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Evaluation of Vaccination Level and Vaccine Literacy in Vocational Health School Students

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ABSTRACT

Purpose: As of 2022, the pandemic COVID-19 has entered a phase of decline thanks to vaccination efforts. In this sense, it is important to determine the vaccination status of young people studying in departments involved in providing health services to the community and to know their thoughts about vaccination. In this study, we aimed to investigate the COVID-19 immunization status and immunization literacy of students at Ankara Yıldırım Beyazıt University-Vocational Health School (AYBU-VHS).

Methods: The sample size of the study was calculated with a confidence interval of 95%, α=0.05, d=5%, and an unknown frequency of 50%, and the sample size was set as a minimum of 384. A questionnaire consisting of 4 parts [sociodemographic variables, information about COVID-19 (vaccination status, presence of chronic diseases, etc), COVID-19 knowledge level with 10 questions, and COVID-19 vaccine literacy scale] was used as the data source for the study. Study groups were determined by the dependent variable of having at least one vaccination or being fully vaccinated.

Results: 77.8% of the students (N:450) were female (n:350), the mean age was 20.37±3.64 years, 3.1% (n:14) were not vaccinated, and 14.0% (n:63) were not fully vaccinated. When analyzing the group's information about the vaccine COVID-19, unvaccinated individuals agreed at a higher rate that the vaccine COVID-19 could not be effective (p < 0.001), but agreed at a lower rate that the vaccine COVID-19 could also protect against other diseases such as influenza (p=0.002). It was found that individuals with at least one vaccination and fully vaccinated had higher vaccination literacy than unvaccinated and fully unvaccinated individuals (p=0.011; p=0.004).

Conclusion: Nearly 20% of students are still not fully vaccinated and there are deficits in attitudes toward vaccination. In addition, the vaccination competency of the fully vaccinated is higher. These findings are crucial to determine the knowledge, attitudes and behaviors of young people regarding vaccination and to take the necessary precautions.

Keywords: Vaccination level, Vaccine Hesitancy, Vocational Health School

Sağlık Meslek Yüksekokulu Öğrencilerinde Covıd-19 Aşısı Olma Ve Aşı Okuryazarlığının Değerlendirilmesi

ÖZET

Amaç: COVID-19 pandemisi 2022 itibarı ile aşılama çalışmaları sayesinde gerileme dönemine girmiştir. Bu anlamda özellikle topluma sağlık hizmeti sunumunda görev alacak bölümlerde okuyan gençlerin aşılanma durumlarının belirlenmesi ve aşı hakkındaki düşüncelerinin ortaya konması önemlidir. Bu çalışmada Ankara Yıldırım Beyazıt Üniversitesi-Sağlık Hizmetleri Meslek Yüksekokulu (AYBÜ-SMYO) öğrencilerinde COVID-19 aşı durumu ve aşı okuryazarlığının değerlendirilmesi amaçlandı.

Yöntem: Çalışmanın örneklem sayısı %95 güven aralığında, α=0.05, d=%5 ve %50 bilinmeyen sıklığı ile hesaplanan örneklem sayısı minimum 384 olarak belirlendi. Araştırmada veri kaynağı olarak 4 bölümden oluşan anket kullanılacaktır [sosyodemografik değişkenler, COVID-19 ile ilgili bilgileri (aşı olma durumu, kronik hastalık varlığı vb.), 10 soruluk COVID-19 bilgi düzeyi ve COVID-19 aşı okuryazarlığı ölçeği]. Çalışmanın bağımlı değişkeni en az bir aşı olan ve tam aşılı olan grup olarak belirlendi.

Bulgular: Öğrencilerin (N:450) %77,8'i kadın(n:350) olup yaş ortalaması 20,37±3,64 yılken, %3,1'i (n:14) aşısız, %14,0'ı (n:63) tam aşılı değildi. Grubun COVID-19 aşına yönelik bilgileri incelendiğinde, aşılı olmayan bireyler COVID-19 aşısının etkili olmayabileceğine (p<0,001), daha yüksek oranda katılıyorken; COVID-19 aşısının grip gibi diğer hastalıklardan da koruyabildiğine (p=0,002) daha düşük oranda katılmaktaydılar. En az bir aşılı ve tam aşılı bireylerin aşısız ve tam aşısız bireylere göre daha yüksek aşı okuryazarlığına sahip oldukları saptandı (p=0,011;p=0,004).

