

Willingness for COVID-19 Vaccination among Healthcare Students and their Perception about Reasons for Society's Hesitation Against COVID-19 Vaccination: Evidence from a University Students in Turkey

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Abstract: The attitude of university students studying in health-related fields towards vaccines is an important population that can affect the vaccination decision of the public. It is aimed to determine the attitudes of society toward the Covid-19 vaccine from the perspective of Afyonkarahisar Health Science University students. It is a cross-sectional study applied face-to-face with Afyonkarahisar Health Science University students between November 2021 and December 2021. The mean age of students is 20.5 ± 2.2 and 70.7% of them are female. 56.1% of the students stated that they believed the COVID-19 vaccine was effective and 49.5% believed it was safe. When the students' requests for the COVID-19 vaccine were questioned, 71.6% stated that they wanted to be vaccinated, 19.4% stated that they were against the vaccine, and 9.0% had hesitations about the vaccine. According to the perspective of the students, the top 5 reasons for the general hesitations of the society against the COVID-19 vaccine are; Fear/insecurity with 79%, negative effects of the internet and social media with 73%, ignorance with 73%, false/unauthorized information source with 73% and fear of sudden allergic reaction with 72% has received. According to students, the top three common reasons for the society against not getting COVID-19 vaccine are; "Nothing will happen to us", "pandemic is a conspiracy" and "risk/benefit ratio" are included. Students who are willing to get vaccinated think that "natural immunity", "alternative medicine", "conspiracy theories about vaccines, and ignorance" are important factors for the society's hesitation not to vaccinate ($p < 0.05$). Adequate pieces of knowledge of the students' risk-benefit ratios and natural and acquired immunity related to vaccines are can serve to build trust and a positive attitude toward vaccines in the community.

Keywords: Afyonkarahisar, Hesitation, Vaccine, Medical students, Society.

INTRODUCTION

Since vaccination is one of the most successful health interventions to prevent communicable diseases worldwide, vaccines against COVID-19 are considered to be of great importance to prevent and control COVID-19 today [1]. Achieving high vaccination rates in populations, especially for emerging infectious diseases, is critical for the success of immunization programs [2]. Although rapidly developed vaccines bring excitement and hope to the public, the increase in the number of unauthorized sources spreading false and misleading information has affected the perception of the general population, leading to the rejection or postponement of the vaccine. This phenomenon of vaccine hesitancy is recognized as one of the top 10 threats to global health [3].

In a study conducted by Sunar and Kaya in 12 provinces in Turkey as part of the Social Structure

Research Program in January 2021, it was reported that 25% of the participants were not considering getting vaccinated, while 25% were undecided [4]. In another study conducted by Yılmaz *et al.* throughout Turkey, the rate of hesitation against the COVID-19 vaccine was 37.9% [5]. In the study conducted by İkioşuk *et al.* in Istanbul, the vaccine hesitancy rate was 45.3% [6]. In a study conducted by Kaya *et al.* on Medical Faculty students in a province in the east of Turkey, the rate of hesitancy for the vaccine was 25.7% [7]. Considering the reasons for hesitation, whether the vaccine has side effects or not comes to the fore [5].

Healthcare students can serve as role models in their communities as future healthcare providers. Trust in medical providers is associated with the belief that vaccines are safe [8].

Health sciences university students' attitudes towards COVID-19 vaccines are an important population for COVID-19 vaccine, as are other healthcare professionals who may influence the public's vaccination decision. This cross-sectional study, it is aimed to determine the hesitations of the society against the COVID-19 vaccine and the reasons for not getting the COVID-19 vaccine from the

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perspective of Afyonkarahisar Health Science University students.

