of socio-demographic and some characteristics of healthcare workers who did not have the COVID-19 vaccine by the reasons for not having the vaccine.

| | Reason for not getting the COVID-19 vaccine | | | | |
|---|---|---|---|---|---|
| | Presence of contraindication (n,%) | Distrust (n,%) | Not believing its protects (n,%) | Total (n,%) | p |
| **Gender** | | | | | |
| Female | 10(76.9) | 19(44.2) | 8(61.5) | 37(53.6) | $x^2$=0.001 |
| Male | 3(23.1) | 24(55.8) | 5(38.5) | 32(46.4) | p=0.970 |
| **Age group** | | | | | |
| 20-30 years | 8(61.5) | 32(74.4) | 9(69.2) | 49(71.0) | $x^2$=0.518 |
| 31-65 years | 5(38.5) | 11(25.6) | 4(30.8) | 20(29.0) | p=0.472 |
| **Marital status** | | | | | |
| Single+Widow | 3(23.1) | 20(46.5) | 2(15.4) | 25(36.2) | $x^2$=2.709 |
| Married | 10(76.9) | 23(53.5) | 11(84.6) | 44(63.8) | p=0.100 |
| **Occupation** | | | | | |
| Physcian | 1(7.7) | 3(7.0) | 8(61.5) | 5(7.2) | $x^2$=2.533 |
| Other healthcare workers | 12(92.3) | 40(93.0) | 5(38.5) | 64(92.8) | p=0.112 |
| **Getting infected with COVID-19 before** | | | | | |
| No | 6(46.2) | 6(46.2) | 11(84.6) | 45(65.2) | $x^2$=2.764 |
| Yes | 7(53.8) | 7(53.8) | 2(15.4) | 24(34.8) | p=0.096 |
| **Td* vaccine status** | | | | | |
| No | 10(76.9) | 33(76.7) | 9(69.2) | 52(75.4) | $x^2$=0.031 |
| Yes | 3(23.1) | 10(23.3) | 4(30.8) | 17(24.6) | p=0.860 |
| **Other vaccines status**** | | | | | |
| No | 11(84.6) | 32(74.4) | 7(53.8) | 50(72.5) | $x^2$=0.115 |
| Yes | 1(7.7) | 4(9.3) | 0(0.0) | 5(7.2) | p=0.944 |
| Getting infected before | 1(7.7) | 7(16.3) | 6(46.2) | 14(20.3) | |
| **All participants** | 69(100.0) | 13(18.8) | | 43(62.3) | |

* Tetanus diphtheria, ** Measles, rubella, mumps, chickenpox vaccines

**Table 3.** Logistic regression model predicting COVID-19 vaccine rejection1 (n= 197)

| Category | OR (95% CI) | p |
|---|---|---|
| **Gender** | | |
| Female | 1.00 | |
| Male | 1.26(0.67-2.36) | 0.473 |
| **Age group** | | |
| 31-65 years | 1.00 | |
| 20-30 years | 2.09(1.01-4.33) | **0.047** |
| **Marital status** | | |
| Single+Widow | 1.00 | |
| Married | 2.31(1.16-4.61) | **0.017** |
| **Occupation** | | |
| Other healthcare workers | 1.00 | |
| Physician | 0.34 (0.12-1.01) | 0.050 |
| **Getting infected with COVID-19 before** | | |
| No | 1.00 | |
| Yes | 2.18(1.07-4.47) | **0.033** |
| **Td* vaccine status** | | |
| No | 1.00 | |
| Yes | 0.88(0.31-2.48) | 0.811 |
| **Other vaccines status**** | | |
| No | 1.00 | |
| Yes | 0.84(0.19-3.77) | 0.821 |
| Getting infected before | 1.12(0.43-2.89) | 0.818 |

OR Odds ratio, CI Confidence interval, Reference category; 1= COVID-19 vaccine yes, * Tetanus diphtheria, ** Measles, rubella, mumps, chickenpox vaccines