Sonuç: Öğrencilerin halen %20'ye yakını tam aşılı değildir ve aşıyla ilgili tutum-bilgi düzeyinde eksiklikler göze çarpmaktadır. İleveten tam aşılı bireylerin aşı okuryazarlıkları daha yüksektir. Bu sonuçlar aşılama konusunda sağlık alanındaki gençlerin bilgi tutum ve davranışlarını belirlemek ve gerekli önlemleri almak için kritiktir.

Anahtar kelimeler : Aşılanma Düzeyi, Aşı Tereddüdü, Meslek Yüksekokulu

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The coronavirus epidemic (COVID-19), classified as a pandemic by the World Health Organization (WHO) in March 2011, is one of the most important public health problems of the 21st century (1). The high risk of infection and the lack of specific treatment have further increased the importance of vaccine development. Societal immunity that ends the pandemic is only possible with high vaccination rates. As of 2021, there is conflicting information about the pros and cons of vaccines, which is one of the most debated topics in the world and in Turkey.

Vaccine literacy is defined as the extent to which individuals are able to obtain, process, and understand basic health information and services to make appropriate health decisions about vaccines (2). Moreover, vaccine literacy is expressed not only as knowledge about vaccines but also as the development of a less complex system for explaining and presenting vaccines as a sine qua non for a functioning health care system.

The COVID-19 epidemic facing the entire health community is now one of the biggest public health problems in the world and began to decline in 2022, mainly due to increased vaccination activities. At that time, in addition to reducing the lethality of the disease, personal protection measures and especially vaccination will be of great importance.

Although there is a great demand for vaccination studies in society, it is clear that some untrue discourses and some thoughts expressed both in social media and in society cause hesitation in vaccination (3). In this sense, it is important to identify the vaccination status of young people studying in departments involved in providing health services to the community and their thoughts about vaccination through descriptive scientific studies (4). One of the groups that will provide this service is students in health vocational schools.

The aim of this study was to evaluate the COVID-19 vaccine literacy and effective variables in Ankara Yıldırım Beyazıt University-Vocational Health School students.

MATERIAL AND METHOD

The study was a cross-sectional study conducted by the academicians of AYBU Faculty of Medicine, Department of Public Health during the academic year 2021-2022. The required ethics committee approvals for the study were obtained from the AYBU Health Sciences Ethics Committee (Date 07/04/2022; No: 06). AYBU VHS Students constitute the population of the study (approximately 2000 students). The sample size of the study was calculated with a confidence interval of 95%, α=0.05, d=5%, and an unknown frequency of 50%, and the sample size was set as a minimum of 384.

A questionnaire consisting of 4 parts was used as a data source for the study. In the first part of the questionnaire, sociodemographic variables were requested for the subjects (gender, age, department of education, marital status, income status, etc.). In the second part, some clinical and COVID-19 related information of the person is questioned (vaccination status, presence of chronic disease, living with a person with COVID-19, etc.), while the third part contains 10 COVID-19 information questions and the last part is a COVID-19 vaccine literacy scale. Study groups were determined by the dependent variable of having at least one vaccination (vaccinated) or having at least two vaccinations (fully vaccinated). The validity and reliability study of the COVID-19 vaccine literacy scale was conducted in 2021 by Durmuş et al (2). The statements on the scale were assessed using a 4-point Likert scale. The statements on the scale are: (1) Never, (2) Rarely, (3) Sometimes, (4) Often. The fact that the average of the scores obtained on the scale is close to 4 indicates that the level of vaccination literacy is high. Questionnaires were completed both in person and online after informed consent was obtained verbally from participants. Participants were told that they were completely independent in their decision to participate in the study, and work was done only with the group that wished to respond voluntarily. The necessary permissions for the study were obtained from the relevant institution.

