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## **Covid-19 Aşısı Kabulünün Belirleyicileri: Sağlık Okuryazarlığı ve Aşı Tutumu**

**Acceptance of COVID-19 Vaccine: Health Literacy and Vaccine Attitudes as Determinants**

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### Özet:

**Amaç:** Bu çalışma, bireylerin COVID-19 aşılama durumlarını belirlemek ve COVID-19 aşılama davranışları ile sosyodemografik, COVID-19 risk algıları/özellikleri, sağlık okuryazarlığı ve aşıya yönelik tutumlar arasındaki ilişkiyi değerlendirmek amacıyla yapılmıştır.

**Yöntem:** Kesitsel tipteki bu araştırmanın örneklemini 392 kişi oluşturmuştur. Verilerinin analizinde ki-kare testi, t-testi ve çoklu regresyon analizi kullanılmıştır.

**Bulgular:** Katılımcıların %75'i COVID-19 teşhisi aldı ve katılımcıların %91,1'i en az bir kez COVID-19 aşısı oldu. Lisans mezunu olan, sosyal medyadan etkilenen ve COVID-19 teşhisi konmamış katılımcılarda aşılama oranı daha düşüktü. Aşılanan grupta katılımcıların yaşları, fonksiyonel sağlık okuryazarlığı puanları ve aşılama tutum puanları daha yüksekti. Yüksek hastalık ciddiyet algısı, interaktif sağlık okuryazarlığı, eleştirel sağlık okuryazarlığı ve aşıya yönelik tutumların Covid-19 aşısı için olumlu tutumları artırdığı görülmektedir. Bu özelliklerin tersi durumlarında ise olumsuz tutum gelişmektedir. Ayrıca mesleki durum ve sosyal medya, COVID-19 aşısına karşı olumsuz tutumların belirleyicisi olmuştur.

**Sonuç:** Sağlık okuryazarlığının ve aşılama tutumlarının artırılması, COVID-19 aşısının kabulüne katkı sağlarken, sosyal medyanın olumsuz tutumlar üzerindeki etkisinin dikkate alınması gerekmektedir.

**Anahtar Kelimeler:** Aşı tereddütü; COVID-19 aşısı; sağlık okuryazarlığı; pandemi.

### Abstract:

**Aim:** This study aimed to investigate the COVID-19 vaccination status of individuals and to evaluate the relationship between COVID-19 vaccination behaviors and sociodemographics, the risk perceptions/characteristics of COVID-19, health literacy, and attitudes towards vaccination.

**Method:** The sample of this cross-sectional research consisted of 392 individuals. The chi-squared test, the t-test and multiple regression analysis were used for analyses of the research data.

**Results:** Among the participants, 75% were diagnosed with COVID-19 and 91.1% of the participants had received at least one COVID-19 shot. The vaccination rate was lower in participants with a bachelor's degree, those influenced by social media, and those who weren't diagnosed with COVID-19. The participants' ages, functional health literacy scores and vaccination attitude scores were higher in the vaccinated group. Perception of severity, interactive health literacy, critical health literacy and general attitudes towards vaccination increased positive attitudes towards the COVID-19 vaccine. In contrast, a negative attitude developed if this was not the case. In addition, occupational status and social media were determinants of negative attitudes against COVID-19 vaccine.

**Conclusion:** Enhancing health literacy and vaccination attitudes, contributes to the acceptance of the COVID-19 vaccine, while social media's impact on negative attitudes needs to be considered.

**Key Words:** Vaccination hesitancy, COVID-19 vaccines, health literacy, pandemic.

## Introduction

Communicable diseases that are preventable by vaccination may affect human health negatively and threaten international health safety. <sup>(1)</sup> The importance of immunization to protect individual health, to prevent the formation of new variants, to control the pandemic, and, most notably, to prevent deaths is emphasized for the COVID-19 outbreak that is considered a pandemic by the World Health Organization. Several vaccines have been developed for COVID-19 and are being used worldwide, although the vaccine selection may vary between countries. <sup>(2)</sup> The rate of participation in COVID-19 vaccination programs varied between countries <sup>(3)</sup> and among cities within these countries. <sup>(4)</sup> Although inequalities in access to healthcare is a key issue, vaccine hesitancy <sup>(5)</sup> and the infodemic<sup>(6)</sup> have led to negative impacts on vaccination rates, which in turn have delayed the success achieved by immunization. Health literacy, which is the capability to correctly understand the importance of individual immunization services and the information on vaccines, is also among the associated factors. <sup>(7)</sup>