METHODS

This study is a cross-sectional study applied to students studying at Afyonkarahisar Health Science University between November and December 2021. As a data collection tool, a questionnaire containing questions developed by the researchers as a result of the literature review was used [9-12]. The data were collected by face-to-face interview method after obtaining informed consent from the students. In the questionnaire, there are questions about the socio-demographic characteristics of the students, their personal experiences, the general reasons for the society's hesitations against the COVID-19 vaccine, and the main reasons for the society not to have the COVID-19 vaccine. Approximately 7000 students are studying at our university. In determining the number of samples, Type I error 0.05, II. The type error is 0.10,

the power is 90% and the acceptable difference is 0.05. Since faculties differ according to the number of students, first, a stratified sampling method was employed by considering each faculty (Medicine, Pharmacy, Dentistry, Health Sciences, Vocational High School) as a stratum. Then, a simple random sampling technique using probability proportional to size was used to sample students from their respective classes. Ethical approval was granted by the Research Ethics Committee of the University of Afyonkarahisar Health Science University (reference number REC-21-02-07-01). SPSS 20.0 statistical package program was used in the analysis of the data. In the study, descriptive statistics are given as numbers for categorical data and as percentages. The Chi-square test was used in the analysis of categorical data.

RESULTS

958 students participated in the study and 70.7% (n=700) of the students were female and the mean age was 20.5 ± 2.2 years (17-36). The majority of the

Table 1: Demographic Characteristics of Afyonkarahisar Health Science University Students

Variable	Outcome	Frequency (n)	Percentage (%)
Gender			
	Female	673	70.3
	Male	285	29.7
Age Group			
	≤20 years old	561	58.6
	>20 years old	397	41.4
Faculty			
	Medicine	228	23.8
	Pharmacy	36	3.8
	Dentistry	46	4.8
	Health Sciences	332	34.7
	Vocational High School	316	33.0
Academic Year			
	1st Year	310	32.4
	2 nd Year	302	31.5
	3 rd Year	161	16.8
	4 th Year	119	12.4
	5 th Year	34	3.5
	6 th Year	32	3.3
Residence			
	Family	157	16.4
	Alone / with friends	234	24.4
	Dormitory	567	59.2
The region you come from			
	Rural	188	19.6
	Urban	770	80.4

Table 2: COVID-19-Related Anamnesis of Afyonkarahisar Health Science University students,

Variable	Outcome	Frequency (n)	Percentage (%)
Have you had the COVID-19 disease?			
	Yes	199	20.8
	No	759	79.2
Have any of your family members/friends tested positive for COVID-19?			
	Yes	554	58.9
	No	394	41.1
How much of a risk does COVID-19 pose to you?			
	Big risk	245	25.6
	medium risk	435	45.4
	low risk	217	22.7
	There is no risk	61	6.3

students participating in the survey are students of medicine, health sciences, and health vocational schools. More than half of the students live in dormitories (Table 1).

Of the students, 20.8% were infected with COVID-19, and about 59% of family members or friends tested positive for COVID-19. Students think that COVID-19 infection does not pose a risk to them (Table 2).

When students' willingness for COVID-19 vaccination is questioned, 71.6% (n=686) stated that they wanted to be vaccinated, 19.4% (n=192) stated that they would not be vaccinated, and 9.0% (n=86) stated that they had hesitations about vaccination. In addition, nearly half of the students trust the safety of the COVID-19 vaccine, and more than half trust the effectiveness of the COVID-19 vaccine (Table 3).

The opinions of the students about the general reasons for society's hesitations against the COVID-19 vaccine are given in Figure 1. As seen from the graph, the first three rows are; "fear/distrust", "The negative impact of mass media and social media" and "ignorance".

Student views on the general reasons why society does not getting the COVID-19 vaccine are given in Figure 2. As it can be seen from the figure, the first three rows are; "Ignorance/nothing will happen to us approach", "Belief that the pandemic is a conspiracy" and "Risk/benefit ratio".

According to the students who are willing to be vaccinated; Inadequate information sources, insufficient testing of the vaccine, conspiracy theories

Table 3: Attitudes of Afyonkarahisar Health Science University Students Towards COVID-19 vaccine

Variable	Outcome	Frequency (n)	Percentage (%)
I am willing to take the COVID-19 vaccine			
	Yes	686	71.6
	No	186	19.4
	I'm undecided	86	9.0
Do you trust the effectiveness of COVID-19 vaccines?			
	Yes	537	56.1
	No	136	14.2
	I'm undecided	285	29.7
Do you trust the safety of COVID-19 vaccines?			
	Yes	474	49.5
	No	148	15.4
	I'm undecided	336	35.1