## DISCUSSION

As of January 2021, Sinovac vaccine of Chinese origin has been started to be administered primarily to healthcare workers in Turkey. Later, it continued with other risk groups and the Pfizer-Biontech vaccine was introduced as the second vaccine. As of May-June, the Russian origin Sputnik V vaccine will be available. As in all over the world, there is a suspicion and even opposing views against vaccines in Turkey. The vaccine hesitancy has been explained by the World Health Organization (WHO) as follows; "Vaccination indecision is defined as delay or rejection in accepting vaccination despite the availability of vaccine services. Vaccine hesitancy is a complex phenomenon; may vary depending on time, place and experience. It can be affected by factors such as indifference, relevance and trust. [9,10] There is distrust and even opposition in healthcare professionals, who are occupational groups that will apply and explain vaccines to the public, and convince the public, as in the whole world, in Turkey. Vaccination hesitancy in healthcare professionals, is a serious obstacle to achieving community immunity. Because the community will be persuaded to get vaccinated through health officials. They rely the most on information disclosed by healthcare professionals. First of all, health professionals must be highly persuaded and thus able to persuade people.[11] People may say that they will be vaccinated until they have the opportunity to get vaccinated, but they can give up when vaccination is possible. People who say that I will be vaccinated when the vaccine is found in the surveys conducted in the whole society do not get vaccinated when the vaccines are started. This is also the case with healthcare professionals. Having the thought of being vaccinated does not mean that you will be vaccinated.[11] For this reason, we must first strongly convince the health professionals and the public through them.

In this study, it was determined that there were those who did not get vaccinated in emergency health services employees who were in intensive contact with positive COVID-19 patients. 69 (35%) of 197 participants did not get vaccinated. In a review article, the vaccine acceptance rates of countries were found as follows; the highest COVID-19 vaccine acceptance rates were found in Ecuador (97.0%), Malaysia (94.3%), Indonesia (93.3%) and China (91.3%), the lowest COVID-19 vaccine acceptance rates were found in Kuwait (23.6%), Jordan (28.4%), Italy (53.7), Russia (54.9%), Poland (56.3%), US (56.9%), and France (58.9%). When the results of the work done to healthcare professionals are evaluated; only eight surveys among healthcare workers (doctors and nurses) were found, with vaccine acceptance rates ranging from 27.7% in the Democratic Republic of the Congo to 78.1% in Israel.8 In a study of vaccine rejection rates in Ireland and the United Kingdom, the vaccine rejection rate was found to be 35% in Ireland and 31% in the United Kingdom.[12] In a study conducted in Spain, 164 (22.43%) out of 731 participants stated that they would not be vaccinated. 20-24% of them were non-healthcare workers or unemployed, 17.5% were doctors, 31.5% were other health workers and 35.2% were nurses.

The most common reasons for not being vaccinated in the study were found to be insecurity, not believing that it is protective, and side effects.[13] 53 (26.9%) of the participants in the study had COVID-19 disease. 69 people did not get vaccinated. In this study, the acceptance rate was found to be higher than the studies conducted with healthcare professionals and the society. Nevertheless, it requires immediate action. When the reasons for these were examined, 13 people stated that they were not vaccinated due to contraindications such as pregnancy, breastfeeding, medical conditions that would cause contraindications, or they had recently had COVID-19. In some studies, vaccine instability or opposition was stated to be common in groups with contraindications.[14-16] 43 (21.8%) did not trust the vaccine, and 13 (6.6%) did not think that the vaccine was protective. 2058 people participated in a study conducted in China and 1879 people stated that they will be vaccinated whenever vaccine is available. (91.3%) Those who agreed that the vaccine would be vaccinated when it was available was 52.2% of the group, and 47.8% of the group stated that they would postpone it until its reliability is proven and then have it done later. It was found that not reliance on the vaccine affected the vaccination 0.69 times. In other words, insecurity reduces vaccine acceptance.[17] In a study examining anti-vaccination websites, it was found that 76-88% of the opposition cited emotional reasons such as the violation of civil liberties by vaccines, the dangers of side effects of vaccines, and 20-50% of these groups underestimate the disease prevention effect of vaccines. In this study, reliance on vaccines and doubts about the vaccine's protection came to the fore.[18,19]

When examining the status of having additional vaccinations consisting of measles, mumps, rubella (MMR), chickenpox, vaccines among the examined personnel, 142 people (72.1%) did not have these vaccines. 39 people (19.8%) stated that they had these diseases as children. 16 people (8.1%) had these vaccinations. When tetanus (Td) vaccination status was examined, 50 people (25.4%) stated that they had the vaccine, while 147 (74.6%) did not. Due to rumors that MMR and Hepatitis B vaccines cause autism and multiple sclerosis, cause aluminum poisoning, and are used to insert microchips, resistance and opposition to these vaccines have also occurred.[20-22] This resistance can be broken with public statements by reliable scientists. However, it is seen in this study that healthcare workers are still not vaccinated with these vaccines. This should be evaluated together with the reasons for not being vaccinated with COVID-19.