The IBM-SPSS 20.0 statistical package was used for statistical analysis of the research data. In the statistical analysis, categorical variables were presented as numbers and percentages in the descriptive results section, whereas continuous variables were presented as mean±standard deviation for normally distributed data and median (IQR; 25-75) for distributed data. For categorical variables, appropriate chi-square tests were used to compare whether there was a difference in frequency between groups. The accepted statistical significance level was $p<0.05$.

RESULTS

77.8% of the study group were women (N: 350) and the mean age was 20.37±3.64 (range 18-53) years. While 3.1% (N: 14) of the study group were unvaccinated, 14.0% (N: 63) were not fully vaccinated. While the proportion of

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living with individuals at risk for COVID-19, such as those over 65 years of age, health care workers, and immunosuppressants, was higher among the unvaccinated (p:0.026), no association was found between gender, age group, marital status, employment status, presence of chronic disease, and COVID-19 history (p > 0.05 for each). The status of not being fully vaccinated was higher among men, married persons, and those who had COVID-19 (p < 0.001; p: 0.014; p: 0.017, respectively). No association was found between not being fully vaccinated and age group, employment status, presence of chronic disease, COVID-19 family history, or living with an at-risk person. The distribution of some sociodemographic data by vaccination status and complete vaccination status of the study group is shown in Table 1.

protect against other diseases such as influenza (p: 0.002). Individuals who were not fully vaccinated were more likely to report that the COVID-19 vaccine may not be effective (p < 0.001), that the vaccine does not protect against infections (p < 0.001), that fever, mild swelling and redness at the injection site are among the side effects of the vaccine (p: 0.001). The distribution of the study group's information about the vaccine COVID-19 according to their vaccination status is shown in Table 2.

Examining the attitudes of the study group toward the vaccine COVID-19, there is higher agreement with the statements that unvaccinated individuals can transmit the virus to others (p: 0.003), can lead a normal lifestyle after vaccination (p: 0.002), and are concerned about the negative effects of the vaccine (p < 0.001).

Table 1. The distribution of some sociodemographic data by vaccination status and complete vaccination status of the study group											
		Vaccinated					Fully vaccinated				
		Yes		No		p	Yes		No		p
		N	%	N	%		N	%	N	%	
Gender	Female	342	78,4	8	57,1	0,059	312	80,6	38	60,3	<0,001
	Male	94	21,6	6	42,9		75	19,4	25	39,7	
Age group	18-19	225	51,6	5	35,7	0,389	203	52,5	27	42,9	0,123
	20-21	143	32,8	7	50,0		129	33,3	21	33,3	
	>22	68	15,6	2	14,3		55	14,2	15	23,8	
Marital status	Single	415	95,2	13	92,9	0,691	372	96,1	56	88,9	0,014
	Married	21	4,8	1	7,1		15	3,9	7	11,1	
Working status	Working	40	9,2	3	21,4	0,125	33	8,5	10	15,9	0,066
	Not working	396	90,8	11	78,6		354	91,5	53	84,1	
Presence of chronic disease	No	29	6,7	2	14,3	0,267	28	7,2	3	4,8	0,472
	Yes	407	93,3	12	85,7		359	92,8	60	95,2	
COVID-19 status	No	341	78,2	11	78,6	0,974	310	80,1	42	66,7	0,017
	Yes	95	21,8	3	21,4		77	19,9	21	33,3	
COVID-19 status in family	No	268	61,5	9	64,3	0,831	242	62,5	35	55,6	0,291
	Yes	168	38,5	5	35,7		145	37,5	28	44,4	
Living with an individual at risk of COVID-19, such as over 65, healthcare worker, immunosuppressive person	No	374	85,8	9	64,3	0,026	332	85,8	51	81,0	0,317
	Yes	62	14,2	5	35,7		55	14,2	12	19,0	

When examining the study group's statements about the vaccine COVID-19, it appears that the unvaccinated individuals agree to a greater extent that the vaccine COVID-19 may not be effective (p < 0.001) and that the vaccine does not protect against infections (p < 0.001), while they agree to a lesser extent that the vaccine COVID-19 may also

Individuals who were not fully vaccinated were more likely to agree with the statements that they were more concerned about the negative effects of the vaccine (p: 0.001) and that they could not lead a normal lifestyle after vaccination (p: 0.013). The distribution of the study group's attitudes toward the vaccine COVID-19 according to their vaccination status is shown in Table 3.