Health literacy is an individual's ability to identify, comprehend and use the information and services in the context of health-related decision making and behavioral development for themselves and others. <sup>(8)</sup> Health literacy also contributes to decision making regarding meeting health demands, the prevention of diseases, health development, and the utilization of healthcare services. <sup>(9)</sup> Health literacy and sociodemographic characteristics may also affect the vaccine acceptance of an individual. <sup>(10)</sup> Elevated health literacy levels of individuals have been identified as a factor that reduces vaccine hesitancy <sup>(11)</sup> and increases vaccine acceptance. <sup>(12,13)</sup> Health literacy ensures correct understanding of the COVID-19 pandemic in a scientific context as well as adaptation of individuals to preventive behaviors. <sup>(14)</sup> However, anti-vaccination content increased through social media during the COVID-19 pandemic. <sup>(15)</sup> During the outbreak, the increase in incorrect or misleading information found on digital or physical

platforms reached a level that may have impaired individual health and may have led to risky health-related behaviors. <sup>(6)</sup> This level is an important source of concern and appeared at such a level that it may have negatively affected community health.

The role of vaccination is obvious in the COVID-19 pandemic, which impacts each domain of life, including education and unemployment. <sup>(16,17)</sup> The enhanced acceptance of vaccines among individuals contributed to ensuring community immunity and helped transition back to everyday life. However, low levels of vaccine acceptance may still pose a risk to individual and community health regarding the vaccine-preventable communicable disease.

### **Research questions**

1. What is the prevalence of COVID-19 vaccination among individuals?
2. What are the risk factors for not being vaccinated against COVID-19?
3. Is there any relationship between receiving COVID-19 vaccinations and attitudes against COVID-19 vaccination?
4. What are the determinants for positive and negative attitudes towards COVID-19 vaccination?

### **Method**

#### **Study design**

This research is a cross-sectional study conducted between October 2021 and April 2022 in a city in the center of Anatolia in Turkey. In Turkey, the total number of COVID-19 cases was 15,180,444 and the total number of deaths was 99,057 in July 2022. The rate of receiving at least two doses of the COVID-19 vaccination was 85.53% in Turkey, while it was 82.7% in the city where this study was conducted. <sup>(4)</sup> There were 28 primary care family health centers (FHCs), one university hospital, two state hospitals, and a home care service in the central city. Vaccination services are available in all these institutions. In addition, vaccinations were implemented by providing the service in public spaces in collaboration with these institutions.

## **Participants**

The study's target population included individuals between 18 and 65 years of age who were registered as patients of the 28 FHCs in the central city. Patients with communication problems, those diagnosed with psychiatric disorders, and healthcare professionals were excluded from the study. Healthcare professionals have actively served throughout the COVID-19 pandemic and were the first group to receive immunization as part of the COVID-19 vaccination program. Additionally, healthcare professionals were not included in the study, considering that they constitute a high-risk group for contracting COVID-19 as an occupational disease and that the close relationship with COVID-19 patients may have influenced their decisions concerning vaccination. This group also differs from the population regarding health literacy. In the data collection phase, the random route method was followed. Each FHC was accepted as the starting point, and the researcher obtained the data by walking within the determined route. Within the scope of this walk, when another FHC region was passed, the data collector went to the new a FHC, and the walking path was followed.

## **Sample Size**

The sample estimate was calculated by the vaccination rate of two doses of the COVID-19 vaccination in the research city (82.7%).<sup>(4)</sup> Based on the percentage of vaccination for COVID-19 in this city, the required sample size was found to be 380 with an error margin of 0.05 to estimate a P value in an absolute percentage score of d at 99% confidence, while the study was completed with 392 subjects.

## **Measures**

The sociodemographic characteristics form, COVID-19 disease characteristics, the Health Literacy Scale, the COVID-19 Vaccination Attitude Scale, and the Public Attitude for Vaccination Scale - Health Belief Model were used to collect the research data.

**Sociodemographic characteristics form:** This form included questions on the gender, age, educational level, and occupational status of the participant.

**COVID-19 disease characteristics form:** This form included questions regarding the presence of individuals diagnosed with COVID-19 in an individual's social circle, the comparison of COVID-19 with seasonal flu, and questions to identify the individual's COVID-19 vaccination status.