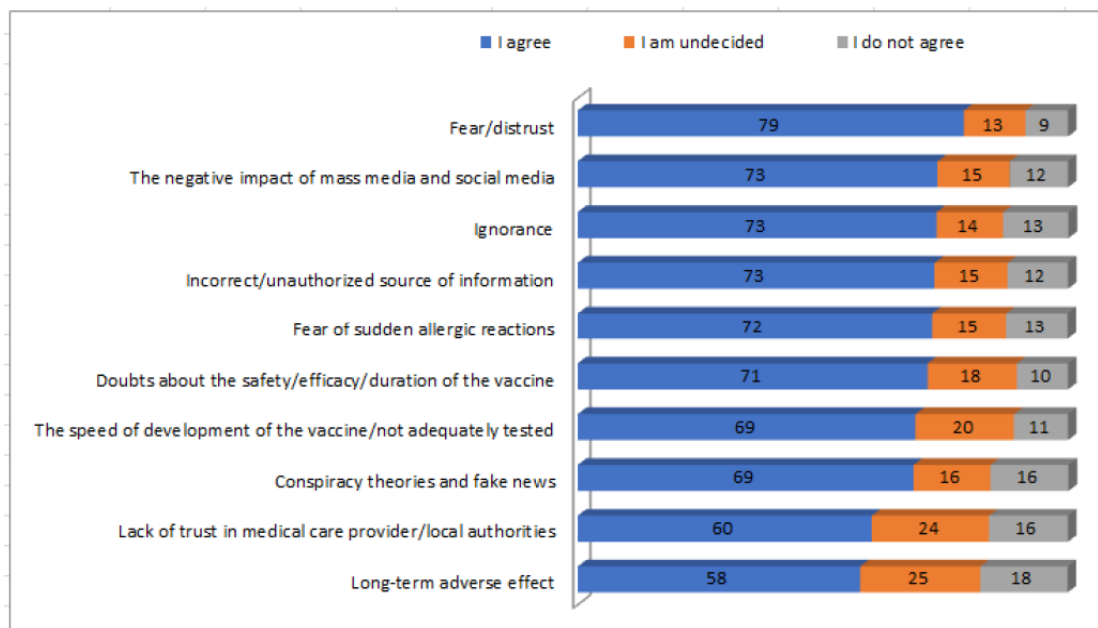


Figure 1: According to Afyonkarahisar Health Science University students, the main reasons for the society's hesitation against the COVID-19 vaccine.

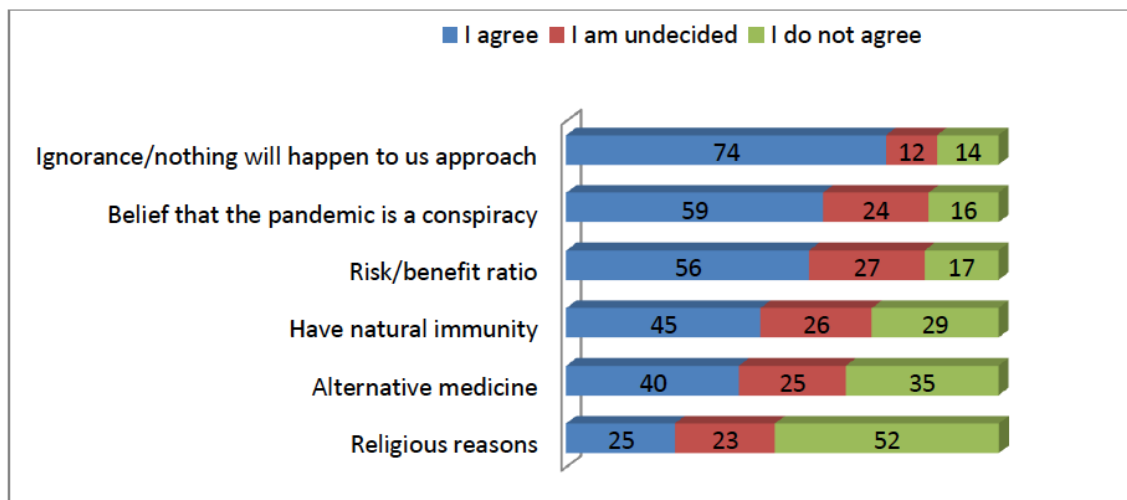


Figure 2: Main reasons for not getting the COVID-19 vaccine according to Afyonkarahisar Health Science University students.

about the vaccine, negative effects of social media, and ignorance are important factors ($p < 0.05$) (Table 4).