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Table 2. Distribution of the study group's information about the COVID-19 vaccine according to their vaccination status.										
		Vaccinated				p	Fully vaccinated				p
		Yes		No			Yes		No		
		N	%	N	%		N	%	N	%	
The COVID-19 vaccine can cause infection.	I strongly disagree	38	8,7	0	0,0	0,611	35	9,0	3	4,8	0,618
	Disagree	16	3,7	1	7,1		16	4,1	1	1,6	
	Undecided	202	46,3	7	50,0		179	46,3	30	47,6	
	Agree	124	28,4	3	21,4		108	27,9	19	30,2	
	I strongly agree	56	12,8	3	21,4		49	12,7	10	15,9	
COVID-19 may not be effective	I strongly disagree	49	11,2	0	0,0	<0,001	47	12,1	2	3,2	<0,001
	Disagree	130	29,8	0	0,0		122	31,5	8	12,7	
	Undecided	174	39,9	3	21,4		145	37,5	32	50,8	
	Agree	65	14,9	6	42,9		58	15,0	13	20,6	
	I strongly agree	18	4,1	5	35,7		15	3,9	8	12,7	
The vaccine protects me from infection	I strongly disagree	14	3,2	3	21,4	<0,001	10	2,6	7	11,1	<0,001
	Disagree	39	8,9	5	35,7		34	8,8	10	15,9	
	Undecided	186	42,7	6	42,9		154	39,8	38	60,3	
	Agree	155	35,6	0	0,0		148	38,2	7	11,1	
	I strongly agree	42	9,6	0	0,0		41	10,6	1	1,6	
Fever, mild swelling and redness at the injection site are among the side effects of the vaccine	I strongly disagree	9	2,1	1	7,1	0,072	7	1,8	3	4,8	0,001
	Disagree	40	9,2	1	7,1		38	9,8	3	4,8	
	Undecided	117	26,8	8	57,1		95	24,5	30	47,6	
	Agree	199	45,6	3	21,4		182	47,0	20	31,7	
	I strongly agree	71	16,3	1	7,1		65	16,8	7	11,1	
COVID-19 may also protect against other diseases such as influenza	I strongly disagree	62	14,2	7	50,0	0,002	54	14,0	15	23,8	0,079
	Disagree	126	28,9	1	7,1		112	28,9	15	23,8	
	Undecided	163	37,4	6	42,9		142	36,7	27	42,9	
	Agree	69	15,8	0	0,0		65	16,8	4	6,3	
	I strongly agree	16	3,7	0	0,0		14	3,6	2	3,2	

Table 2. Distribution of the study group's information about the COVID-19 vaccine according to their vaccination status.										
		Vaccinated				p	Fully vaccinated				p
		Yes		No			Yes		No		
		N	%	N	%		N	%	N	%	
I can transmit the virus to other people	I strongly disagree	34	7,8	2	14,3	0,003	30	7,8	6	9,5	0,133
	Disagree	26	6,0	3	21,4		23	5,9	6	9,5	
	Undecided	89	20,4	1	7,1		73	18,9	17	27,0	
	Agree	125	28,7	8	57,1		113	29,2	20	31,7	
	I strongly agree	162	37,2	0	0,0		148	38,2	14	22,2	
I have a serious risk of contracting a COVID-19 infection	I strongly disagree	31	7,1	1	7,1	0,405	28	7,2	4	6,3	0,186
	Disagree	94	21,6	4	28,6		81	20,9	17	27,0	
	Undecided	174	39,9	8	57,1		153	39,5	29	46,0	
	Agree	97	22,2	1	7,1		86	22,2	12	19,0	
	I strongly agree	40	9,2	0	0,0		39	10,1	1	1,6	