This form also included questions that assessed how vaccine platforms on social media were followed and evaluated the influence of anti-vaccine posts on the individual's decision to have the COVID-19 vaccine.

**Health Literacy Scale HLS-14:** The Health Literacy Scale was developed to measure the health literacy in adults in Japan. <sup>(18)</sup> Validity and reliability studies of the scale within Turkish culture were performed by Turkoglu and Kılıc (2021). The total cronbach alpha value of the Health Literacy Scale was 0.85 and for the Functional Health Literacy Sub-Dimension; 0.85, Interactive Health Literacy Sub-Dimension; 0.90 and Critical Health Literacy Sub-Dimension; 0.87 was found. <sup>(19)</sup> In this study, these values are between 0.89-0.82 respectively. The scale provides functional, communicative and critical evaluations. Higher total scores indicate an increased level of health literacy.

**COVID-19 Vaccine Attitude Scale:** The scale for determining attitudes towards the COVID-19 vaccine was developed in Turkish by Genis et al. (2020). The scale has two subdimensions comprising a total of nine items that evaluate positive and negative attitudes. High scores in the positive attitude subdimension indicate a positive behavior for vaccination. Higher scores in the negative attitude subdimension indicate lower negative behavior against vaccination. The total cronbach alpha value of the Attitudes Towards Covid-19 Vaccine Scale was 0.96 for the positive attitude sub-dimension, and 0.78 for the negative attitude sub-dimension. <sup>(20)</sup> In this study, these values are 0.94 and 0.75.

**Public Attitude for Vaccination - Health Belief Model Scale:** This scale is a modification of the scale that was developed by Kocoglu-Tanyer et al. (2020) adapted for adult vaccines. The scale involves 26 items in five dimensions: susceptibility, severity, benefit, barrier and health responsibility. The score is obtained by dividing the sum of each dimension score by the number of items in that dimension. Except for the barrier subdimension, higher subdimension scores indicate a positive attitude to vaccination. Cronbach's alpha values for this scale range from 0.83 to 0.92. <sup>(21)</sup> In this study, it was obtained between 0.77-0.87.

### **Analysis**

IBM SPSS® Statistics for Windows version 24.0 was used for data analysis. The data collected from the investigation were summarized in numbers, percentages, mean values and standard deviation. The chi-squared test, the t-test for independent groups and multiple regression (enter model) analysis were performed in the study. Positive and negative attitudes towards the COVID-19 vaccine were considered dependent variables for the multiple regression analysis. Before multiple regression analysis, the data were evaluated in terms of multiple normal distribution and multicollinearity. Independent variables included age, gender, marital status, educational level, employment status, comparison with seasonal flu, the presence of infected individuals, the influence of social media on vaccination decisions, the Health Literacy Scale, and the Public Attitude for Vaccination Scale. Categorical independent variables were analyzed after being converted to dummy variables

### **Ethics**

Ethics committee approval was obtained from A Noninterventional Clinical Research Ethics Committee (No. 2021/65). The research followed the Declaration of Helsinki and the Good Clinical Practices. The research was conducted after obtaining permission from the Provincial Health Department and from the participants.

### **Results**

The mean age of the participants (n=392) was  $35.02 \pm 13.23$  years (18-65). 55.4% of the participants were female, 51.3% were married, 43.4% were graduates from university, and 53.1% were employed. 75% of the participants had been diagnosed with COVID-19, and 44.9% described COVID-19 as a much more severe disease than seasonal flu. 91.1% were vaccinated against COVID-19, and 58.2% remarked that social media did not influence their vaccination decision.

The average scores for the positive and negative subdimensions of the COVID-19 Vaccine Attitude Scale were  $14.86 \pm 3.97$  (4.00-20.00) and  $17.10 \pm 3.99$  (5.00-25.00), respectively. For the Health Literacy Scale, scores for functional health literacy, communicative health literacy, and critical health literacy were  $11.60 \pm 5.3$  (5.00-25.00),  $18.28 \pm 4.38$  (5.00-25.00), and  $15.44 \pm 3.80$  (4.00-20.00), respectively. In addition, the scores of the participants on the Public Attitude for Vaccination – Health Belief Model Scale were  $3.85 \pm 0.82$  (1.00-5.00),  $3.84 \pm 0.83$  (1.00-5.00),  $3.71 \pm 0.80$  (1.00-5.00),  $2.48 \pm 0.73$  (1.00-5.00) and  $3.87 \pm 0.69$  (1.40-5.00) for the susceptibility, severity, benefit, barrier, and health responsibility subdimensions, respectively.