The students who were willing for the vaccine stated that society's hesitations against the COVID-19 vaccine stemmed from the speed of development of the vaccine, the negative effects of social media, the source of false information, and their ignorance.

Students who are willing to get vaccinated think that "natural immunity", "alternative medicine", "conspiracy theories about vaccines, and ignorance" are important factors for the society's hesitation not to vaccinate ($p < 0.05$) (Table 5).

DISCUSSION

In Turkey, there are studies examining positive and negative attitudes, vaccine refusal, and hesitations of university students about the COVID-19 vaccine [4-7, 13]. However, from the students' point of view, there is no study that examines the hesitations of society toward the COVID-19 vaccine and the reasons for not getting the vaccine.

There is an undeniable difference between the vaccine acceptance rates of health sciences university or medical school students and the general population.

Table 4: Analysis of Society's Hesitations against Vaccination according to Afyonkarahisar Health Science University students' willingness to have COVID-19 vaccine

		Willingness for COVID-19 vaccination		
Society's hesitations against the COVID-19 vaccine		Yes n(%)	No n(%)	p
Incorrect/insufficient information source				
	I do not agree	74 (10.8)	35 (18.8)	0.001
	I am undecided	86 (12.5)	37 (19.9)	
	I agree	526 (76.7)	114 (61.3)	
Doubts about the rate of development of the vaccine/undertested				
	I do not agree	70 (10.2)	27 (14.5)	0.001
	I am undecided	157 (22.9)	20 (10.8)	
	I agree	459 (66.9)	142 (74.7)	
Fear of sudden allergic reactions				
	I do not agree	84 (12.2)	28 (15.1)	0.518
	I am undecided	96 (14.0)	28 (15.1)	
	I agree	506 (73.8)	130 (69.9)	
long-term adverse effect				
	I do not agree	128 (18.7)	31 (16.7)	0.071
	I am undecided	173 (25.2)	34 (18.3)	
	I agree	385 (56.1)	121 (65.1)	
Conspiracy theories and fake news				
	I do not agree	97 (14.1)	37 (19.9)	<0.001
	I am undecided	88 (12.8)	47 (25.3)	
	I agree	501 (73.0)	102 (54.8)	
The negative impact of mass media and social media				
	I do not agree	68 (9.9)	34 (18.3)	<0.001
	I am undecided	92 (13.4)	36 (19.4)	
	I agree	526 (76.7)	116 (62.4)	
Fear/distrust				
	I do not agree	51 (7.4)	24 (12.9)	0.057
	I am undecided	86 (12.5)	20 (10.8)	
	I agree	549 (80.0)	142 (76.3)	
Lack of trust in medical care providers and local authorities				
	I do not agree	116 (16.9)	29 (15.6)	0.053
	I am undecided	171 (24.9)	32 (17.2)	
	I agree	399 (58.2)	125 (67.2)	
Doubts about the efficacy/safety/duration of immunity conferred by the vaccine				
	I do not agree	69 (10.1)	25 (13.4)	0.313
	I am undecided	124 (18.1)	28 (15.1)	
	I agree	493 (71.8)	133 (71.5)	
Ignorance				
	I do not agree	61 (8.9)	52 (28.0)	<0.001
	I am undecided	74 (10.8)	36 (19.4)	
	I agree	551 (80.3)	98 (52.7)	

The vaccine acceptance rate obtained from the study was 71.6%. In studies conducted on the general population, the vaccine acceptance rate was 50.2%, 41.2%, and 54.7% [4-6]. Studies conducted on the general population in Turkey show that the vaccine acceptance rate is much lower.

