

# Can We Persuade Those Who Hesitate to Get the COVID-19 Vaccine?

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## Brief Report

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## Abstract

**Objective:** Coronavirus disease (COVID-19) vaccine studies are continuing in many centers. However, the public's preference for vaccination against COVID-19 is not clear. This study aims to determine the knowledge level of people about vaccines developed against the COVID-19 and their preferences for vaccination.

**Methods:** Participants' knowledge of COVID-19 vaccines was evaluated with a questionnaire. Participants were selected by a stratified method using age, gender, education, and occupation group.

**Results:** The study includes 1508 participants with a mean age of  $38.97 \pm 14.50$  (min = 18, max = 82); 24.7% (n = 373) of the participants stated that they wanted to be vaccinated, 34.5% (n = 521) did not want to be vaccinated, and 40.7% (n = 614) stated that they were undecided about vaccination; 39.11% (n = 444) of the participants stated that they were afraid of the vaccine's side effects, and 19.55% (n = 222) thought that the vaccines produced were used for malicious purposes and hesitated to vaccinate; 7.57% (n = 86) of the participants stated that they thought the vaccines were rushed too much and not yet reassuring.

**Conclusions:** The study results show that individuals are hesitant and unwilling to get the COVID-19 vaccine. Persuasion interventions and information are necessary, as the rate of those who accept vaccination is very low.

The coronavirus disease (COVID-19) pandemic, which the World Health Organization defined as a worldwide pandemic in January 2020, entered our lives much faster and with variable parameters than its previous counterparts.<sup>1</sup> Scientists agree that the most effective way to get rid of COVID-19 is to develop a vaccine against the virus.<sup>2</sup> The acceptability of the vaccine by humans is of great importance to create an effective immunization in public.<sup>3</sup> However, anti-vaccine movements and hesitancy, which are already present in the pre-pandemic period, can strain public health about vaccines developed against the new coronavirus.<sup>4</sup> It is seen that these reservations and insecurities also continue toward vaccines developed against the new coronavirus.<sup>5</sup> It is clear that vaccination of the public is needed in order to control the increasing number of cases and to ease the burden on the health system. It is vital to know the underlying reasons for community hesitancy and to implement appropriate interventions. Many factors such as the level of knowledge about vaccines, speculative news about vaccines, and the sense of trust in the government of the people will determine their comfort level about vaccination.<sup>6</sup>

In addition, it is stated that the decision to be vaccinated may vary with some demographic characteristics such as age, education, gender, and health conditions such as the presence of chronic diseases and COVID-19 fear.<sup>7</sup> The fact that the majority, who are indecisive about vaccination, are affected by the anti-vaccine discourses, which are frequently shared on social media, is considered to be the biggest obstacle in front of social immunization.<sup>8</sup> If too many people hesitate to vaccinate, a prolonged and weary pandemic process can pose a threat to public health.

This study aims to determine the knowledge level of people about vaccines developed against the coronavirus and their preferences for vaccination and to discuss the underlying reasons for not having a vaccine or being indecisive.

## Methods

Approval was obtained from the Duzce University Faculty of Medicine Ethics Committee for the study (Approval No: 2020/259). A survey was created using Google Forms to obtain the study data quickly and securely. In the distribution of the created survey, WhatsApp network with a high utilization rate and demographic diversity in Turkey was selected. Participants were recruited using a snowball sampling technique that they were asked to communicate to the WhatsApp contacts. To estimate the required sample size, an a priori power analysis was conducted. Based on the total population of adults in Turkey ( $N \approx 80$  million), with 99% confidence levels, and a conservative 3% margin of error, a total of 1359 participants were needed for the study. In the questionnaire, the participants were asked about their demographic information, as

well as their preferences for influenza and pneumococcal vaccines before and after the pandemic. Also, it was requested to fill the fear of COVID-19 scale to determine the fear of getting COVID-19 disease, which may affect the decision to be vaccinated. To determine the missing and incomprehensible aspects of the prepared questionnaire, a pilot application was made to 20 people before the study was started. After the questionnaire was finalized, it was sent to the people.

### Statistical Analysis

Numerical data were summarized with mean  $\pm$  standard deviation, and categorical data were summarized with frequency and percentage. Pearson's  $\chi^2$  test or Fisher–Freeman–Halton test was used to analyze categorical data according to the expected count rule. Normality assumption for numerical data was analyzed with the Kolmogorov–Smirnov test. The Mann–Whitney U test or Kruskal–Wallis test was used to compare groups where appropriate. A post-hoc analysis was performed using the Tamhane test.