In the study, COVID-19 vaccination rates were lower in graduates from a university (93.7%), in individuals affected by social media (82.0%), and participants who themselves had not been diagnosed with COVID-19 (85.7). Furthermore, the mean age ( $35.03 \pm 13.54$ ), functional health literacy score ( $11.70 \pm 5.42$ ), and the average susceptibility ( $3.93 \pm 0.75$ ), severity ( $3.93 \pm 0.75$ ), and benefit ( $3.79 \pm 0.71$ ) subdimensions of the Vaccine Attitude Scale were significantly higher in participants who received the vaccination compared to those who did not (Table 1).

Participants vaccinated for COVID-19 appeared to have higher mean scores for positive ( $15.29 \pm 3.71$ ) and negative attitudes ( $17.47 \pm 3.79$ ) towards the COVID-19 vaccine than those who were not vaccinated ( $10.48 \pm 4.01$ ;  $13.37 \pm 4.03$ ) (Table 2).



The determinants for positive attitudes towards the COVID-19 vaccine were evaluated using hierarchical regression analysis. Model 1 includes sociodemographics and certain COVID-19 disease characteristics. In this model, considering COVID-19 as a more severe disease than seasonal flu ( $\beta=0.115$ ) was a predictor for COVID-19 vaccine attitudes ( $R^2=0.25$ ). In Model 2, the variables of health literacy and the vaccine attitude subdimensions were added as predictors. In this model, the variables increasing positive attitudes towards the COVID-19 vaccine were as follows: communicative health literacy ( $\beta=0.127$ ), critical health literacy ( $\beta=0.142$ ), perceived severity ( $\beta=0.191$ ), benefit ( $\beta=0.145$ ), and health responsibility ( $\beta=0.174$ ). Perceived barriers ( $\beta=-0.136$ ) also had a negative determinant. The explanatory rate of the model increased from 0.25% to 49% (Table 3).

For the determinants of negative attitudes towards the COVID-19 vaccine, it is observed in Model 1 that considering COVID-19 a more severe disease than seasonal flu prevents a negative attitude ( $\beta=0.123$ ), while being influenced by social media increases a negative attitude ( $\beta=-0.127$ ). In Model 2, the dimensions of health literacy and vaccine attitude were added as predictors. Employment ( $\beta=0.103$ ), susceptibility ( $\beta=0.154$ ), severity ( $\beta=0.154$ ), and benefit ( $\beta=0.190$ ) were determinants of negative attitudes towards vaccination. These variables increased the score of negative attitudes towards vaccination. The perceived barrier subdimension variable negatively affected the score for negative attitudes towards COVID-19. This new model accounted for 37% of the negative attitudes towards COVID-19 (Table 4).

## **Discussion**

In this study, the proportion of participants who received at least one dose of the COVID-19 vaccine is 91.1%. The proportion of individuals having at least one vaccination dose is 78.88% in England, 84.52% in Italy, 80.93% in France, 77.8% in Germany, and 80.09% in the USA. The proportion of full dose vaccination is between 66.64% and 79.62% in these countries. <sup>(3)</sup> In Turkey, the proportion of vaccination by the number of doses was 93.26% and 85.58% for at

least one dose and a total of two doses, respectively. The rate of vaccination is 82.7% in the city where the study was conducted. <sup>(4)</sup> The rates of COVID-19 vaccination vary among countries and cities. The vaccination rate in the study population was lower than the rate of single-dose vaccination in Turkey but higher than the provincial rate. This finding may be accounted for by the relationship between ecology and vaccines. <sup>(22)</sup> This study was solely carried out within the central city, excluding its 12 counties. Individuals living in the city center work more in the industry and service sector than in the districts, so those living in the city have an organizational incentive to be vaccinated. Furthermore, the higher rates of COVID-19 cases in regions with a higher population density <sup>(23)</sup> during the pandemic may be a source of motivation for those residents in the city center.