The rate of hesitation against the COVID-19 vaccine among Afyonkarahisar Health Science University students is 9%. In the study of İkişik *et al.*, vaccine hesitancy was found to be 45.3% in the Turkish population [6]. In a study conducted jointly in 7

Table 5: Analysis of Society's Reasons for not Vaccinating According to Afyonkarahisar Health Science University Students' Willingness to Vaccinate Against COVID-19

Main reasons for acceptance society of the COVID-19 vaccines.		Willingness for COVID-19 vaccination		p
		Yes n(%)	No n(%)	
Risk/benefit ratio				
	I do not agree	118 (17.2)	34 (18.3)	0.680
	I am undecided	184 (26.8)	44 (23.7)	
	I agree	383 (56.0)	108 (58.1)	
Have natural immunity				
	I do not agree	206 (30.0)	56 (30.1)	0.027
	I am undecided	187 (27.3)	34 (18.3)	
	I agree	293 (42.7)	96 (51.6)	
The belief that COVID-19 was produced in the lab and that the pandemic was a conspiracy				
	I do not agree	100 (14.6)	37 (19.9)	0.001
	I am undecided	146 (21.3)	57 (30.6)	
	I agree	438 (64.1)	92 (49.5)	
Religious reasons				
	I do not agree	329 (48.0)	116 (62.4)	0.002
	I am undecided	160 (23.3)	36 (19.4)	
	I agree	197 (28.7)	34 (18.3)	
Other beliefs/alternative medicine				
	I do not agree	216 (31.5)	86 (46.2)	<0.001
	I am undecided	166 (24.2)	46 (24.7)	
	I agree	304 (44.3)	54 (29.0)	
Ignorance/nothing will happen to us approach				
	I do not agree	70 (10.2)	57 (30.6)	<0.001
	I am undecided	65 (9.5)	32 (17.2)	
	I agree	551 (80.3)	97 (52.2)	

European countries, the rate of those who hesitated about the vaccine was 18.9%. When asked about the reason for hesitations about the vaccine, it was reported that there was concern about the possible side effects of the vaccine (55%) and that the vaccine could be released to the market before the working phases were completed [14]. In a study by Balan *et al.* in 2021, they emphasized that the most important reason for vaccine hesitancy was the speed of development of the COVID-19 vaccine [9].

When students are asked to share their views on the main causes of vaccine hesitancy among the public, their answers mostly revolve around various themes such as "fear/insecurity", "the negative impact of social media" and "lack of knowledge (ignorance)". In the study of Balan *et al.*, it was mostly stated as wrong information, lack of medical education, the negative effect of social media, and distrust of local and medical authorities [9]. It is seen that the prominent reasons are the lack of information and the negative effect of social media. In our study, students who did

not want to be vaccinated for COVID-19 reported that the public's biggest hesitations about getting vaccinated were "speed of development of the vaccine/not enough testing" and "lack of confidence in medical care providers/local authorities". When people lose control of their lives or feel threatened, they always become more vulnerable to believing in conspiracies. Science literacy is basically a skill that enables people to make decisions based on facts, research, and information, not opinions or hearsay. It is seen that the prominent reasons are the lack of information and the negative effect of social media. In our study, students who did not want to be vaccinated for COVID-19 reported that the public's biggest hesitations about getting vaccinated were "speed of development of the vaccine/not enough testing" and "lack of confidence in medical care providers/local authorities". When people lose control of their lives or feel threatened, they always become more vulnerable to believing in conspiracies. Science literacy is basically a skill that enables people to make decisions

based on facts, research, and information, not opinions or hearsay.

It can be eliminated by taking specific strategies to explain the possible benefits and risks of the COVID-19 vaccine with scientific evidence and data, and by auditing the misinformation on social media. Students studying in health-related fields will influence their behavior as future parents and medical professionals, and in the long run, can help shape a different perspective on vaccination in society.

CONCLUSIONS

It is important to increase the knowledge and awareness of the students of the Health Sciences University, who are role models to the society, on vaccines, immunization, and vaccine hesitations, from the time they start university. Health students who demonstrate a generally positive attitude towards vaccines can become a crucial resource in disseminating scientifically accurate information to the public. In today's technology, the effect of social media and communication tools is also very important. Although anti-vaccine ideas do not have a scientific basis, they have the opportunity to spread rapidly through the media and the internet, and in this way, they can reduce the public's trust in vaccines.

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