### Results

Data collection was terminated after sufficient data were returned. In total, 1508 participants with a mean age of  $38.97 \pm 14.50$  (min = 18, max = 82) were included in the study; 41.4% (n = 625) of the participants were female and 58.6% (n = 883) were male; 30.3% (n = 457) of the participants were primary school graduates, 37.1% (n = 560) were high school graduates, and 32.6% (n = 491) were university graduates; 13.8% (n = 208) of the participants were housewives, 13.9% (n = 209) were workers, 9.5% (n = 144) were retired, 15.8% (n = 238) were students, 15.3% (n = 231) were civil servants, 12.7% (n = 192) were self-employed, 7.2% (n = 109) were unemployed, and 11.7% (n = 177) were health workers; 32.4% (n = 488) of the participants stated that they smoke; 14.2% (n = 214) of the participants stated that they have a chronic disease, and 7.9% (n = 119) of the participants stated that they have more than 1 chronic disease.

According to the study results, 24.7% (n = 373) of the participants stated that they wanted to be vaccinated, 34.5% (n = 521) did not want to be vaccinated, and 40.7% (n = 614) stated that they were undecided about vaccination; 20.4% (n = 307) of the participants knew only the country where the vaccines were produced, 35.6% (n = 537) had little knowledge about the action mechanisms of vaccines, 24.4% (n = 368) had detailed information about the action mechanisms of vaccines, and 19.6% (n = 296) of them stated that they had no information about vaccines; 58.0% (n = 874) of the participants stated that their choice of vaccination was affected by the production mechanisms of the vaccines; 53.7% (n = 810) of participants stated that they take fictional news about vaccines seriously and avoided vaccination by this negative speculative news about vaccines (Table 1); 39.11% (n = 444) of the participants stated that they were afraid of vaccines' side effects, and 19.55% (n = 222) thought that the vaccines produced were used for malicious purposes and hesitated to vaccinate. While 17.35% (n = 197) of the participants stated that they would not be vaccinated because they had COVID-19, 9.69% (n = 110) stated that they would not be vaccinated because they thought they were not at risk; 9.07% (n = 103) of the participants stated that they thought vaccines were ineffective and so vaccination would not be beneficial; 7.57% (n = 86) of the participants stated that they thought the vaccines were rushed too much and not yet reassuring.

**Table 1.** Vaccine preferences and knowledge of the participants about the COVID-19 vaccines

	n	%
<b>Choice of vaccination</b>		
I want to be vaccinated.	373	24.7
I do not want to be vaccinated.	521	34.5
I am undecided about getting vaccinated.	614	40.7
<b>Knowledge about vaccines</b>		
I have no information about vaccines.	296	19.6
I only know the country where vaccines are produced.	307	20.4
I know little about the mechanism of action of vaccines.	537	35.6
I have detailed information about the mechanism of action of vaccines.	368	24.4
<b>Being influenced by vaccines' production mechanisms in the decision of vaccination</b>		
Yes	874	58.0
No	634	42.0
<b>Avoid vaccination by taking seriously fictional news about vaccines</b>		
Yes	810	53.7
No	698	46.3

According to the comparison of flu and pneumococcal vaccines this year and last year: While 189 participants got the flu vaccine last year, 599 participants stated that they had the flu vaccine this year. While 148 participants stated that they had the pneumococcal vaccine last year, 322 participants stated that they had the pneumococcal vaccine this year.

There was no significant difference between the vaccination preferences of the participants according to their age, gender, education status, profession, and smoking status ( $P = 0.053$ ,  $P = 0.06$ ,  $P = 0.73$ ,  $P = 0.154$ ,  $P = 0.782$ , respectively). Participants who have 1 or more chronic diseases want significantly more vaccination than those who have no disease ( $P < 0.012$ , Table 2).

While a significant difference was detected between the COVID-19 fear scale and age groups, it was observed that there was no significant difference between gender, education level, and occupational groups ( $P < 0.001$ ,  $P = 0.462$ ,  $P = 0.112$ ,  $P = 0.456$ , respectively). When anxiety scores were evaluated according to vaccine preferences, there was a significant difference between the groups (Kruskal–Wallis;  $P = 0.019$ ). According to the comparison results of vaccination preference and fear of COVID-19, participants who were undecided about vaccination had higher COVID-19 fear scale scores than participants who did not want to be vaccinated; however, no statistical difference was found (post-hoc Tamhane;  $P = 0.052$ ).