In this study, variables affecting vaccination rates included age, education, social media, perceived disease severity, history of COVID-19, health literacy, and general and individual vaccine attitude. Older age is among the factors that increase vaccine acceptance, possibly due to the close relationship between age and disease prognosis. <sup>(24)</sup> Similar to this finding, studies have suggested a higher acceptance of COVID-19 vaccine among individuals with a lower level of education. <sup>(25)</sup> This result may be associated with higher levels of skeptical behavior or social media use in individuals with a higher level of education. Social media affects vaccine hesitancy and vaccine behavior. <sup>(26)</sup> The low rates of vaccination among the participants in the study influenced by social media may be associated with negative attitudes against the COVID-19 vaccine, lack of confidence <sup>(27)</sup> and following of the posts with anti-vaccine content. <sup>(28)</sup> The high rates of vaccination among participants with a history of COVID-19 infection may be due to experiences regarding both physical and mentally-negative clinical consequences associated with COVID-19. <sup>(29)</sup> Functional health literacy indicates the capability level of individuals to read and understand the instructions or brochures as well as prescriptions and package inserts <sup>(30)</sup> and appears to have positively contributed to the rate of vaccination observed in this study.

Studies suggest that individuals with poor health literacy have vaccine hesitancy <sup>(31)</sup> and that increased levels of health literacy reduce vaccine hesitancy <sup>(11)</sup> and increase vaccine acceptance.

(13)

Additionally, this study indicated that levels of perceived susceptibility, severity, and benefits of the vaccine differ between the groups with and without vaccination. Perceived susceptibility reflects the individual's perception of the risk of contracting the disease, perceived severity reflects the individual's perception of the treatment and outcomes, and perceived benefit indicates the individual's perception of disease prevention and improving the outcomes. <sup>(32)</sup> The relationship between vaccine acceptance and the perceived susceptibility, severity, <sup>(33)</sup> and benefit <sup>(25)</sup> seen in the literature was also observed in this study. These results demonstrate that vaccination campaigns should be designed to address these attitudes.

It is important to develop positive attitudes towards the COVID-19 vaccine and to prevent negative attitudes to provide community immunization. The determinants for positive attitudes for the COVID-19 vaccine included considering COVID-19 a more severe disease than seasonal flu, communicative health literacy, critical health literacy, and the severity, benefit, barrier and health responsibility subdimensions of general vaccine attitude, while those for negative attitudes for the COVID-19 vaccine included being employed, considering the disease more severe than seasonal flu, being influenced by social media, and perceived susceptibility, severity, benefit and barrier subdimensions regarding the vaccine. In the study, considering COVID-19 a more severe disease than seasonal flu increased the level of positive attitudes towards the COVID-19 vaccine and prevented negative attitudes. Similarly, a study in the literature suggests that an increase in the perceived severity of the disease enhances positive attitudes towards vaccine acceptance, <sup>(34)</sup> which is already supported by the fact that the severity subdimension of general vaccine attitude is a similar determinant. The study showed that being influenced by social media increased negative attitudes. The impact of social media on vaccine

hesitancy and behavior is well known. <sup>(26)</sup> As described earlier, social media has the potential to develop negative attitudes against the COVID-19 vaccine through the infodemic it creates. <sup>(15,27,28)</sup> Another important finding in this study is the effect of communicative and critical health literacy on positive attitudes. Communicative health literacy indicates the capability level of individuals to make decisions and communicate effectively with healthcare professionals. In contrast, critical health literacy is associated with using advanced-level cognitive and social skills in the critical review of information and decision making. <sup>(33)</sup> Therefore, individuals with these skills have a significant chance to access accurate information and make correct decisions regarding vaccination. Moreover, it is recommended in the literature to increase the level of health literacy among individuals to enhance positive attitudes and behaviors regarding the COVID-19 vaccine. <sup>(35)</sup>

Furthermore, the general attitude towards vaccination is deterministic of the attitude that develops towards the COVID-19 vaccine. The effect of attitudes on vaccination is well defined in the literature. <sup>(25,36-38)</sup> High levels of perceived susceptibility, severity, benefit, and health responsibility regarding the vaccine support vaccination and prevent vaccine hesitancy, while perceived barriers act oppositely. This finding demonstrates that improving the general perception of the population regarding the vaccine is an initiative that enables individuals to be prepared for epidemic situations and/or to control the damages of the epidemic.