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The vaccine also protects other unvaccinated people	**I strongly disagree**	76	17,4	5	35,7	0,186	68	17,6	13	20,6	0,090
	Disagree	116	26,6	4	28,6		105	27,1	15	23,8	
	Undecided	134	30,7	5	35,7		112	28,9	27	42,9	
	Agree	81	18,6	0	0,0		75	19,4	6	9,5	
	I strongly agree	29	6,7	0	0,0		27	7,0	2	3,2	
I am concerned about the negative effects of the vaccine	**I strongly disagree**	20	4,6	0	0,0	<0,001	19	4,9	1	1,6	0,001
	Disagree	73	16,7	0	0,0		67	17,3	6	9,5	
	Undecided	132	30,3	1	7,1		122	31,5	11	17,5	
	Agree	145	33,3	3	21,4		123	31,8	25	39,7	
	I strongly agree	66	15,1	10	71,4		56	14,5	20	31,7	
I can lead a normal lifestyle after vaccination	**I strongly disagree**	19	4,4	3	21,4	0,002	16	4,1	6	9,5	0,013
	Disagree	47	10,8	3	21,4		41	10,6	9	14,3	
	Undecided	128	29,4	7	50,0		110	28,4	25	39,7	
	Agree	170	39,0	1	7,1		151	39,0	20	31,7	
	I strongly agree	72	16,5	0	0,0		69	17,8	3	4,8	

The mean score of the study group on the vaccine literacy scale was 2.75±0.41 (range, 1.58-3.92). It was found that vaccinated females and fully vaccinated males had higher vaccine literacy scores according to gender (p: 0.008 and p: 0.003, respectively). Although there was no relationship between being vaccinated and vaccination literacy according to age group, it was found that vaccination literacy was higher in the 20-21 age group among those who were fully vaccinated (p: 0.005). It was also found that both vaccinated and fully vaccinated individuals had higher vaccination literacy than unvaccinated and fully vaccinated individuals (p: 0.011 and p: 0.004, respectively). The distribution of scores obtained with the vaccine literacy scale according to the vaccination status of the study group is shown in Table 4.

DISCUSSION

While 3.1% of the study group were unvaccinated, 14.0% were not fully vaccinated. Considering all vaccine acceptance studies, the highest acceptance for the vaccine COVID-19 was found in Indonesia (93%), China (91%), the United Kingdom (86%), and the lowest in the United Arab Emirates (22%) (5). In low- and moderately low-development countries, vaccine acceptance rates ranged from 76.7% to 42.6% (6). According to April 2022 data, 59% of the world's population has completed the COVID-19 vaccination protocol (7). While the rate of living with persons at risk for COVID-19, such as persons older than 65 years, health care workers, and immunosuppressives, was higher among unvaccinated persons, the rate of not being fully vaccinated was found to be higher among men, married persons, and persons with COVID-19.

Table 4. Distribution of scores obtained with the vaccine literacy scale according to the vaccination status of the study group.							
		Vaccinated			**Fully vaccinated**		
		Yes	**No**	**p**	**Yes**	**No**	**p**
		Median (IQR 25-75)	**Median (IQR 25-75)**		**Median (IQR 25-75)**	**Median (IQR 25-75)**	
Gender	**Female**	2,75 (2,5 -3)	2,42 (2,38 -2,54)	**0,008**	2,75 (2,5 -3)	2,67 (2,42 -2,92)	0,127
	Male	2,67 (2,58 -3)	2,67 (2,58 -2,67)	0,484	2,75 (2,58 -3)	2,58 (2,42 -2,67)	**0,003**
Age group	**18-19**	2,75 (2,5 -3)	2,5 (2,42 -2,58)	0,117	2,75 (2,5 -3)	2,67 (2,42 -2,83)	0,081
	20-21	2,75 (2,5 -3)	2,58 (2,33 -2,67)	0,059	2,75 (2,5 -3)	2,58 (2,33 -2,67)	**0,005**
	>22	2,83 (2,67 -3,08)	2,71 (2,25 -3,17)	0,745	2,83 (2,67 -3,08)	2,75 (2,58 -3,08)	0,518
Total		2,75 (2,50-3,00)	2,54 (2,42-2,67)	**0,011**	2,75 (2,50-3,00)	2,67 (2,42-2,83)	**0,004**

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No difference was found between work status, presence of chronic disease, family history of COVID-19 and the vaccination. The studies showed that COVID-19 vaccine hesitancy varied greatly by age, race/ethnicity, income, and education. Young people, women, and participants with lower income and education were more likely to be hesitant about getting vaccinated (5,8,9). In addition, some studies have shown that populations with a history of COVID-19 infection, similar to our study, were more likely to accept the COVID-19 vaccine (5,10-12). Vaccine acceptance was higher in healthcare workers and vulnerable groups than in the general population (5,13,14).