When the COVID-19 vaccination status was examined according to the professions, 5 (19.2%) of 26 physicians did not have the vaccine. In the study in Spain, this rate

was found to be 17.5%. [13] In a study on vaccine anti-vaccination in Ireland and the United Kingdom. İt was found that rejections were higher for the female sex and mostly at younger ages.[12] In a study conducted in China, it was found that male gender increased the acceptance of COVID-19 vaccine by 1.25 times and being married 1.70 times.[17] The results in this study were determined as follows; among those not vaccinated, 37 were female (53.6%), 32 were male (46.4%). Of the unvaccinated, 49 were in the 20-30 age range (71%), 20 were in the 31-65 age range (29%). Of those who were not vaccinated, 25 were single or widowed (36.2%), 44 were married (63.8%). The results in this study were similar to other publications.

The biggest reason for not being vaccinated was the distrust towards vaccines (62.3%). When the reasons for vaccination rejection were examined by professions, 5 of those who were not vaccinated were doctors (7.2%), 64 (92.8%) of them were other healthcare professionals 3 of those who did not trust the vaccine were doctors (7%), 40 of them were other healthcare workers (93%). Thirty-two (74.4%) of the group that did not trust the vaccine were in the 20-30 age group, 11 (25.4%) were in the 31-65 age group. Of those who did not trust the vaccine, 23 were married (53.5%) and 20 were single (46.5%). When the getting infected with COVID-19 status was examined, in the group that did not trust the vaccine, 28 did not get infected with COVID-19 (65.1%), 15 got infected with COVID-19 (34.9%).In a study conducted with Egyptian medical students, 43.6% got infected with COVID-19. There was no significant difference in vaccine acceptance between the getting infected with COVID-19 group and the group that did not. A significant difference was found in vaccine acceptance among those who got infected with COVID-19 in their immediate vicinity compared to those who did not. [23]

In the study conducted in China, it was found that getting the influenza vaccine last season increased the COVID-19 vaccine acceptance 1.46 times.[17] In a study conducted with healthcare professionals in Izmir, it was found that having a flu vaccine beforehand significantly increased the rate of acceptance of COVID-19 vaccines.[24] In this study, it was determined that 33 (25.8%) of those who had the COVID-19 vaccine also vaccinated with the tetanus vaccine, and 11 (8.6%) of those with the COVID-19 vaccine also vaccinated with other additional vaccines (measles, rubella, mumps). It was found that those who had additional vaccines and tetanus vaccines had more covid-19 vaccines. (Tetanus 66%, other vaccines 68.7%) It is seen from these results that vaccine resistance continues for all vaccines. With the evidence of reliable scientists and people that the society will trust, it is thought that it will be effective in all vaccines in terms of breaking this resistance.

In the model created in the study in China, being married and male gender were found to be significant and positive in vaccine acceptance. In a study conducted in Spain, a significant difference was found between nurses (OR=1.146 %95CI (Confidence İnterval)(1.052–1.249) P=0.002) and other healthworkers(OR=1.119 %95CI (1.012–1.238) P=0.028) in modeling vaccine acceptance. [13-17] In a study conducted in healthcare personnel in İzmir, it was found that the COVID-19 vaccine acceptance was significantly different between doctors, midwives, nurses and others, men and women, student midwives and nurses, young age group and other age groups. [24] In this study, being between the ages of 20-30 increased vaccine rejection 2.1 times (p = 0.047). Being married increased the rejection of vaccines 2.3 times (p = 0.017). Being previously infected with COVID-19 increased vaccine rejection 2.2 times (p = 0.033).

### *Limitations*
-The study was carried out on a certain part of the emergency health services workers. More studies, including primary care and hospitals, are needed to determine vaccine rejection rates in healthcare workers.

-The study could be done retrospectively. Opportunities did not allow for a face-to-face study.

-Data distributions were not normal, so non-parametric tests were used.

## CONCLUSION

The presence of this opposition and reservations in the section that can convince the society such as the health personnel shows that there is a much higher percentage in the society. Even if the number of unvaccinated people in the study was not in the majority, the finding of this number among health workers is disappointing for epidemic disease management. In order to quickly get rid of this pandemic, the public should be informed about COVID-19 vaccines by reliable scientists and their fear, anxiety and reservations should be eliminated. The higher the number that cannot be persuaded, the less useful the vaccines will be. In the study, it was found that being married, being in the 20-30 age group, and having had Covid-19 before, increased covid-19 vaccine rejection. In the light of this information, it would be useful to conduct more persuasion studies on these groups.

**Ethics Committee:** Permission was obtained from the Non-Invasive Ethics Committee of Cumhuriyet University Faculty of Medicine. Decision No: 2021-05/02 Date: 26.05.2021

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