In the study, the participants' employment status was a determinant of negative attitudes against the COVID-19 vaccine. Results found in the literature suggest that working characteristics are related to the behavior of being vaccinated. <sup>(39)</sup> This finding may be due to the higher level of education in the employed group compared to the general population as well as higher levels of social media use.

## Conclusion and Recommendations

This study found that COVID-19 vaccination rates are at a good level among individuals in terms of community health. In addition, communicative and critical health literacy affect positive attitudes towards the COVID-19 vaccine, while functional health literacy is associated with vaccine behavior. Social media has a strong effect on having the COVID-19 vaccine and negative attitudes against COVID-19 vaccination. Developing health policies and practices to increase health literacy among individuals and to control and supervise social media content are important for vaccine acceptance. Having a routine fight against vaccine hesitancy will ensure that we are prepared in the fight against epidemics in epidemic situations. This study is important in terms of revealing the multifaceted nature of vaccination attitude, especially the importance of Health Literacy About Vaccination.

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**Table 1 Prevalence and Risk Factors for not Vaccinated for Covid-19**

	<b>Having vaccine for Covid-19</b>	<b>Not having for Covid-19</b>	<b>Chi-square test and p-value</b>
<b>Gender</b>	<b>N (%)</b>	<b>N (%)</b>	
Females	196 (90.3)	21 (9.7)	$X^2=0.335$
Males	161 (92.0)	14 (8.0)	$p=0.563$
<b>Marital status</b>			
Married	178 (88.6)	23 (11.4)	$X^2=3.207;$
Single/never married	179 (93.7)	12 (6.3)	$p=0.073$
<b>Education level</b>			
≤ High school	208(93.7)	14 (6.3)	$X^2=4.329;$
≥ Bachelor's degree	149 (87.6)	21 (12.4)	$p=0.037$
<b>Occupational status</b>			
Employed	186 (89.4)	22 (10.6)	$X^2=1.481;$
Not-employed	171 (92.9)	13 (7.1)	$p=0.224$
<b>Comparison with seasonal flu</b>			
Covid-19 is worse	293 (91.3)	28 (8.7)	$X^2=1.214;$
Covid-19 same and milder	64 (90.1)	7 (9.9)	$p=0.545$
<b>Social media influence the decision</b>			
Yes	50 (82.0)	11 (18.0)	$X^2=8.475;$
No	214 (93.9)	14 (6.1)	$p=0.014$
A little	93 (90.3)	10 (9.7)	
<b>People with covid-19 around</b>			
Oneself and family and friends	273(92.9)	21 (7.1)	$X^2=4.612;$
Family and friends	84 (85.7)	14 (14.3)	$p=0.032$
<b>Health Literacy Scale HLS-14</b>	<b>mean±sd</b>	<b>mean±sd</b>	
Functional health literacy	11.70±5.42	10.65±4.50	$t=-1.101; p=0.034$
Communicative health literacy	18.36±4.76	17.43±5.51	$t=1.087; p=0.076$
Critical health literacy	15.54±3.80	14.51±3.71	$t=1.518; p=0.651$
<b>The Public Attitude Towards Vaccination Scale-Health Belief Model</b>			
Perceived susceptibility	3.93±0.75	3.00±1.03	$t=5.223; p=0.005$
Perceived severity	3.93±0.75	2.97±1.08	$t=6.895; p<0.001$
Perceived benefits	3.79±0.71	2.89±1.14	$t=6.726; p<0.001$
Perceived barriers	2.41±0.70	3.12±0.73	$t=-5.650; p=0.435$
Health motivation	3.93±0.66	3.33±0.78	$t=5.093; p=0.110$
Age	35.03±13.54	34.89±9.70	$t=0.062; p=0.002$

**Tablo 2. Relationship Between Not Having Covid-19 Vaccine and Attitudes Towards the COVID-19 Vaccine**

	<b>Having vaccine for Covid-19</b>	<b>Not having for Covid-19</b>	<b><i>T test and p value</i></b>
Positive attitude	15.29±3.71	10.48±4.01	t=7.272; p<0.000
Negative attitude	17.47±3.79	13.37±4.03	t=6.063; p<0.000