Sonmezer et al. reported in their study conducted in our country that 62.7% of the subjects believed that the vaccine COVID-19 would induce an immune response against COVID-19 (12). In our study, when we examined individuals' information about the vaccine COVID-19, it was found that individuals who were not vaccinated or did not complete the protocol believed that the vaccine COVID-19 may not be effective and may not protect against infection. The literature reports that the most common reason for not getting vaccinated against COVID-19 is the belief that the vaccines are not effective (15). Although reliance on advice from health care professionals increases vaccination coverage, sources of misinformation and content creation without surveillance have become evident today (16). Misinformation often relates to the evaluation of vaccine safety, efficacy, and suitability, which are major concerns with COVID-19 vaccination (17). Despite numerous studies demonstrating both the high efficacy and safety profile of COVID-19 vaccines, these concerns are considered high both globally and in our country (18,19). Evidence suggests that this may be due to a lack of adequate information dissemination (19). It is well known that willingness to vaccinate increases with accurate information (17). It was thought that conducting research and informing the community about the content and efficacy of the vaccine would have a positive impact on vaccination coverage.

Vaccination reduces the risk of COVID-19 infection. However, fully vaccinated individuals with the infection have a similar viral load to unvaccinated cases and can effectively transmit the infection in their home environment, including fully vaccinated contacts (20). In our study, the unvaccinated individuals believe that they will not transmit the virus to others. This shows that unvaccinated individuals who are vulnerable to infection still pose serious risks in society because of their beliefs. This belief of unvaccinated individuals may also reduce compliance with mask, distance, and hygiene recommendations

established to prevent infection. In our study, individuals who were unvaccinated reported that they were more worried about the negative effects of the vaccine and that they could not maintain a normal lifestyle after vaccination. Studies show that the side effects of the vaccines are mild. A quarter of people reported having no symptoms after the first vaccination, but mild symptoms after the second vaccination. At the second dose, 14% of participants reported no symptoms, while the majority had mild and predictable side effects (15). The fact that side effects are mild and predictable and that there are no cases of hospitalization may help to reduce vaccination hesitancy (15). On the other hand, knowing the possible findings after vaccination will help dispel myths and reduce public concerns.

Despite global efforts to contain the pandemic COVID-19, inadequate vaccination literacy among the population may hinder these efforts (21). In our study, both vaccinated and fully vaccinated individuals were found to have higher vaccination literacy than unvaccinated and fully unvaccinated individuals. In the study by Biasio et al, vaccination literacy increased with increasing age and educational status (22). In the study by Gusar et al., the vaccine literacy level increased with educational level and decreased with age.

Vaccination literacy was lower among participants who were employed, had a chronic disease, used drugs, or consumed alcohol daily (21). In our study, vaccination literacy was found to be lower in unvaccinated women and unvaccinated men. Considering that a person's vaccination literacy also provides information about health literacy, low health literacy is considered a serious barrier to vaccination coverage in our country (23,24). Determining the vaccination literacy of the population is important for planning intervention studies aimed at increasing COVID-19 vaccine coverage.

Our study adds some important information to the literature about the vaccination status of various health care professionals, especially those who will be working in the health care field, but there are also some limitations of our study. The HVS students selected for the study are a select and specific group. It would be more comprehensive to assess the oppositional thoughts against the COVID-19 vaccine among students from different faculties and schools.

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Public health authorities should take steps to increase vaccine acceptance and promote positive attitudes toward vaccines. An optimal approach would be to develop an educational program that provides the general population with accurate, reliable information about vaccines. In addition, public health authorities should be more vigilant about misinformation disseminated via the Internet, especially via social media.

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