### Discussion

Study results show that only one-fourth of the participants wanted to be vaccinated against coronavirus. These results are insufficient for protection from COVID-19 disease. However, almost half of the participants stated that they were undecided about vaccination. This group, who is not against vaccination, can decide to vaccinate with adequate and correct information and so is open to be guided. Emphasizing the issue of vaccine hesitancy with similar results, Grech et al. stated that their hesitation against COVID-19 vaccines was due to insufficient information.<sup>9</sup>

**Table 2.** Factors affecting participants' vaccination preferences

	<i>I want to be vaccinated</i>	<i>I do not want to be vaccinated</i>	<i>I am undecided about getting vaccinated</i>	P value	
	n	N	n		
<b>Age groups</b>					
18-24	66	95	113	0.053	
25-39	119	204	235		
40-59	123	152	190		
60 >	65	70	76		
<b>Gender</b>					
Male	163	227	235	0.066	
Female	210	294	379		
<b>Education</b>					
Primary school	114	163	180	0.730	
High school	117	214	229		
University	142	144	205		
<b>Job</b>					
Housewife	38	96	74	0.154	
Worker	46	67	96		
Retired	39	47	58		
Student	58	84	96		
Civil servant	47	90	94		
Unemployed	52	73	67		
Self-employed	28	35	46		
Health worker	65	29	83		
<b>Smoking</b>					
Yes	113	188	187		0.782
No	260	333	427		
<b>Chronic disease</b>					
One	63	75	76	0.012	
More than 1	34	45	40		
None	276	401	498		

Participants stated that the most common reason for not wanting to be vaccinated was fear of vaccine side effects. An important emphasis of the study results is that the participants' vaccination decisions are related to fictional news circulating in the communication tools about vaccines. Studies also draw attention to the danger that social media platforms can foster vaccination opposition.<sup>10</sup> Social and personal benefits of vaccines should be explained to people who are unsure and anxious about vaccination by using the influence of communication networks positively.<sup>11</sup>

Another thought-provoking result of the study is that some participants stated they did not want to be vaccinated because they thought they were not at risk due to the lack of any chronic disease. Studies show that there are different risk perceptions in the society regarding COVID-19.<sup>12</sup> Even if people have different risk perceptions, it must be explained that they should be getting vaccinated because they have responsibilities toward public health.

Approximately 1 in 10 of the participants stated that they did not want to be vaccinated because vaccine production was too rushed. Vaccines produced by conventional methods that have

been used for many years can be offered as an option to people with this anxiety.

According to the results of the study, the fear of COVID-19 was found to be higher in the participants who were undecided about the vaccine than the participants who did not want to be vaccinated. Fear and anxiety are often considered negative phenomena, but anxiety that is at a controllable level can push people to protect behavior.<sup>13</sup> It may be thought that the undecided population fears both the disease and the vaccine. Individuals in this dilemma can be told that complications of the disease are worse than vaccine side effects.

With appropriate counseling, individuals who are hesitant about vaccination can be protected from both anxiety and disease. According to the results of the study, the rate of flu vaccination between last year and this year has increased approximately 3 times, and the rate of pneumococcal vaccination has increased approximately 2 times. This significant increase in vaccination rates suggests a promising break in vaccine hesitancy. These results actually suggest that the public is not against the vaccine and is open to protection behavior with explanatory clear vaccine knowledge. One of the most striking results of the study results is that the majority of the participants avoided being vaccinated by being affected with negative speculative news about vaccines.

Considering the high number of participants who are hesitant or indecisive about vaccination, it is seen that political and social dynamics are more important in people's decisions than survival motives or scientific results. Fortunately, we are going through a rare period when all the people of the world have only 1 goal at the same time.<sup>14</sup> In order to transform this common purpose into a public health gain, it is necessary to develop a discourse considering all the dynamics of the public while conducting preventive health services.

The COVID-19 pandemic has paralyzed many processes of life, from education to the economy, from the health system to social areas. Control of the COVID-19 virus is essential for us to return to our old "normals" and breathe a little more easily. According to our current knowledge, it seems that the closest known solution to control the virus is vaccination. We should take advantage of the opportunities we have without wasting time.

### Strengths and Limitations

The present study was designed to represent the society in our country and focused on the reasons for people's hesitance about vaccination. In the study, a power analysis was made to represent the society and the required number of participants was reached. This context is the strength of the study. Although power analysis has been made to reflect the general opinion of the society, non-face-to-face survey data may not provide the desired feedback exactly. Participants may be affected by many factors such as not fully understanding what they read while answering questions, not being able to focus due to environmental factors, and being directed by the people around them. In addition, qualitative studies that reveal psychosocial causes are also needed to evaluate the deep causes of people's hesitancy for COVID-19 vaccines. These should be considered the limitations of the study.

### Conclusion

The study results show that, with the current information we have, individuals are hesitant and unwilling to get the COVID-19 vaccine. The underlying reasons for not wanting to get the COVID-19 vaccine or being hesitant about vaccination are fear of vaccine

side effects, taking seriously the fictional scenarios about vaccines, refusing to vaccinate because they are not at risk—thoughts that can be changed with appropriate guidance. It is our responsibility to normalize public health and provide a safe environment for everyone. We may not have a second chance to stop the spread of COVID-19. In this case, it is necessary to concentrate all our facilities on this issue in order to increase the reliability and application of the vaccines we have.

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