**Table 3 Determinants of Positive Attitudes Towards the Covid-19 Vaccine**

	B	β	t-value	p value
<b>Model-1 Sociodemographics</b>				
Costant	13.863		16.822	<.001
Age	.010	.033	.468	.640
Gender (Males=0. Famales=1))	.090	.011	.209	.835
Marital status (Single/never married =0. Married=1)	-.046	-.006	-.079	.937
Education level (≥ Bachelor's degree =1)	-.017	-.002	-.041	.968
Occupational status (employed =0)	.175	.022	.389	.697
Comparison with seasonal flu (Covid-19 same and milder =0. Covid-19 is worse=1)	1.183	.115	2.254	.025
People with covid-19 around (with oneself =0. Family and friends=1))	-.574	-.063	-1.230	.219
Social media influence the decision (No=0. Yes=1 A little=2)	-.657	-.082	-1.611	.108
<b>Model -2 Sociodemographic and Health Literacy Scale HLS-14, The Public Attitude Towards Vaccination Scale-Health Belief Model</b>				
Constant	-.558		-.368	.713
Age	.018	.060	1.115	.266
Gender	-.141	-.018	-.445	.657
Marital status	-.110	-.014	-.258	.797
Education status	-.233	-.029	-.724	.469
Occupational status	.263	.033	.790	.430
Comparison with seasonal flu	-.003	.000	-.007	.994
People with covid-19 around	-.574	-.063	-1.669	.096
Social media influence the decision	-.057	-.007	-.187	.852
<b>Health Literacy Scale HLS-14</b>				
Functional health literacy	.035	.047	1.213	.226
Communicative health literacy	.104	.127	2.147	.032
Critical health literacy	.148	.142	2.451	.015
<b>The Public Attitude Towards Vaccination Scale-Health Belief Model</b>				
Perceived susceptibility	.572	.118	1.942	.053
Perceived severity	.918	.191	3.071	.002
Perceived benefits	.723	.145	2.321	.021
Perceived barriers	-.739	-.136	-3.195	.002
Health motivation	1.002	.174	3.696	<.001
<b>Model 1</b>	R=0.160	R <sup>2</sup> =0.025	F=1.178	p=0.267
<b>Model 2</b>	R=0.699	R <sup>2</sup> =0.489	F=22.439	p<0.001

**Table 4 Determinants of Negative Attitudes Towards the Covid-19 Vaccine**

	B	ß	t-değeri	p değeri
<b>Model-1 Sociodemographics</b>				
Costant	15.692		19.211	<.001
Age	.003	.008	.119	.905
Gender (Males=0. Famales=1))	-.545	-.068	-1.280	.201
Marital status (Single/never married =0. Married=1)	.438	.055	.765	.445
Education level (≥ Bachelor's degree =1)	.662	.082	1.557	.120
Occupational status (employed =0)	.816	.102	1.828	.068
Comparison with seasonal flu (Covid-19 same and milder =0. Covid-19 is worse=1)	1.268	.123	2.438	.015
People with covid-19 around (with oneself =0. Family and friends=1)	.470	.051	1.017	.310
Social media influence the decision (No=0. Yes=1 a litte=2)	-1.014	-.126	-2.509	.013
<b>Model -2 Sociodemographics and Health Literacy Scale HLS-14, The Public Attitude Towards Vaccination Scale-Health Belief Model</b>				
Constant	9.053		5.367	<.001
Age	.006	.019	.319	.750
Gender	-.698	-.087	-1.982	.048
Marital status	.342	.043	.722	.471
Education status	.496	.062	1.386	.166
Occupational status	.820	.103	2.215	.027
Comparison with seasonal flu	.441	.043	1.009	.314
People with covid-19 around	.579	.063	1.513	.131
Social media influence the decision	-.465	-.058	-1.385	.167
<b>Health Literacy Scale HLS-14</b>				
Functional health literacy	-.002	-.002	-.051	.960
Communicative health literacy	.008	.010	.155	.877
Critical health literacy	.045	.042	.662	.509
<b>The Public Attitude Towards Vaccination Scale-Health Belief Model</b>				
Perceived susceptibility	.830	.170	2.533	.012
Perceived severity	.741	.154	2.228	.026
Perceived benefits	.949	.190	2.737	.006
Perceived barriers	-1.089	-.199	-4.231	<.001
Health motivation	-.138	-.024	-.457	.648
<b>Model 1</b>	R=0.223	R <sup>2</sup> =0.50	F= 2.644	p=0.011
<b>Model 2</b>	R=0.611	R <sup>2</sup> =0.373	F=14.055	p<0.001